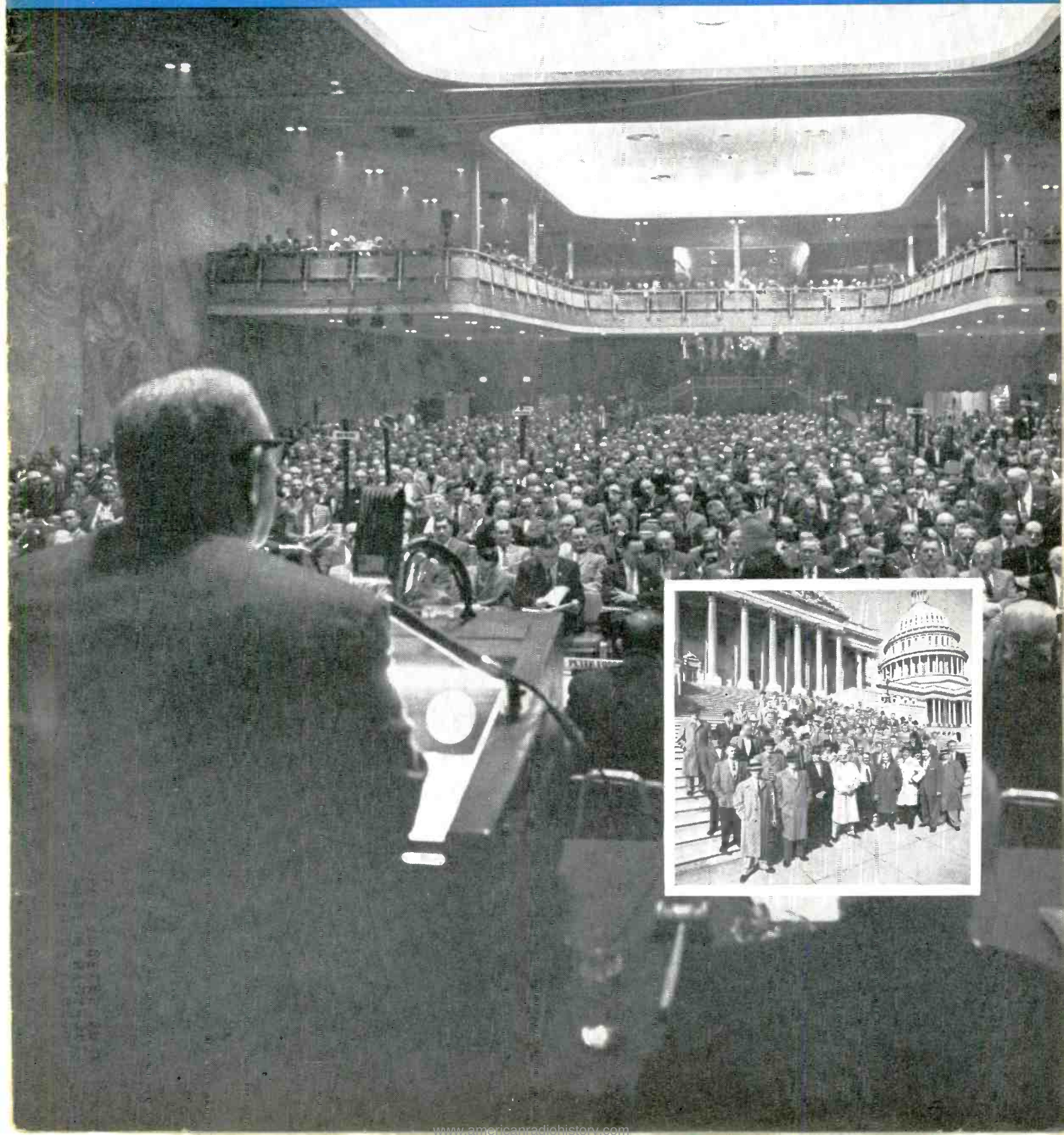
RADIO, TV and RECORDING

TECHNICIAN-ENGINEER

MARCH, 1958



RADIO, TV and RECORDING
TECHNICIAN-ENGINEER
VOLUME 7 — NUMBER 3
PRINTED ON UNION MADE PAPER

. . . in this issue

. . . the cover

Some 2,800 delegates from AFL-CIO Building and Construction Trades unions, including many from the International Brotherhood of Electrical Workers, converged on Washington, D. C., this month on behalf of various legislative goals. They heard George Meany, AFL-CIO president, shown speaking on our cover, call the current recession American's "number one concern." The building and construction trades called for expanded programs of slum clearance and housing, school and hospital construction; modernization of the Davis-Bacon Act; amendments to Taft-Hartley; and much more. The small cover picture shows delegates on Capitol Hill.

commentary

On March 4 the U. S. Department of Labor commemorated its 45th anniversary. Behind this vital branch of government are four and a half decades of labor-management assistance highlighted by all manner of eventful history—World War I mobilization, the depression of the 1930's, the NRA and the Blue Eagle, the Wagner Act, and now Taft-Hartley. At the milestones ahead are pressing problems of unemployment, job classification and wage determination, aid to the handicapped, and other matters.

President William Howard Taft, on his last day in office, March 4, 1913, signed the Act of Congress which created the U. S. Department of Labor. Starting with a shrewd, hard-working Scotch immigrant miner named William B. Wilson, there have been eight Secretaries of Labor, including the present, James P. Mitchell.

The Labor Department performs many valuable services for the working population—services which may seem remote to the average union member but which, nevertheless, indirectly affect his job and working conditions.

Our congratulation to the Department on its birthday!

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 1957 figures:

January, 1958—122.3; January, 1957—118.2.

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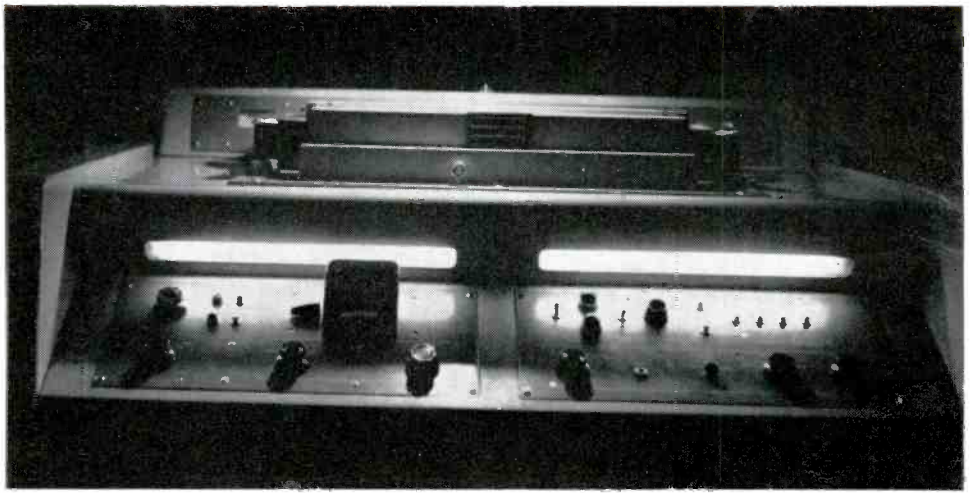
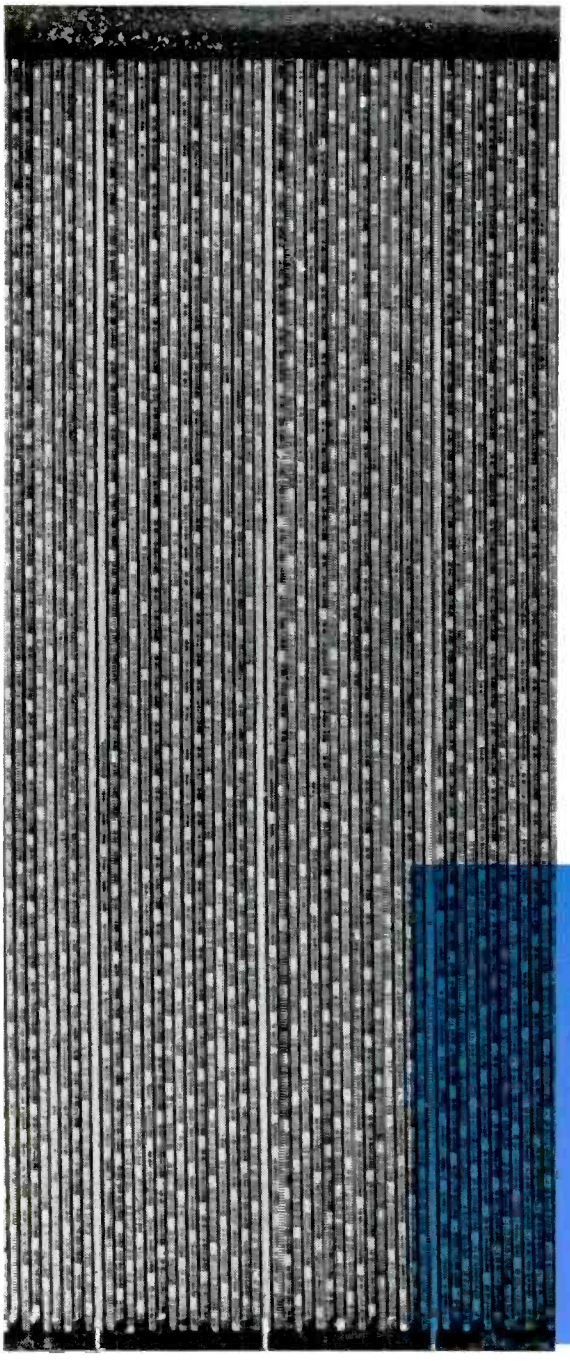
RIGHT: An Ampex "Videotape" recorder on duty. BELOW: Magnified view of section of "developed" videotape. Edit pulses are white "blips" on control track at bottom.



CBS Photo by Gabor Rona



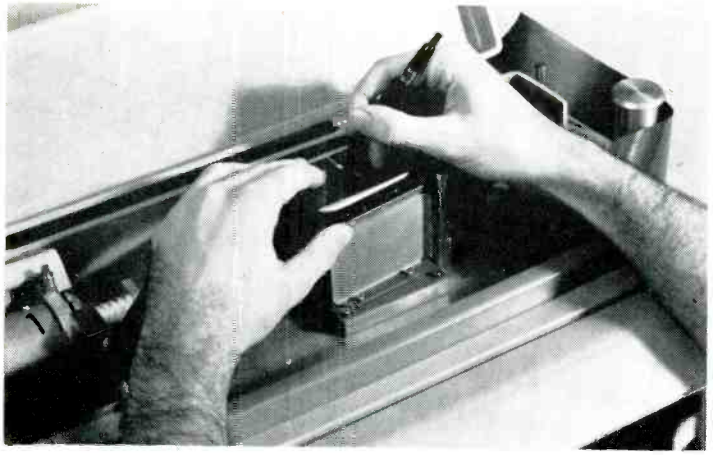
Video Tape

SHOWS STEADY IMPROVEMENT

It was April 14, 1956, not quite two years ago, that the Ampex Corporation demonstrated for the first time a revolutionary new process for the recording and reproduction of television programs on magnetic tape. Both sound and picture could be recorded on a single reel and played back immediately, or even hours later, as the station schedule required.

Very shortly thereafter, the Radio Corporation of America also came out with a video tape recorder, and a highly competitive race began to produce video tape *for color*. After months of laboratory research, both companies reached the objective.

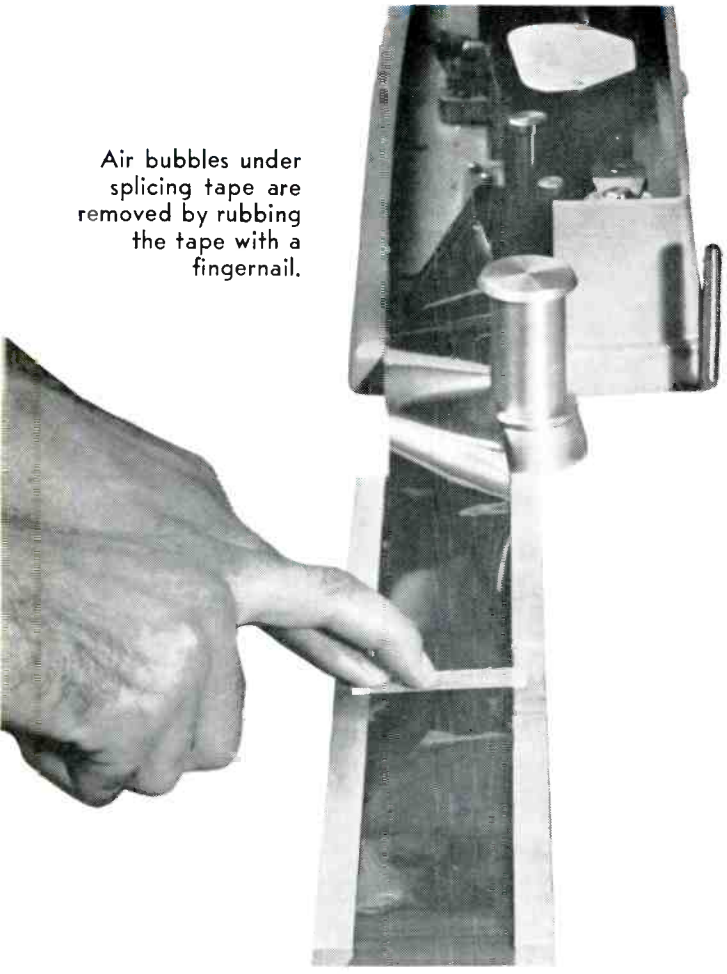
Meanwhile, prototypes of Ampex and RCA video tape recorders were installed in network stations, and the public received video taped shows for the first time. CBS first broadcast a video taped show in November, 1956. Now the networks have inaugurated color tape transmission coast-to-coast. Eventually, video tape will spread across the land.



1 Area where cut is to be made is marked with grease pencil.

2 "Edivue" is stirred with Q-tip to insure an even collodial suspension of iron particles.

New Techniques Simplify Splicing



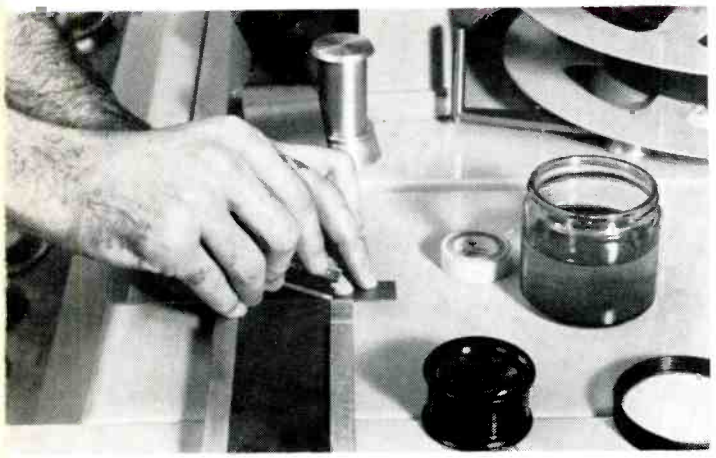
Air bubbles under splicing tape are removed by rubbing the tape with a fingernail.

WHEN the first Ampex engineering prototype "Videotape" Recorders were installed in network studios for delay programming operations, one of the most significant unanswered questions about the future of "Videotape" was: Would there be a convenient method of splicing and editing?

The problem in developing such a method was not especially one of the mechanics of slicing a tape and putting it back together; this could be acomplished from the beginning as easily as with any other tape recorder. With "Videotape," however, the splice must be made within extremely close tolerances along a specific recorded line containing a vertical synchronization pulse. Otherwise, during playback, the picture would not continue smoothly without interruption as the splice passed the video heads.

The problem, then, was to develop a method which would quickly and accurately locate the precise splice line, make an even cut, then rejoin cut ends back into a strong continuous tape. Ampex has successfully developed such a splicing system which will be available for use with all Model VR-1000 "Videotape" Recorders.

There were two main considerations which required extensive investigation by Ampex engineers to determine the feasibility of video tape splicing. First, was the need for a method of "developing" the ordinarily invisible magnetic image on the tape for visual location of the vertical sychronization pulse. Second was



3 Cut is made utilizing the edge of the metal ruler as a guide.

4 Tape ends to be spliced are turned recorder-side down and "floated" together. Thin splicing tape must be applied carefully.

of 'Videotape'

Precise splice line needed to assure smooth flow of tape past video heads in playback

a method for accurate positioning of the splice in relation to the small mechanical tolerances within which the splice must be placed, together with means for joining tapes so that maximum mechanical strength is attained with minimum effect on the head assembly.

Ampex has solved all of these problems and now offers a completely successful splicing kit for easy tape editing operations.

The visual "development" of the magnetic image is accomplished by application of a chemical solution in which minute carbonyl iron particles are suspended. The chemical evaporates almost instantly, leaving the iron particles aligned to the magnetic patterns on the tape in a readily visible form. To simplify the location of the splice line along a vertical blanking area, the VR-1000 electronically places an "edit" pulse in the form of a very positive "blip" on the control track along the lower edge of the tape. This pulse occurs every quarter of an inch, indicating the vertical synchronization pulse along which the tape may be cut. The "development" of just the lower edge of the tape, then, is sufficient to locate the splice line immediately.

For television studio operations this simple technique for splicing and editing has great importance. Commercials may all be pre-recorded at any time, then inserted later into the body of a taped program without any interruption in program continuity or picture quality. Dramatic sequences may be recorded in repetitive "takes" with the best performance selected later for program insertion.

Location of the spot to be "developed" and cut may be accomplished by two different methods. One is the video monitoring method, where the monitor TV screen is viewed during playback and the tape is stopped and marked where editing is needed. Another is the audio monitoring method, where the sound tract only is used, much as in editing of conventional sound recordings. With this technique, reels may be shuttled back and forth manually for audible location of the beginning or ending of a specific sound.

In the VR-1000, the audio record head is spaced about 9½ inches ahead of the video record heads. This means that the sound track leads the picture with which it is synchronized by some 9½ inches on the tape. At first glance, it would appear that splicing would interfere seriously with sound synchronization. However, when the horizontal tape speed is considered, it is plain to see that this presents no problem. Since the machine operates at 15 inches per second, there is only slightly more than a half-second difference in time between the synchronized position of sound and picture. A cut made anywhere within the spacing between the two heads will never vary synchronization beyond the momentary half-second tolerance, which is imperceptible. Most splicing is made at ends of complete scenes, where there are usually several seconds of extra space available in which to cut, and even where splicing between dialogue is desired, there is usually a free half-second in which to make the cut.

Editor's Note: We acknowledge the cooperation of the Ampex Corporation in the preparation of this article and pictures.

Louis Sherman Addresses Fourth Annual Legislative Conference

IBEW General Counsel Delivers Speech: 'Taft-Hartley Act Amendments, Including Proposals Relating to Union Democracy'

Editor's Note: The Annual Legislative Conference of the Building and Construction Trades Department of the AFL-CIO was held in Washington, D. C. during the week of March 3-7, 1958. One of the principal speakers was our General Counsel. His remarks are so significant, in our opinion, we feel that our readers, their families and friends should have an opportunity to read them. We are therefore printing the speech, in serialized form in this issue and the next to come. We are sure you will agree that this is "must" reading.

General Counsel Sherman confers with Andrew Biemiller, AFL-CIO legislative director, who was also a conference speaker.

WE are meeting in this Fourth Annual Legislative Conference of the Building and Construction Trades Department to take counsel together on the important problems confronting trade unions in the field of Federal legislation.

The labor movement has been a major subject of public attention and discussion during this last year. Recently, the large degree of interest in certain personalities in the ranks of labor officialdom has been reduced somewhat because of public preoccupation with serious problems of national defense, education, increasing unemployment and questionable practices of persons in high places in Federal administrative agencies. The long-continued and well-publicized legislative committee hearings on labor matters have, however, furnished a basis for the demand that "Something must be done."

To some, the slogan "Something must be done" is a warrant of authority for legislation that would directly or indirectly destroy the effectiveness of the trade unions of America. The great majority of the public and the Congress, however, are fair minded and will, I believe, respond to a reasonable and logical discussion of the problem.

To them—to the fair minded members of the public and the Congresss—labor must address its request that *before* they jump to hasty conclusions under the pressure of transient emotion or hysteria—*before* they adopt or approve ill-conceived and dangerous legislative measures which may cause permanent injury—they should think the problem through in all its complexities and ramifications.

In doing so, there are a few general propositions which should be borne in mind.

Individual wrong-doing is of ancient origin. It is not confined to any people, to any geographical place or to any particular class or group. The sensational wrong-doing of a few should not be paraded as characteristic of the entire group. The danger of this approach is apparent. For, if there is a public acceptance of the proposition that the entire group is guilty, it then becomes possible to direct action against all, innocent and guilty alike. Labor must insist that there be a mature discrimination between the need for correction of individuals and the demand for drastic change in institutions.

To the slogan "Something must be done" there must be advanced the indisputable answer that "Something Has Been Done." The central body of the labor movement has adopted a comprehensive series of codes of ethics prescribing applicable standards of conduct in critical areas. It has been said that "Imitation is the sincerest form of flattery." The labor movement can feel flattered that bills are now being introduced in the Congress of the United States to establish codes of ethics to govern the conduct of the officials in Federal administrative agencies. It has been found that the weaknesses of human nature do not vanish even when the robes of high Federal office are put on, solemn oaths of office are taken and the officeholder

subjects himself to the rigid Federal statutes which are applicable to Government officials. But these recent events do not minimize the continuing obligation of labor to clean its own house.

The labor movement has not contented itself with the expression of laudable standards. It has taken direct concrete action in support of these standards.

Whole Answer Not Statutory Regulation

There are some among those who say "Something must be done" who think only in terms of new and extensive Federal statutory regulation. But it must be recognized that the law of the land is not made up solely of Federal statutes. There is the common law as interpreted and applied by the State and Federal judiciary. Officers of unions have legal fiduciary responsibilities under the common law which can be enforced in all the courts of the land. Members of unions have legal rights which can be and are the subject of extensive litigation in the courts which have established strict standards of due process applicable to union disciplinary proceedings affecting those rights. There is an extensive body of law which has been developed on unions as unincorporated associations. There has been recent litigation in the Federal District Court for the District of Columbia where individual plaintiffs secured substantial results under existing law against a major trade union in a suit involving an election of officers. Furthermore, we have had a recent illustration that the criminal statutes of the states do not make exceptions for officials of trade unions.

Is it wise—is it truthful to assume that there is no effective law applicable to the incidents which have been made the subject of public disclosures in the recent year? Since it must be conceded that there is such law, State and Federal, is not the question then what, if anything, should be added to existing law rather than what new comprehensive Federal code of regulations should be enacted?

It is, of course, *not* the position of the labor movement that it is opposed to any new Federal legislation in this field. There has been an expression of the support of labor for the Douglas Bill (S. 1122, 85th Cong. 1st Sess.) which provides for registration, reporting and disclosure of employe welfare and pension benefit plans. This bill would also make it a Federal criminal offense to embezzle, steal or unlawfully convert any funds of such plans.

Peculiarly enough, the objection to this bill has come from some management sources who object to the bill's definition of covered plans which includes not only collective bargained plans but also *welfare plans established unilaterally by management where no union is involved.* I do not think that the objection has proceeded on the ground that all representatives of management are without any fault. The objection appears rather to be based on the proposition that irregularities which have been exposed are limited to collectively bargained plans. The weakness of this argument is self-evident. The limitation of the evidence is undoubtedly caused by the limitation of the Congressional investigations to collectively bargained plans. *There is no logic* in the proposition that if disclosure is good for collectively bargained union-employer plans, it is bad for unilateral employer plans.

The Douglas Bill has an additional merit. If enacted, it would be effective for a period of three years. It is contemplated that on the basis of the experience gained under this Act, the administrative agency would make a report to Congress as to the continuance, simplification or modification of the Act.

Is this not the sensible way to proceed? Is it not better to first see where we are going before adopting novel courses of action which may produce unfavorable results?

The view that "Something must be done" should be affected by the facts that labor has taken action through its own voluntary processes, that there is an extensive body of existing common law, State and Federal statutes, that such law is being applied and that there are moderate proposals for further Federal legislation, such as the Douglas Bill, for which labor has expressed support.

Senator Knowland's Dramatic Approach

Let us turn our attention now to a legislative proposal which offers a more dramatic approach to the problem. I refer to S. 3068 introduced by Senator Knowland, the Minority Leader of the Senate, on January 23, 1958. I shall endeavor to make a legal analysis of its more important provisions.

It is the object of the Knowland Bill "To regulate certain internal affairs of labor organizations by providing processes and procedures for insuring democratic control of such organizations by the rank and file membership thereof."

The democratic control of unions is an object with which few, in or out of labor, would disagree, although there is a very substantial question whether even such an object should be sought through legislation which would project the Federal government into the internal affairs of private non-governmental unincorporated associations.

Furthermore, the methods proposed for achieving such object must be evaluated from the standpoint of an applicable standard to determine whether such methods are fitting and proper. No better standard can be found, in my judgment, than the words used by the sponsor of the legislation himself, who said when he presented the bill to the Senate:

> "I wish to state for the public record my firm judgment that unions have played in the past, and will play in the future, an important role in the strengthening of our national economy. I am hopeful that unions will continue to grow in membership and importance, but, further, that they will also grow in responsibility." (*Cong. Rec.*, Jan. 23, 1958, p. 703.)

As you know, the legal analysis of a bill cannot proceed by reading it from the first page through the last page as if it were a story book. It is necessary to relate the various provisions of the bill to each other and to the existing case and statutory law. In the analysis of this bill it appears best to begin with the terminal point

of the proposal and that is the section prescribing the sanctions and penalties for violation of its provisions.

The explanation which was offered with the bill (*Cong. Rec.*, Jan. 23, 1958, p. 707) contents itself with six words—"provides both civil and criminal penalties"—as a description of the section on sanctions and penalties. An examination of the section shows that it merits somewhat fuller treatment.

Criminal penalties are indeed provided for union officers and individuals who violate certain provision of the bill, but it is also provided that during any period for which unions or their officers fail to act consistently with National Labor Relations Board determinations in numerous fields "such labor organization shall not (A) be considered to be the representative of employes for the purposes of the National Labor Relations Act, (B) be exempt from Federal income tax under section 501 (a) of the Internal Revenue Code of 1954, or (C) be considered to be a labor organization for the purposes of sections 6 and 20 of the Act entitled 'An Act to supplement existing laws against unlawful restraints and monopolies, and for other purposes' approved October 15, 1914 as amended (15 U.S.C. 17; 29 U.S.C. 52) or the Act of March 23, 1932 (29 U.S.C. 101 and the following)." (Knowland Bill—Sec. 412 (a)).

This means that there are many circumstances in which this bill would deprive a labor organization of the benefits of the National Labor Relations Act *and* the Federal income tax exemption *and* the Clayton Act exemption of labor from the Anti-Trust laws *and* the protection of the Norris-La Guardia Act.

There would be extremely drastic effects on such a labor organization and the rank and file membership whose living standards it is intended to protect. Such labor organization would be deprived of the legal rights which were first provided by the Wagner Act of 1935. Its revenues would become subject to the coroporate income tax rate of 52 per cent on income exceeding $25,000 and 30 per cent of the first $25,000. (For example, in the case of a union which receives $200,000 per annum the tax rate would decrease available income to approximately $102,000. In such a case services would have to be cut in half or the rate of dues would have to be doubled in order to produce the same sum of $200,000.)

Such labor organization would lose its status under section 6 of the Clayton Act adopted in 1914 which declares that:

> ". . . the labor of a human being is not a commodity or article of commerce. Nothing contained in the anti-trust laws shall be construed to forbid the existence and operation of labor . . . organizations . . . or to forbid or restrain the individual members of such organizations from lawfully carrying out the legitimate objects thereof; nor shall such organizations or the members thereof; be held or construed to be illegal combinations or conspiracies in restraint of trade, under the anti-trust laws."

The removal of a labor organization from the protection of the above quoted section of the Clayton Act would place it directly under the Anti-Trust Laws of 1890. You will recall that the *Danbury Hatters* case was decided under the treble damages provisions of these laws (*Loewe v. Lawlor* (1908) 208 U. S. 274; (1915) 235 U. S. 522) and that the personal properties of the individual members of the union involved in the *Danbury Hatters* case were deemed liable to the judgment under the Anti-Trust Laws. This denial of the Clayton Act exemption might also subject the labor organization to the old "criminal conspiracy" doctrine.

Finally, the protections of the 1932 Norris-La Guardia Act, which terminated "Government by Injunction" would be removed from such labor organization leaving it to the peril of private suits for labor injunctions in the Federal courts.

Knowland Bill Contradicts Its Author

It would seem fairly clear that labor organizations which become subject to the sanctions and penalties of the Knowland Bill could not be expected to *continue to grow in membership and importance.* For they would lose not only their exemption from income tax but also the protection of the laws which represent the Magna Charta of labor: the Clayton Act, the Norris-La Guardia Act and the Wagner Act.

The bill provides for large scale intervention of the Federal Government into the internal affairs of the trade unions and in the event of violation of any of the provisions discussed below which relate to such intervention there is applied the quadruple penalty of loss of income tax exemption, loss of Wagner Act rights, loss of Norris-La Guardia Act protection and loss of the labor exemption from the Anti-Trust Laws.

It is provided, for example, that 15 per cent of the members of a union can initiate a referendum election on decisions made by the officers or governing body of the union. The election would be held under the auspices of the National Labor Relations Board on the question of whether the majority of the membership favor the proposal specified in such petition:

> "(2) to amend, modify, revise, or veto any decision of the officers or governing body of the labor organization with respect to—
>
> "(A) dues, intiation fees, assessments, salaries of officers and employes of the labor organization, gifts, grants, loans, donations, or investments made by the labor organization, the expenditure of funds of the labor organization or projects involving the use of such funds or the resources or assets of the labor organization or involving the use of paid manpower, *or other matters relating to the financial affairs of the labor organization;*
>
> "(B) attendance at union meetings, picket line duty, performance of services on behalf of the labor organization, contributions, welfare activities, distribution of literature, support of political or ideological causes, issues, parties, platforms, or candidates, lobby- or legislative activities, *or other matters relating to the conduct or activities of members of the labor organization;* or

"(C) fines, suspensions, expulsion, loss of status or union benefits, *or other matters relating to the disciplining of members.*" (Sec. 404 (a))

It is further provided that any member can file a petition with the Board leading to a governmental determination of whether the union officers have failed to carry out a proposal approved in the election, are carrying out a disapproved proposal, or are otherwise failing to give effect to the wishes of such majority. (Sec. 404 (b))

There are outer limits to this unusual proposal. Such referendum elections could not be conducted on any decision with repsect to matters "specifically required or prohibited by law," or the "precise content of which is specifically required by the constiution . . . of the labor organization" or such collective bargaining negotiation items as involve the duration of the work period and money items. It is further provided that "Not more than one referendum shall be conducted under subsection (a) (2) with respect to any particular decision." (Sec. 404 (c) (3))

This means that each and every decision of the officers or governing body of a union, except for the minor limitations mentioned above, could be made the subject of a Government referendum election, at least once.

When it is realized that there are more than 77,000 local unions in the United States, hundreds of thousands of local and international union officers who make decisions, and there are 365 days in the year; it will be seen that there would be ample opportunity under this bill for inundating the unions and the National Labor Relations Board with petitions, elections and long drawn out controversy and litigation as to the interpretation of official conduct with respect to the results of such elections.

Furthermore, the people who make up the unions are a cross-section of America. The same controversies which exist in other associations and in political parties exist in unions. The labor movement is not free from the ever-present tendency to divide into factions and groups. Any dissident group in a local which could secure the signatures of 15 per cent of the membership; any dissident locals in an international which could secure the signatures of a similar percentage would be given the aid and assistance of the Federal Government in causing vexation, confusion and dissension among the membership.

History Refutes Bill's Democratic Theory

It may be said that the bill seeks to approach the ideal of pure democracy. We are for democracy in unions but we are for a democracy that is workable and effective.

In this connection, I would suggest a careful reading of The Federalist No. 10 written November 1787, by James Madison, when the U. S. Constitution was being ratified. Madison said:

"From this view of the subject, it may be concluded that a pure democracy, by which I mean a society consisting of a small number of citizens, who assemble and administer the government in person, can admit of no cure for the mischiefs of faction . . . Hence it is that such democracies have ever been spectacles of turbulence and contention; have ever been found incompatible with personal security or the rights of property; and have in general been as short in their lives as they have been violent in their deaths." (Modern Library Ed. p. 58).

Trade unions are not governments. But can they be accused of being undemocratic when they model their structure on the principle of *representative* government which characterizes the American way life? President Lincoln, in his message to the Congress of July 4, 1861, stated the dilemma of Government as follows:

"Must a Government of necessity be too strong for the liberties of its own people, or too weak to maintain its own existence?"

The same question is posed for the unions. The answer of the Knowland Bill to this question would be to enact legislation which would so weaken the representative system in unions as to make them unable to maintain their existence.

It is most doubtful that the trade unions would be able to discharge their *important role in the strengthening of our national economy* under the principle of referendum elections of official decisions in the Knowland Bill. It is also most doubtful that they would *grow in responsibility* in the atmosphere of confusion and dissension which would result from such elections.

How responsible could a union officer or representative be, if in addition to having his decisions subject to veto or modification in referendum elections initiated by groups or factions, his specified tenure of office could be rendered uncertain by annual recall elections? The Bill (Sec. 403 (a)) provides that:

"(a) Upon the filing with the Board of a petition therefor signed by at least 15 per centum of the members of a labor organization, the Board shall conduct an election at which the members of such labor organization shall be entitled to vote by secret ballot on the question of recalling any elected officer or officers of such labor organization named in such petition. If a majority of the members voting in such election vote to recall any officer named in the petition the Board shall declare the office held by such officer to be vacant. Not more than one election for the recall of the holder of any one office shall be held under this section in any twelve-month period."

It may be noted that this method was not chosen by the Founding Fathers to assure the responsiblity of representatives holding delegated power from the people.

And let us note, in passing, that the individual wage earner who reaches for the rose of union democracy may find the thorn of industrial tyranny. For, as unions are weakened by legislation resulting in internal strife and confusion, the individual wage earner may find once again that his individual economic necessities are pitted against the necessities of others with inevitable lowering of his own and the national wage standards.

(To Be Continued in the April Issue)

The Campaign is DELIBERATELY DECEPTIVE

The following analysis of "right-to-work" laws is excerpted from an address by the Rev. William J. Smith, S.J., director of St. Peter's Institute of Industrial Relations, Jersey City, N. J. The address—"Right-to-Work Laws—an Old Game, New Name," was delivered before the Association of Catholic Trade Unionists.

EXTRANEOUS matters of various kinds have been introduced into current controversy on "right-to-work" laws. The basic issue, however, is a simple one, namely, "shall the union shop provision in a collective bargaining contract be arbitrarily and absolutely prohibited by law?"

My answer is no!

A multitude of arguments could be marshalled in defense of that position. For the sake of brevity I am confining my remarks to four points.

The campaign is deliberately deceptive in its approach.

The title "right-to-work" was chosen and is constantly used for the purpose of misleading the public.

The only right that a "right-to-work" law touches upon (and it would abolish the exercise of that right) is that of freedom of contract between a union and management to insert a union shop provision in a contract.

So deliberate is the deception in that title that when the attorneys general of the states of California and Washington refused to accept it as a title on a legal petition, sponsors of the law protested loudly and even instituted court action to retain the fraudulent title.

The campaign is socially unsound because it is based on a false philosophical principle.

A "right-to-work" law is basically an appeal to exaggerated individualism. There is no such thing, however, as an absolute individual freedom to work as I please, if the social circumstances of my employment demand my cooperation with an employer upon whose tools I work and with a number of other fellow workers.

It is true the current "right-to-work" laws state that employes have a right to organize and bargain collectively. The philosophic principle upon which those laws are based, nevertheless, is one of absolute individualism —the absolute right of freedom for the worker regardless of the social circumstances.

Such a law, due to an unfortunate loop-hole, is in contradiction with the national policy of collective bargaining and the claim that individual workers have such an absolute freedom is in contradiction to Catholic social doctrine.

I do not say every worker has a duty to join some specific union. I do say that where a union shop would be a good, proper and perhaps necessary means to safeguard the union and the welfare of the employes, it should not be arbitrarily abolished by a law.

That is what a "right-to-work" law does. It makes no distinction between decent unionism and dictatorial abuse of unionism. It destroys the exercise of a right to correct a possible abuse. That is neither good logic nor sound social justice.

The sponsors of "right-to-work" laws and their voluntary spokesmen take this adamant position of total abolition of the union shop and build upon it, because they are acting on unfounded assumption.

Among these unproven suppositions are:

1—That a "right-to-work" law is a remedy for the corrupt practices of certain individual labor leaders exposed by the McClellan Committee.

2—That mass desertions of employes from the ranks of organized labor unions would build up better unions in America.

3—That no worker anywhere, regardless of how necessary the union may be in a plant, has any social obligation whatever to join with his fellow workers in protecting their common standard of living.

4—That every union abuse anywhere is a direct result of a union shop provision in a contract.

5—That a "right-to-work" law, in some magic way, can inspire union members to have a greater interest in trade union affairs.

6—That the moral standards of trade unions in states that now have "right-to-work" laws are higher than in those states that allow the union shop.

7—That a "right-to-work" law is morally and socially of higher value than the Taft-Hartley Law which has given a legal sanction to the union shop.

8—That absolute freedom for the individual in human social relations is a natural right.

9—That union security, regardless of the fact that 80 per cent of union-management contracts today contain a provision for it, and six million American workers have democratically chosen a union shop in NLRB elections, is an evil that must be wiped out of American industrial life.

Each and every one of these assumptions is false; none of them can be proved as true; they all run counter to the common good.

The fourth feature of the national campaign now going on in support of "right-to-work" laws rests on the fact that these laws are sponsored and supported not by workers but by organized management associations known to be traditionally hostile to trade unionism, good or bad.

Crusade Endorsement

Prominent leaders of organized labor have endorsed the American Cancer Society's April Cancer Crusade, and are urging that it be generously supported, so as to increase the attack in all aspects of the nation-wide assault on cancer.

The ACS is the only national voluntary health agency fighting that disease on three fronts—through public and professional education, service facilities for patients, and a multi-million dollar research program aimed at finding new cures for cancer.

George Meany, AFL-CIO president, in a recent statement said:

"Only a program of education, research, and service, like that so ably conducted by the American Cancer Society, can achieve relief from this dread disease. American workers, of course, have a big stake in this Crusade. The lives and well-being of workers and their families are involved."

1.000008

1.000010

1.000013

Redetermining The Amp

A recent experiment at the National Bureau of Standards in Washington has shown that the standard ampere maintained by the Bureau has drifted no more than a few parts per million in the last 15 years. Such a small apparent change may well be due to slight errors in measurement so that the standard ampere may actually have remained perfectly stable since its original evaluation in 1942.

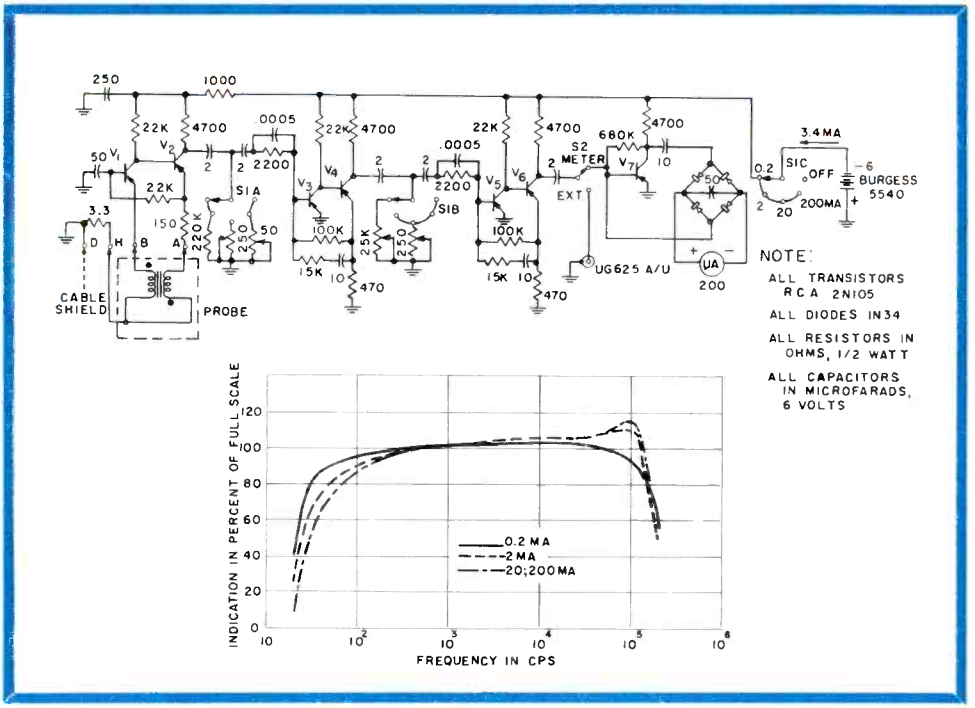
Because of the importance of precise electrical measurements to modern science and industry, the Bureau maintains permanent primary standards of two basic electrical quantities, voltage and resistance. From these basic electrical standards, the Bureau has derived other standards for all electrical quantities in use today. One of these, of course, is electric current. Because current is transitory, the primary standard ampere cannot be kept in the form of a material object such as the standard cells that maintain the volt or the standard resistors that maintain the ohm. Each time the standard ampere is required, it must be obtained anew from the standard volt and the standard ohm by use of Ohm's law. However, a gradual change might sometimes occur in the standard cells or the standard resistors. One method of checking the stability of these standards is to compare the standard ampere derived from them with the "absolute" ampere, that is, the ampere obtained experimentally in terms of mechanical units of length, mass, and time.

In the present determination, R. L. Driscoll and R. D. Cutkosky, of the Bureau staff, measured the standard ampere in absolute amperes using two different sets of apparatus. One was the current balance used in the 1942 evaluation; the other was a Pellat type electrodynamometer, which was introduced to reduce the possibility of systematic errors. The standard ampere was found to equal 1.000008 absolute amperes by the current balance method and 1.000013 absolute amperes by the Pellat instrument. The weighted mean of these two values is 1.000010 absolute amperes, but in this mean there is an uncertainty of 5 parts per million. If no accidental errors were made in either the original or the present evaluation and if all systematic errors remained fixed, then the value of the current yielded by the electrical standards of resistance and voltage has decreased by 6 parts per million. On the other hand, known sources of accidental error in the current balance determinations could easily account for the apparent drift.

A Clamp-type AC Microammeter

ABOVE: Photograph of a-c microammeter with clamp-type probe developed at the National Bureau of Standards. Probe is in foreground.

RIGHT: Schematic diagram of microammeter. Graph shows response of instrument over a wide frequency range.



A PORTABLE, battery-powered, transistorized microammeter developed at the National Bureau of Standards provides a rapid, convenient method for measuring alternating currents. Since the current pickup is a miniature split-core transformer that can be clamped onto a wire, it is unnecessary to open the circuit to make the measurement. Lowest range of the prototype instrument is 200 microamps full scale, and on higher ranges it can accurately determine currents as large as 200 ma. Its frequency range is 50 cps to 100 kc. Instruments embodying the same principles can be used for materially lower and for very much higher ranges. The development was carried out as part of the work in basic instrumentation, a cooperative program sponsored by the Department of Defense, the Atomic Energy Commission, and NBS, and was conducted by G. F. Montgomery and C. Stansbury of the Bureau's electronic instrumentation laboratory.

For many years, it has been common practice to extend the range of current-indicating instruments by using current transformers. For convenience, the transformer often consists of a secondary winding on a split core that can be clamped around the conductor carrying the current to be measured. This technique suggested a similar device for measuring small currents at audio and radio frequencies: an instrument consisting of a small clamp-type magnetic probe and a suitable means for amplifying the probe output to operate an indicating meter. Such an instrument would be comple-

mentary to the vacuum-tube voltmeter found in all experimental electronic laboratories. The Bureau's device is not only based on the probe-amplifier-meter concept but is transistorized as well for long life and modest power requirements.

Transformer Design

The core of the transformer consists of 0.014-in. silicon-steel laminations. It is formed of matching C- and I-shaped sections; the I's close the gap of the C's when assembled. The completed core is 5/16-in. square, 1/8-in. thick, and contains a 1/8-in. window. The core is mounted in a spring-loaded bakelite clamp, about the size and shape of an ordinary clothespin. Shielding with mu-metal minimizes sensitivity to external magnetic fields.

The core contains two windings, each having 250 turns of number 44 enameled wire. The four coil leads connect to a shielded four-wire cable and plug. One of the windings on the core is considered the secondary, and provides the actual current pickup. The other winding, the tertiary, is part of a feedback network to provide frequency equilization. By using this tertiary winding, transformer output for a particular primary current is very nearly linearized over the frequency range from 100 cps to 100 kc. The primary of the transformer is, of course, the conductor carrying the current to be measured.

Circuit Design

Output of the transformer is fed into a preamplifier consisting of two transistors and a feedback network. Gain in this stage is sacrificed to provide frequency equalization and to reduce phase shift at the higher frequencies.

Gain is provided by two intermediate stages, each using a pair of transistors. Each stage uses direct coupling from the first transistor to the next. A feedback network, from the emitter of the second transistor to the base input of the first, stabilizes the d-c operating point for each pair and reduces the overall current gain of each stage to about 20. The a-c feedback factor at low frequency for each stage is about 100; the low-frequency current gain is thus stabilized against transistor and battery aging, and the frequency range for constant response is extended beyond that available without feedback.

The indicating meter has a 200-microamps d-c movement and was chosen as a compromise between cost, sensitivity, and ruggedness. The meter is driven through a full-wave rectifier. Although the input current from the immediate amplifying stages is more than adequate to drive the movement to full scale, it is small compared to the normal operating characteristics of the rectifier.

Performance

Whenever current is measured with any type of instrument, an impedance is in effect inserted in series with the circuit carrying the measured current. For the Bureau's microammeter, the insertion impedance is almost entirely resistive over the useful frequency range. This impedance is made up of a resistance of 2.8×10^{-5} ohm and inductance of 2.2×10^{-7} henry in parallel.

In the experimental instrument, the high-frequency limit is imposed mainly by limitations of the transistors used, although even with high-frequency transistors the maximum operating frequency is probably not more than three or four times the transformer resonant frequency of 120 kilocycles. Instruments designed particularly for high-frequency use would probably make use of more appropriate core material and a construction minimizing distributed capacitance.

One Moment Please

Two members of the House Ways and Means Committee Rep. Eugene McCarthy of Minnesota and Rep. Robert Kean of New Jersey—sat opposite their moderator, Harry Flannery of the AFL-CIO.

Over to one side of Congressman Kean's office sat an IBEW technician from Sound Studios, manning the tape recorder.

The two solons were all set to discuss tax reductions in the low income brackets for the AFL-CIO's regular radio program, "Washington Reports to the People." Their papers were spread across the table.

Flannery said: "Are we ready to go?" The technician said he was ready. Rep. McCarthy said he was all set. Rep. Kean hunched up to the microphone, then jumped up like he was shot.

"Wait!" he exclaimed. "Before we start giving our views on tape, I'd better stop my clock!"

He walked to the wall and carefully stopped the pendulum of the clock that was about to announce the hour . . . a cuckoo clock.

Technical NOTES

Conelrad for Weather

The weather bureau announced plans February 18 to use the nation's radio-TV defense warning system to alert the public to hurricanes, floods and tornadoes.

The system is Conelrad, which stands for control of electromagnetic radiation. It was devised to permit broadcasting of Civil Defense information during an air attack without giving enemy bombers a radio "beam" to guide them to targets.

The Conelrad system itself will not be used to carry the weather warnings. But the Conelrad "attention signal," designed to warn listeners a defense alert is about to begin, will be employed.

This signal consists of interrupting a normal broadcast program, turning off a station's power (or sound only in the case of TV) for five seconds, then on for five seconds, then off for five seconds and on again, and then broadcasting a steady "beep" for 15 seconds.

The signal does two things. For persons with radio or TV sets turned on, it lets them know a special warning is coming. For a small but growing number of persons whose sets have automatic alarm devices, it will turn on the loud speaker even if the set is off, so any emergency message that follows can be heard. Stations will broadcast the signal and message at request of the Weather Bureau issuing the warning.

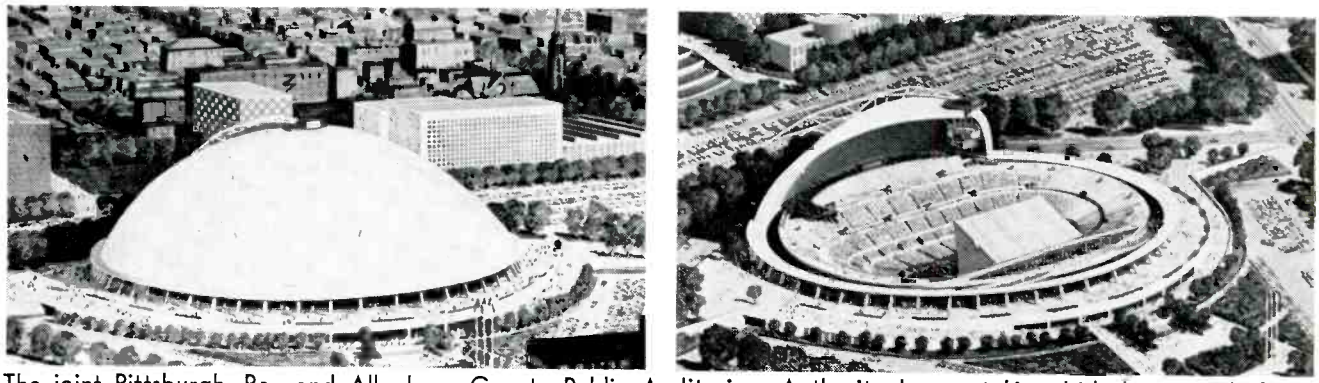
The Weather Bureau said an estimated 200,000 or more sets with such devices now are in operation in the hands of Civil Defense offices, schools, police and fire departments and others. Storm specialists hope millions of sets will contain the device in the next few years, the bureau said.

The Conelrad network will pass along only "new and urgent warnings" such as that a hurricane has speeded up or changed course, a flash flood is sweeping down a valley, or a tornado is minutes away from a specific location.

It is expected to be ready for "most areas" in time for the 1958 hurricane and tornado season, the bureau said.

Dr. F. W. Reichelderfer, chief of the Weather Bureau, said much of the value of the new warning plan will depend on ability of radio manufacturers to include low-cost automatic alarm devices in future sets.

Pittsburgh Facility with Roll-Back Roof to Be TV-Equipped



The joint Pittsburgh, Pa., and Allegheny County Public Auditorium Authority began taking bids last month for a spectacular auditorium-stadium which will hold from 7,000 to 13,000 persons, depending upon the event, and which features a roll-back roof. Hoping for big conventions, plans include five permanent TV camera sites and a TV monitoring room equipped for color-TV transmission. One installation will be in the hanging platform at the center. The $17-million structure will also be wired for closed-circuit television.

Live TV From Europe?

The United States and Europe may be swapping live television programs by 1959 with indications that global TV will be firmly established within the next decade.

Steelways, official publication of American Iron and Steel Institute, says scientists are rapidly mastering the technical problems that will permit construction of 60-foot steel antennas across the Atlantic land masses that will enable TV pictures to be relayed to both continents and eventually around the world.

It asserts the scientists already have achieved success in reaching the 200-mile "plateau" in transmitting pictures and are now bending every effort to send a picture 300 miles which is necessary to leapfrog across the remote land masses that span the Atlantic.

The major breakthrough to international TV occurred when engineers discovered that signals could and did cross the horizon. Until then, the light wave, which is straight and limited to a 30 to 100-mile horizon, seemed forever to block progress. But now the engineers could multiply power by 20,000 times, adopt huge round steel antennas and go beyond the horizon.

One of the major problems that still confronts trans-Atlantic TV is maintenance of the relay stations in the remote areas after they are built. says *Steelways:*

"The carbon steel relays will be able to withstand almost anything; the plan for establishing an airlift in and out of each location for maintenance men still requires development."

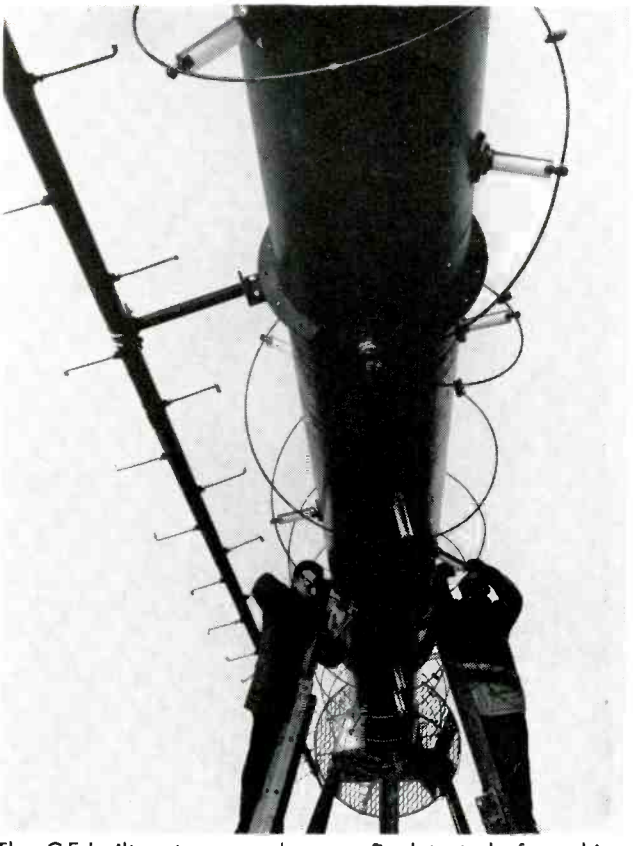
Two Billionth Tube

The Radio Corporation of America's two billionth electron tube came off an assembly line at the company's Harrison, N. J. plant on January 21, it was announced by President John L. Burns.

It was an RCA traveling-wave tube designed for use in classified electronic equipment for the Armed Forces. The tube was shipped to RCA's West Coast Defense Electronic Products plant at Los Angeles where it will form the "heart" of a new defensive system being built for the U. S. Navy.

In twenty-eight years of tube-making, RCA has produced enough entertainment-type receiving tubes and picture tubes to equip 17½ million TV sets and 300 million radios. The rest of the two billion total consisted of various receiving-type industrial tubes, power tubes, and tubes for television cameras, oscilloscopes and microwave equipment.

Giant TV Antenna



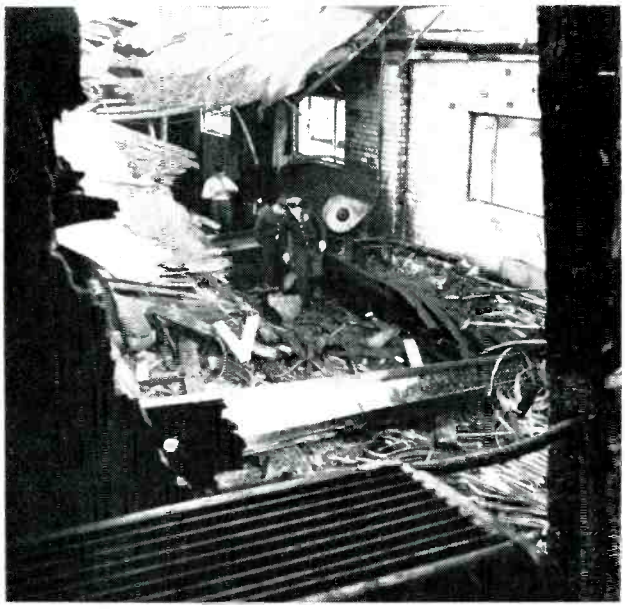
The GE-built antenna undergoes final tests before shipment to an IBEW-manned station in Seattle, Wash.

A giant helical television broadcast antenna will soon be blanketing the Seattle, Wash., area with reliable, very-high frequency (VHF) TV picture and sound signals. Shown above undergoing final tests at General Electric's Electronics Park, Syracuse, N. Y., the 57-feet-long, 5,500-pound antenna is one of the latest of its type developed by G-E broadcast engineers. It is designed to give improved home reception in hilly areas, such as that surrounding Seattle, where spotty coverage and ghostly reception are often problems. The huge antenna will be used by Seattle's newest TV station, KIRO, channel 7, expected to go on the air early this month. Wire shown spiralling down the antenna, known as a helix, operates dually to send out picture and sound signals and to supply heat for de-icing. The antenna, one of the simplest yet developed, is also designed to withstand severe lightning and other weather hazards and still permit stations to remain on the air. G-E broadcast engineers say that in event of damage to one of the antenna's two main transmission lines, the device will continue to operate under half power without pattern change. The station employs members of Local Union 77, IBEW.

Station Breaks

Fire Destroys Office of Local 45, Los Angeles

As reported in our February issue, a recent fire totally destroyed the office of Local 45, Los Angeles. The two-story building in which the office was located was a smoldering ruin. As pictures below indicate, the local union staff continued their work undaunted by the catastrophe.



A view from Local 45's former office into the lower floor. Note the I beam twisted by the heat.

Miss Ellinton takes a letter from Business Manager Draghi: "Dear Sir: We are quite burned up. . . ."

Business as usual . . . well, almost usual. Kay Ellinton and Sylvia Globe work from a temporary office.

Sylvia Globe shows satisfaction with, "Fresh air at last!" Cross ventilation deluxe.