WCFL

WORLD COOPERATIVE FARMER LABOR

Quarterly **Radio** Magazine

35¢

The VOICE of FARMER and LABOR

SUMMER 1929

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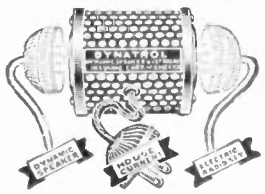
3C2547—List, $10.00. Net..... $5.88



Dynamic Speaker
Electric Radio Relay

It automatically throws on and off all current supply for set and speaker at its source the moment the set switch is thrown. Controls the current for speaker and set at the same time from the single control set switch. Cuts off the current from the speaker automatically, as soon as reception is shut off. All metal. Black lacquer and nickel finish. Automatic, fool proof, convenient. Shpg. wt., 1½ lbs.

2C375—List, $2.50. Net.... $1.47

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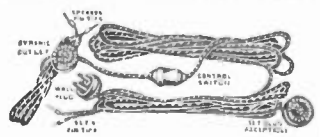

A snap of the switch will turn on or shut off power on both electric set and dynamic speaker 50 feet from the receiver. A real radio convenience, simple and inexpensive. For magnetic or dynamic speakers. Will operate additional speaker at a remote point. Patented feature eliminates AC line current hum. Simply plug in current outlet. Shpg. wt., 1½ lbs.

2C1506—List, $3.50. Net.. $2.06

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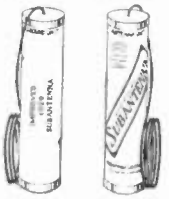
$1.18 Net

Antenna with provision for two electric outlets and a 10-foot extension cord. It helps reduce static disturbances and is beneficial where sharper tuning is desired. The bakelite housing on the Dumontenna has two electrical outlets, one for AC or DC receivers, the other for a dynamic speaker, lamp or other electric attachment. Shpg. wt., 1 lb.

3C2729—List, $2.00. Net.. $1.18

New SUBANTENNA Twins

Eliminates Unsightly Aerials
Diminishes Static—Simple to Install—Permanent



This new development of advanced radio engineering is so simple in principle, and at the same time so inexpensive you will be surprised at its preeminent practicability and efficiency, the wonderful degree of improvement it affords to radio reception. It is a two-unit installation that overcomes all difficulties of overhead aerials, loses nothing in volume and purifies tone quality. There are four distinctive features: Placed in the ground, they eliminate unsightly overhead wires and lightning hazard; they diminish electrical strays and static pickup; simplicity of installation with no added expense for aerial clamps, insulators, etc.; permanency—once installed, they require no further attention and will last indefinitely. Easy to install, six inches below the surface is usually sufficient. Each unit, 4½x18 inches. Shpg. wt., 6 lbs. Complete with weatherproof lead-in connection wire.

3C2749—Set of two. List, $7.50. Net..... $4.41

Arc Aerial
The Modern Outside Antenna

Decidedly new! Functions perfectly in locations which are easily accessible. Any convenient place, the window jamb, side of building or above the window frame—wherever a lead-in wire can be placed conveniently for the radio set—will prove satisfactory. Are aerials will cut service costs in half. Installed in twenty minutes. Its dark green color harmonizes with most buildings. Shpg. wt., 6 lbs.

3C2742—List, $9.50. Net.. $5.59

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The annoying hum which is present in AC operated dynamic speakers using low voltage type rectifiers is effectually silenced by the Potter Dynamic Filter. Clear and noiseless reproduction is obtained. Easily installed. Requires no servicing. Small, compact, permanently sealed. Shpg. wt., 4 lbs.

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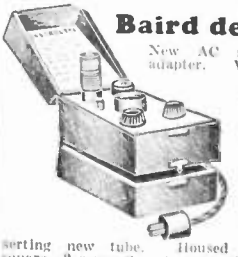


Baird de Luxe

New AC short wave adapter. Works with any length antenna indoors or out. Straight line frequency tuning condenser and vernier dial. Connects simply as inserting new tube. Housed in 8-inch square, 2-compartment, attractive cabinet. Complete, ready to work. Shpg. wt., 6 lbs.

3C518—AC Model. List, $21.50. Net..... $12.65

3C519—DC Model. List, $20.00. Net..... 11.76

BUD Antenna Eliminator and Selector

Can be placed inside the cabinet where it functions perfectly. It increases selectivity, cuts down interference, eliminates fire and lightning hazards of outside aerials, partially absorbs static, clarifies reception and adds to tonal quality. Installed in two minutes. Has 50-foot aerial capacity. Bakelite case, 4½x2⅝x⅞ inches. Shpg. wt., 1 lb.

3C2705—List, $3.50. Net.. $2.06

POTTER Interference Eliminator

A Potter Interference Eliminator successfully eliminates much troublesome interference. Simply connect filter to AC line at point of interference. Takes but a minute to install. Made in sizes to fit all requirements.

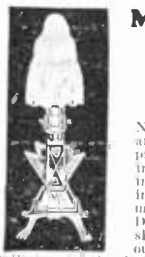
3C432—Type 105-05. Line voltage, 110. List, $2.75. Net..... $2.21

3C449—Type 305-05. Line voltage, 220. List, $6.50. Net..... 3.82

X-L Link
$3.38

A complete link between the radio receiver and the light socket. For any set, AC or power unit operated. A few advantages are: Positive line voltage regulation; increased selectivity, reduced interference and elimination of external wires; double socket outlet; complete fusing; control switch. Quickly attached. No wiring or extra connections. Buffed silver finish and brown bakelite trim. Shpg. wt., 2 lbs.

2C1513—List, $5.75. Net..... $3.38



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Not a toy or merely an ornament, but a practical and efficient indoor aerial housed in a beautiful, genuine reading lamp of most artistic design. Does away with unsightly, hazardous outside aerials. Installation is simplicity itself: plug into light socket and connect your radio antenna post to terminal on lamp. Stands 12 inches high and is solidly built so cannot easily tip over. Semi-translucent art crystal shade. Nickel finish base. Will greatly improve selectivity and reception and blot out considerable static. Shpg. wt., 4½ lbs.

3C2704—List, $6.50. Net.. $3.82

New AUDAK Electro Chromatic Pick-Up

$17.64 NET

The finest pickup we have ever known! It accomplishes the seemingly impossible—NATURAL interpretation of voice and music. It is rubber "clamped," making reproduction absolutely clear and devoid of scratch and pick-up noises. Produces enormous volume with a good amplifier. Beautifully finished in black and gold with the new compensating arm which relieves pressure from records. Shpg. wt., 5 lbs.

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New improved model. Super-sensitive and gives true reproduction. New balanced tone-arm assures perfect contact and eliminates scratching. Higher frequency range—4,000 C.P.S. down to between 40 and 60; mechanical filter. Complete with cords and adapters. Shpg. wt., 3 lbs.

3C5440—Type 106B New Super-Phonovox, on balanced tone arm. Bronze finish. List, $15.00. Net..... $8.82

3C5441—Type 106A New Super-Phonovox, without tone arm. Bronze finish. List, $12.00. Net..... $7.06

3C5442—Type 106C New Ultra Combination. Heavy gold finish, individually calibrated. Automatic stop in base. List, $25.00. Net..... $14.70

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WCFL, Radio Magazine, published quarterly by Co-operative Farmer-Labor Radio Listeners' Assn. Summer issue 1929, Vol. 2, No. 3. Single copy 35c, annual subscription $1.25. Office of publication, 720 North Ridgeland Ave., Oak Park, Ill. Editorial office, 623 So. Wabash Ave., Chicago. Entered as second-class matter Oct. 10, 1927, at postoffice at Oak Park, Ill., under Act of March 3, 1879.

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"Ask for the tube in the yellow and black triangular box"

TRIAD MANUFACTURING CO., Inc. ▲ PAWTUCKET, R. I.

Summer 1929

Contents of This Issue

Volume 2
No. 3

Issued Quarterly

WCFL RADIO MAGAZINE

Voice of the Farmer and Labor

OFFICIAL QUARTERLY PUBLICATION OF

WCFL RADIOPHONE BROADCAST STATION

and of the Co-operative Farmer-Labor Radio Listeners' Association

EDWARD N. NOCKELS, Managing Editor, Chicago

Paul Stephens, Editor **L. W. Ainsworth, Asso. Editor**

WCFL Radiophone Broadcast Station was established and is owned by the Chicago Federation of Labor. In its maintenance and operation, Organized Farmers and Co-operatives participate with Union Labor through membership in the Co-operative Farmer-Labor Radio Listeners' Association. WCFL Transmitter, located on the Navy Pier, Chicago, operates on 309.1 meters (970 kilocycles) by authority of the Federal Radio Commission. Studios and offices, 623 So. Wabash ave., Chicago.

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TOBE Filterette

STOPS RADIO NOISES

WHAT IS A FILTERETTE?

A Filterette is a small plug or steel cabinet, placed on electric apparatus to keep them from giving off electrical disturbances which will be heard in the radio speaker. Some apparatus are like miniature broadcasting stations, but unlike a regular station they broadcast, not on a given wavelength, but all over the dial. This is the reason we can not tune them out by placing some device on the set, but must go to the source of the noise and choke it off there.

The Filterette, once installed, requires no further attention. Many of the models can be instantly attached. It employs combinations of two scientific electrical principles known as inductive or capacitive filtering. It is positively guaranteed to work to your satisfaction or your money will be cheerfully refunded.

MODEL	Applications for Filterette	Maximum Load	Outside Dimensions	List Price
Junior	An ideal Filter for small motors such as are used for electric fans, hair dryers, barbers' clippers, vacuum cleaners, rash receivers, etc. Plugs into the line, and it is necessary only to run a small wire from the binding post on the Filterette to any part of the motor frame. Interference is eliminated at once. Maximum potential, 110 volts A. C. or D. C.	500 watts		$ 3.50
No. 10	For 110-volt D. C. motors, generators, chargers, house lighting plants, etc. For use in D. C. circuits only. Must not be used in A. C. circuits.	5,000 watts	7"x 6⅝"x3⅛"	10.00
No. 11	For 110-volt A. C. motors, generators, chargers, transformers, house lighting plants, etc.	5,000 watts	7"x 6⅝"x3½"	10.00
No. 20	For 220-volt D. C. motors, generators, chargers, house lighting plants, etc. For use in D. C. circuits only. Must not be used in A. C. circuits.	10,000 watts	10"x 6⅝"x3½"	15.00
No. 22	For 220-volt A. C. motors, generators, chargers, transformers, house lighting plants, etc.	10,000 watts	10"x 6⅝"x3½"	15.00
No. 23	For 220-volt, 3-phase A. C.; 110-220-volt, single phase, 3-wire A.C., or 110-220-volt, 3-wire D. C. systems. For use in applications similar to the No. 22 where 3 wires are required instead of 2.	15,000 watts	13"x 6⅝"x3½"	20.00
No. 55	For 440 or 550-volt A. C. motors, or other electrical apparatus requiring capacitive type filters capable of operation on potentials between 250 and 550 volts A. C.	25,000 watts	13"x12⅜"x4½"	25.00
No. 56	For 440 or 550-volt, 3-phase A. C. systems. For use in applications similar to the No. 55 where 3 wires are required instead of 2.	30,000 watts	15"x12⅜"x4½"	35.00
No. 60	For 600-volt D. C. motors, generators or other electrical apparatus requiring capacitive type filters capable of operation on potentials between 250 and 600 volts D. C. For use in D. C. circuits only. Must not be used in A. C. circuits.	25,000 watts	13"x12⅜"x4½"	25.00
No. 110	For all types of 110-volt A. C. or D. C. electrical apparatus which require a combined inductive and capacitive type filter. Essential for certain types of refrigerators, oil burners, chargers, electric signs or blinkers, electric heating pads, dental motors, and properly shielded violet ray and diathermy apparatus. Maximum current, 5 amperes.	500 watts	10"x 6⅝"x3⅛"	15.00
No. 221	For all types of 220-volt A. C. or D. C. electrical apparatus which require a combined inductive and capacitive type filter. For use in applications similar to the No. 110 where a Filterette capable of operating at a high potential is required. Maximum current, 5 amperes.	1,000 watts	13"x 6⅝"x3⅛"	20.00

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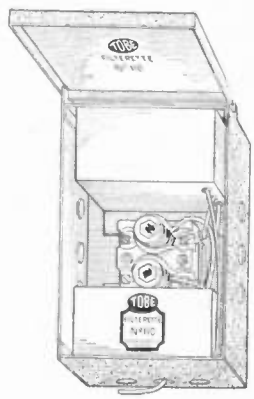
(Maximum potential, 110 volts A. C. or D. C.)

For 110-volt motor-driven sign flashers to suppress radio disturbances set up by the motor and rotary contacts of such flashers. May be used for any application within the rating of the unit, which requires a combined inductive and capacitive type filter.

No.	Maximum Current	Maximum Load	Outside Dimensions	List Price
131	10 amperes	1,000 watts	13"x 6⅝"x3⅛"	$20.00
132	20 amperes	2,000 watts	16"x10⅝"x4½"	27.50
133	30 amperes	3,000 watts	19"x12⅜"x4½"	37.50
134	40 amperes	4,000 watts	19"x12⅜"x1½"	50.00
135	50 amperes	5,000 watts	19"x12⅜"x4½"	65.00

Filterette Jr.



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VOLUME 2 | SUMMER, 1929 | NUMBER 1

The Fight Is On!

By E. N. NOCKELS

THE fight is on!

Union Labor and Organized Farmers have been denied adequate radio facilities. The Federal Radio commission has declined to grant Station WCFL a change in wavelength, a cleared channel, unlimited time and greater power. This severe blow means that the battle must be waged with increased vigor.

Organized toilers have their backs to the wall. They must fight with the courage of conviction, likewise with the fury of desperation. In such dire extremities they fight best.

The next stage of the battle will be waged in the courts. The adverse ruling of the Federal Radio commission is being appealed to the District of Columbia Court of Appeals to which all appeals from the commission's rulings must be carried. By such a maneuver the General Electric company recently won a notable victory in the now famous WGY-KGO case, as the result of which synchronous broadcasting is getting an earnest trial, promising greater radio service. Similar action on the appeal of WCFL would result in another great forward step in radio service.

Should the Court of Appeals fail to reverse the Federal Radio commission, Labor and the Farmers will carry their fight direct to Congress where the final stand must be made.

WCFL's plea has been presented to Congress, arousing much favorable comment. In the course of a speech on January 7, during which he placed in the Congressional Record a lengthy letter setting forth WCFL's appeal, Senator C. C. Dill said:

"When any organization proposes to serve the whole country on one wavelength, the Radio commission should encourage them."

During the same discussion Senator McKellar asked: "What reason has been advanced by the Radio commission why this station (WCFL) has not been granted the right it asks?"

Sen. Heflin declared: "If the Radio commission turns down a request so reasonable and fair as this, the Senate can adopt a resolution condemning the commission."

Senator Dill replied that the Senate could grant a wavelength to WCFL if it saw fit.

Now that the Federal Radio commission has ruled adversely on the plea of organized workers for adequate air facilities, the campaign in Congress will be pressed with redoubled vigor. All the strength of Union Labor and Organized Farmers must be marshalled. The seriousness of the situation must be impressed upon the entire membership of Congress. Every International, every Central Body and every Local Union must form its lines and strengthen its position for this last ditch battle. We MUST win!

Keep the Air Free! Down with

EARLY in May, the Senate Committee on Interstate Commerce started a radio hearing. The purpose of the hearing was to lay the foundation for a discussion of the Communications Commission bill introduced by Senator Couzens, of Michigan, who has succeeded Senator Watson, of Indiana, as chairman of the committee.

This bill proposes the creation of a commission which would have complete control over all forms of wire and wireless communication. It would exercise all the power over radio now in the hands of the Federal Radio commission and the Department of Commerce and, at the same time, take over the Interstate Commerce commission's control over telephones, telegraphs, and cables.

OUR OMNIPRESENT MONOPOLY

As might have been forecast, the hearings had not proceeded an hour before the Radio Trust was mentioned. No discussion of radio is possible without touching on this omnipresent monopoly. It has left no field of radio untouched. Every discussion of government control necessarily touches at once upon the organization which thinks itself to be even bigger than the government — the Radio Trust.

In the interest of the radio development, the Senate committee should allow nothing to keep it from a thorough investigation of every angle of this radio monopoly.

So far, the Radio Trust has always been able to sidetrack any investigation that looked as if it might wind up in an actual prosecution of the Radio Trust for violations of the anti-monopoly laws. From time to time, Congress has begun inquiry into the radio monopoly activities, but these investigations have never gone to the roots of this trust.

It is easy enough to understand why. The Radio Trust is made up of the Radio Corporation of America, the General Electric company, the Westinghouse Electric and Manufacturing company, the United Fruit company, and the American Telephone and Telegraph company, with an imposing host of subsidiaries and affiliated companies. Estimates of the resources controlled by this combination run as high as five billion dollars. The United States never before has seen such a powerful monopoly.

RADIO TRUST GIVEN IMMUNITY

Efforts to force the government to prosecute that huge combination have been futile, ever since Attorney General Daugherty gave to trust promoters a letter of immunity under which the trust was allowed to operate without fear of interference by the Department of Justice. Mr. Daugherty's successors have never bothered to write a new letter of immunity, but they have been just as effectively inactive as if they had promised not to interfere with the monopoly.

For a time there were indications that the present administration might not be so friendly to the Radio Trust. When plans were made to consolidate the Radio Corporation of America with the International Telephone and Telegraph company, in acknowledged violation of the Radio law, the Radio Trust expected to obtain a new promise of immunity from the department. Attorney General Mitchell, however, refused to sanction this new violation, and President Hoover, himself, told President Harbord of the Radio Corporation of America, and President Behn of the International Telephone and Telegraph company, that only Congress could repeal the law which they had planned to violate. Beyond this, however, there had been no signs, when the congressional investigation started, that the Department of Justice intended to take any active steps against the Radio Trust.

So far as Congress was concerned, the trust seems to have been confident that it had nothing to worry about during the present session.

the Radio Trust---*By E. N. Nockels*

When President Hoover called the special session of Congress, he made it clear that he wanted no discussion outside the tariff and farm relief. That there might be no slip-up in this program, the House leaders declined to appoint any committees, except on these two subjects.

It was not so easy to throttle the Senate. The Senate committees hold over from session to session, and are always ready to work. But radio is under the jurisdiction of the Senate Interstate Commerce commission, and here, the chairmanship was held by Senator Watson, of Indiana. As the floor leader of the Senate, the friends of the Radio Trust felt that he would be too busy with his other duties to let his committee tackle a Radio investigation.

When the Senate convened, however, Senator Watson resigned as chairman of the committee, and Senator Couzens of Michigan took the place. Senator Couzens had no reason to delay committee action. He had had his own experiences with trusts. He was at the right hand of Henry Ford when the latter broke the Selden patent, under which an attempt to create an automobile trust was made almost twenty years ago. As mayor of Detroit, Senator Couzens had fought the street railway companies. Under such leadership, it should have surprised no one that the Senate committee went to work.

INVESTIGATION FOLLOWS PRESSURE

Of course, there would have been no hearings had there been no pressure for an investigation at Washington. So far, the various independent interests in the radio field have had no real organization. Only one group of those who have been victims of the trust have undertaken to co-operate in a real offensive and defensive battle with the octopus. These are the independent radio manufacturers, organized as the Radio Protective association, with headquarters in Chicago. The executive head of this group is Oswald F. Schuette, who has been the most active figure in all of the attacks made on the trust in Washington during the last two years. Just before the opening of the special session in Congress, Mr. Schuette moved his headquarters from Chicago to Washington, and began a consistent campaign to force Congressional attention on the Radio Trust.

VITAL TO INDEPENDENT RADIO

Independent radio interests everywhere owe it to themselves to participate in the battle which has been precipitated by the congressional inquiry. Efforts will be made from time to time, doubtless, to stop this investigation or to lead it off into harmless channels.

There is no greater power in the United States than that of the independent broadcasters everywhere. Properly guided, this power would be more effective than the power of the press. If these independent broadcasters will center their activities in a demand for congressional action, they should have no difficulty in forcing government action against the Radio Trust. They can accomplish this most quickly by personal appeals to their congressmen and senators, and by asking their listeners to do the same.

Congress is not friendly to the Radio Trust. There are probably not twenty men — it is doubtful if there are ten—in either House at Washington, who would be willing to make a public defense of the Radio Trust. The chief danger to the independents lies in the indifference of a large number of the members of both houses. If their constituents would call upon them to act, they would be found with the majority in both Houses, ready to compel the Department of Justice to do its duty.

The watchword of e v e r y independent broadcasting station and every listener ought to be:

"Keep the air free! Down with the Radio Trust!"

New Voices on WCFL Programs

Olie and Hilma—
He's Both of 'Em.

Lawrence Carlson, clever character actor portrays "Olie" and "Hilma" on the Saturday evening Farm Fiddlers' program with great feeling. Mr. Carlson is an unique entertainer and already has a loyal following.

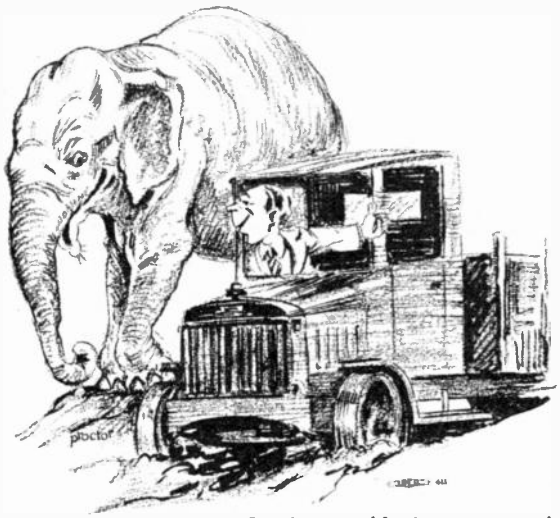
Eleanor Masquelet, who chases our blue devils away with her sensational singing of "blues," is heard over WCFL at 7:30 each Friday evening. More about her success appears on page 75.
—Youngberg Photo.

This is a picture of Pauline Wade, known to WCFL listeners as leader of the Melody Girls Trio. These popular musicians are heard on Wednesday and Thursday evenings at 8:30 to the manifest delight of thousands of fans.

WCFL program makers get many compliments over a recent acquisition, Pauline E. Stephens, soprano, who is heard in recital with the Kozak orchestra on Sunday evenings, 7:30 to 8:30. Miss Stephens has a rare quality of tone. Her singing is a delight to all lovers of good music. Miss Stephens is much in demand for concert work
—Photo by Root.

Mac and Max, featured every Wednesday night at 9 o'clock. They travel around the world in their plane "The Spirit of Pneumonia."

Getting *the* Most Out *of* Radio *in* Summer



You wouldn't invite Jumbo to ride in your truck when stuck in the mud: why burden your radio under a like handicap?

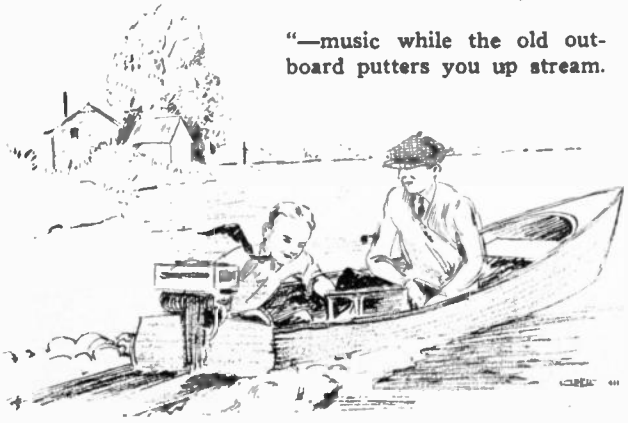
SUMMER radio has not been a "joy forever" due not only to atmospheric disturbances, but to other factors not generally known, and practically always ignored even when admitted to be present. A few hints should make radio in summer as popular in our homes as it has always been in winter.

Of course static will be with us until someone comes along with a means of ridding us of this nuisance, thereby earning our gratitude, and a goodly share of our loose change. But even static, when intelligently planned for, becomes very much like the kitty with a stripe down its back,—that is, a nuisance only to those who are either careless, or just looking for trouble.

The program directors of the modern radio stations are surpassing themselves in working up entertainment for their summer broadcasts. Wouldn't it be a pity for us to miss the fun? So, first, let us allow the technical editor to tell us how to avoid most of the unpleasantness, then we can take a look at some of the summer uses of radio that are decidedly worth trying.

Static is usually avoidable—that is, it can be kept so far in the background as to be practically unnoticed. The exceptions to this promising statement are two,—that is, two real ones, and one more that exists only until you know it, and then you'll jump on it with all four feet, and put it out of commission.

When a thunder storm, electric storm, or just plain "heat lightning" hovers right over us we have real static, the unavoidable kind. There is only one way to cheat this, and that is by grounding the aerial, unless you know your lightning arrestor is O. K., and continue to use the set by hooking up an electric phonograph pick-up, so that your radio is really only an amplifier, and static is left outdoors. More of this later.



"—music while the old outboard putters you up stream.

The other legitimate exception applies only to the fan who must listen to distant stations. He is doomed to have his ears tickled by static.

What is the third exception —the one we are to jump on? Well, when do you usually overhaul your set and its accessories? Oh! about September! Sure,—after the summer static is over, to get ready for the good reception in the fall and winter!

Did it ever occur to you that part of your "winter reception" should be more truly spelled "good running condition?" That is the truth. The bugaboo of static has given us the habit of letting the set go any old way for summer use. What's the difference? Well, you don't invite an elephant to ride on your truck when you are stuck in the mud, so why allow the radio set to meet the worst conditions with everything in just the shape to make it seem worse?

Batteries that have seen a winter of hard service are seldom in shape for summer use. They nearly always are noisy, discharging little clicks and spits and other noises that the wise guy listens to, says "Static" with an "I told you so" look, and shuts off the set. Yet, with new batteries there might not be static, except in one of the two cases noted above. Condition of the set means the best of batteries, tight connections, tight socket prongs, no dust in the plates of the condensers, tubes all working properly, speaker properly connected and adjusted, and the aerial and ground made ready for summer use.

A good ground is one that makes permanent contact deep in the wet soil. It should be on the water pipe coming from the earth before that pipe enters the meter, if possible. Paint, rust, corrosion, or a loose clamp must be got rid of.

Summer radio really demands the use of two aerials if you want the best out of your set, including some distance. Aerial number (*Continued on Page* 60)

Labor Presents Splendid Record

Radio Commission Turns Deaf Ear To Toilers' Plea.

THE Federal Radio Commission has declined the petition of Station WCFL for unlimited time, a cleared channel, a change in allocation from 970 to 770 kilocycles, and an increase in power from 1,500 watts to 25,000 watts with an additional 25,000 watts for experimental purposes.

Formerly WCFL enjoyed practically full time on 620 kilocycles, but in the general reallocation last November was changed to 970 kilocycles, a fifth zone channel, and required to cease broadcasting at sundown on the Pacific coast so as not to interfere with Station KJR of Seattle, Wash. Station WCFL immediately filed application for more tolerable conditions and, after numerous continuances, secured a hearing before the Federal Radio commission on April 16 to 20. The commission rendered its adverse verdict May 20.

In its petition for the changes above enumerated, WCFL frankly stated that its former allocation of 620 kilocycles is preferable both to its present assignment and the one requested. However, the Federal Radio commission requires a station requesting a change to designate the wavelength desired—and it must be one assigned to the zone in which the station is located.

The wavelength of 770 kilocycles, specified by WCFL, is now used jointly by WBBM, Chicago, and KFAB, Lincoln, Neb. Station WBBM is controlled by Atlass brothers, while the Nebraska Buick Automobile company seems to be the controlling factor in KFAB. Both are purely commercial stations, while WCFL is the "Voice of the Farmer and Labor," representing more than five million organized workers.

THE tremendous contribution of Organized Labor to human progress and the splendid ideals which actuate trade unionism were inspiringly presented in the recent hearing before the Federal Radio commission on the application of Station WCFL for adequate radio facilities. All in attendance were profoundly impressed, even counsel opposing Labor's application frequently voicing surprise and admiration. Although the Radio commission turned a deaf ear to the toilers' petition, the truths established under oath before this national tribunal, constitute a record of immense value. The showing of strength and the wide range of industrial activitity represented at the hearing also were impressive. Representatives of nearly one hundred international labor organizations, city central bodies and large local unions were present. All went on record concerning the importance of radio to Organized Labor and the great value of the service rendered by Station WCFL, the only radio station owned by the toilers.

Frank Morrison, for thirty-two years secretary of the American Federation of Labor, was the first witness. Mr. Morrison was a delegate from Typographical union No. 16 to the Chicago Federation of Labor in 1896. He interestingly sketched the history of the American Federation of Labor and recited statistics showing the scope and importance of the movement. Some three million dues-paying organized workers are affiliated. These are organized into 30,000 local unions and 794 city central bodies. Non-affiliated unions and the railroad brotherhoods include nearly a million more.

"The record of the American Federation of Labor is now a part of the general history of the nation," declared Secretary Morrison. "It has ever striven to further production and efficiency, to improve the lot of the wage-earner, to create the desire and provide the machinery for co-operation in industry between management and personnel. It has assisted in the elimination of industrial waste. Through their 'benefits' the affiliated unions have done much to reduce human waste. Several unions are now paying 'benefits' in excess of $25,000,000 annually.

TRADES UNIONISM MEANS PROGRESS

"Trade unionism does not mean industrial strife. It addresses itself to the problems of industrial co-operation and understanding. Conflicts are traceable directly to disregard for the common rights of either employer or employees. Invariably conflict arises out of an attempt to substitute tyranny for justice, autocracy for democracy and secretiveness for frankness."

Free schools, compulsory education and opposition to child labor ever have been policies of organized labor, declared Mr. Morrison, as he told of the splendid educational work done by Organized Labor. He also mentioned the "Bill of Grievances" presented by Organized Labor to Congress in 1906. Practically every demand in this document had been enacted into law by 1917. Assistance also has been given in state campaigns. From 1905 to 1925 some 208 laws were enacted for the improvement of the lot of the wage earner.

Mr. Morrison concluded his statement by reading the various resolutions regarding radio adopted by the American Federation of Labor, the last one highly commending WCFL and concluding with the declaration that in event the Radio commission fails to grant an adequate allocation the whole matter be presented to Congress.

Matthew Woll, vice-president of the American Federation of Labor and president of the Union Labor Life Insurance company, said he had investigated the possibilities of radio at the direction of the federation. The few stations willing to broadcast the message of Labor were found to be of small power. The cost of using other stations was prohibitive. His interesting presentation of Labor's need of a radio station provoked a discussion on what is proper to broadcast between Chairman Robinson and Attorney Hope Thompson, representing WCFL, during which Mr. Thompson said:

"For a station to announce that it is going to broadcast a program sponsored by the Standard Oil company does not help to solve our problems or establish great vital principles that dominate our country. I have little patience with the theory that radio is to be just for entertainment. We want to be able to say, in the only way we can say to any number of people today, 'Organ-

ized Labor stands for this idea, or this policy; we are seeking to accomplish this thing.' And we recognize that all other sides should have equal opportunity to show that we are wrong. In this way, as throughout the history of the world, progress will eventuate."

When opposing counsel sought to make Mr. Woll admit that the message to be broadcast is more important to Labor than the ownership of a station, Mr. Woll countered with the query: "I wonder, then, why other corporate interests are so industriously seeking privileges on the air. In fact, throughout the hearing opposing attorneys tried repeatedly to make it appear that it would be greatly to the benefit of Organized Labor to secure time on high-powered stations rather than to own a station. However, these same lawyers failed to explain why Atlass brothers and the Nebraska Buick company do not follow the same policy but are defending their places on the air with all vigor. Mr. Woll emphatically declared that the person or agency doing the broadcasting was equally as important to Labor as the message broadcast, and that Labor does not want to be put in the position of asking broadcast time from some station with which they may be at issue.

WCFL RENDERS VALUABLE SERVICE

Patrick F. Sullivan, president of the Chicago Building Trades council, told of the unfair treatment given by the Chicago daily newspapers to statements furnished by representatives of labor, and stated that WCFL had rendered valuable relief during the years of controversy following the carpenters' trouble in 1921.

Miss Selma Borchardt, vice-president of the American Federation of Teachers, told of the hearty commendation received on educational programs broadcast by her organization over WCFL.

"We regard radio as a mighty class room," said Miss Borchardt. "Organized Labor is not a special interest but a special approach to the general public interest. A labor radio station undoes propaganda by helping to present the full picture."

Edward N. Nockels, secretary of the Chicago Federation of Labor and general manager of Station WCFL, told of the origin of the station and presented documents showing the wide scope of its interest. His splendid presentation included many of his articles and statements published in recent issues of WCFL Radio Magazine. Mr. Nockels also told of the fraternal hand extended by Labor's radio station to the Farmers union when that body found all other adequate radio avenues closed. The Farmers union is now participating in the management both of the station and WCFL Radio Magazine.

The desperation of the opposing counsel was shown by the way they assailed almost every word of Mr. Nockels' statement. They were seeking to show that labor does not need a radio station.

Victor A. Olander, secretary-treasurer both of the Illinois State Federation of Labor and of the International Seamen's union, presented trades unionism in its true light. Said he:

"The trade union is not a commercial institution. It recognizes too that it can obtain nothing of any lasting value for its membership unless the community as a whole shares in the gain. Unless a new standard of wages, brought about by a definite group within a particular union, spreads over the surrounding country and affect others, sooner or later it must be lost.

"Among the vital contributions of trade unionism to mankind, first rank belongs to freedom. From the moment it first appears in history the labor movement has held as its primary purpose and effort to increase human liberty.

"The struggle to take the child out of the factories and place it in school, which everyone now agrees should have been done long before it was done, was carried on by the trade unions in the face of badly misinformed public opinion. Progress was made in exactly the proportion that trade union opinion could be brought to the public mind. In states where trade unions are weak and do not flourish, there you will find that the law permits younger children still to remain at work.

NARROWING FIELD OF PUBLICITY

That there are almost 500 fewer daily newspapers in the United States than there were on January, 1922; that there is a remarkable movement to conduct newspapers in chain groups and that the interests that deem it advantageous to mold public sentiment are investing their cash in newspapers were some of the high points in the testimony of Edward Keeting, editor of Labor.

As to the attitude of the daily press toward Organized Labor Mr. Keeting declared that few newspaper men are at all familiar with the organized labor movement and have given to it little consideration.

"The men who own newspapers," testified Mr. Keeting, "approach all industrial problems from the viewpoint of the employer of labor. That is the most natural thing in the world, as every man who owns a newspaper is a large employer of labor. With very few exceptions, these men find it difficult to put aside their feelings as employers and discuss these questions impartially. The newspapers contain very little labor news and that little is frequently badly distorted.

"I think this suggestion for giving labor an open channel on the air is one of the most important propositions that has been submitted to this commission or any other commission in recent years."

Continuing, Mr. Keeting said: "In my judgment 90 percent of the people of this country are unable to get their side of the story across, not only to the other ten percent of the people but to the 90 percent. Frequently we find numbers of our own organizations being misled by what they read in the daily newspapers, and we find it extremely difficult to get the truth, even to our members, to say nothing of the outside public. Then when it comes to discussing public questions it is almost impossible to get that discussion into daily papers from the point of view of the workers."

On cross-examination Editor Keeting let go a fast one: "I do not think there is a man around this table or in this room who does not know that just as sure as the sun will come up tomorrow these broadcasting facilities, which are in the hands of private enterprises, if they prove profitable or if their capacity for broadcasting propaganda of a certain sort develops, will eventually fall into the hands of a very few men, just like every other business enterprise in this country is being gradually concentrated in the hands of a few men, and those men will be the men who represent large capital."

Tied Up With a Shoestring

How the Radio Trust Has Secured a Virtual Monopoly of the Air at Trifling Expenditure

By GEORGE L. KNAPP

IN HIS wonderful poem, "The Vision of Sir Launfal," James Russell Lowell told our grandparents:

"Tis Heaven alone that's given away."

This worthy sentiment is out of date. In our time, almost any kind of public property can be given away—and usually is. But in the long list of Christmas presents to "private enterprise"—from the government fleet to Muscle Shoals and back again—there are few to match the gift of the air which is slowly but, I fear, surely being made to the Radio Corporation of America.

When the Radio corporation is mentioned in this article, it generally means the Radio corporation's family. In the forefront of radio matters is usually the corporation itself; but sometimes first place is taken by the corporation's parents, the General Electric and the Westinghouse; and sometimes by its children, the Radio Communications company and the National Broadcasting company. Then there are collateral relatives, American Telephone & Telegraph Company, for instance.

In an article which is neither a textbook nor a legal argument, it is convenient to let the Radio corporation—" R. C. A.", as the stock ticker has it— stand for the whole group.

This group is steadily building up one of the tightest monopolies known to our time—and doing it with an unbelievably small investment.

One of the favorite alibis of monopoly is the claim that "vast sums of money" are involved; so that only a giant corporation can finance the venture and "take the risk."

But in this case, there were no risks; and by comparison with the sums involved in other enterprises, radio was tied up with a shoestring.

The Radio corporation proper has three main functions: it is selling agent for the Westinghouse, the General Electric, and perhaps other concerns; it is a sort of holding company for patents; and it broadcasts, directly or through a subsidiary organization.

Just a Simple Little Trick of Magic

It is perfectly plain that broadcasting is a sort of key position—if there were no broadcasting, nobody would buy receiving sets, and the patents would have little value.

One of the leading engineers of the Federal Radio commission told me that a broadcasting station with 50,000 watts power could be built for around $150,000.

There are three such stations—WEAF of the Radio corporation (through the National Broadcasting company) at Bellmore, New York; WGY at Schenectady, New York, belonging to the General Electric; and KDKA at Pittsburgh, owned by Westinghouse—all in the family, you see.

According to the estimate of my engineering friend, all three of these stations could be built for less than half a million dollars. Then there are some smaller stations belonging to the family, which possibly might cost another half million. Double the total to allow for unlisted items, and add another million for current expenses, and you have $3,000,000.

The Radio corporation proper took in $4,595,552 from communications alone during the year 1928.

About this point, someone is asking how the radio group can have a monopoly when they own so few stations. The answer is not at all difficult.

They have the powerful stations; they have the best cleared channels and they have the hookup.

This last has to be accomplished through telephone wires—and by referring back to the roster of the radio family, you will see that the American Telephone & Telegraph company is in the list.

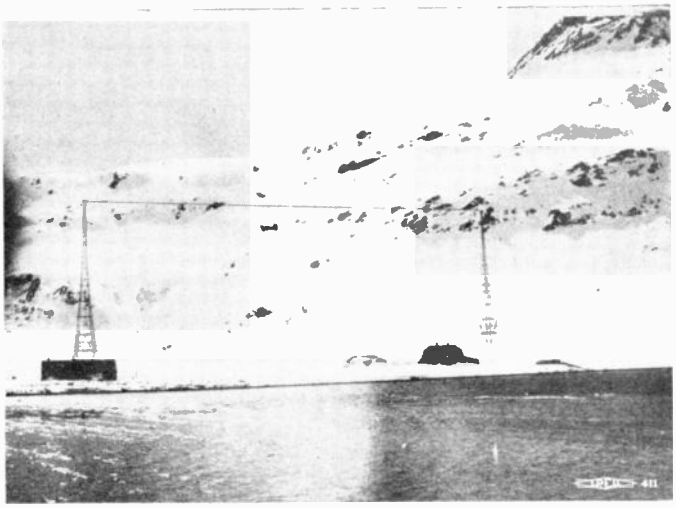
Another element of the monopoly that must not be lost to sight is the wealth of the interests holding it.

The General Electric is one of the strongest units of the Power Trust; Westinghouse is an immensely wealthy concern, and the market value of the stocks and bonds of the A. T. & T.

(*Continued on page* 64)

The World Brought to Our Homes by Radio Short Waves

By LEWIS WINNER



A Radio Station in the Antarctic

The most southerly stations on the radio map are a great aid to Commander Byrd and his party in the lower polar region. They also relay the news to radio fans in many lands. Above is pictured the 6 k.w. station at Grijtviken, South Georgia, working on 2,000 meters. It maintains daily radio-telegraph communication with the Falkland Islands, which in turn communicate with Montevideo, South America.

A THICKLY wooded labyrinth, here and there a patched hut with ravenous humans as inhabitants, snarling roving beasts, swamps—a lost world in the African or perhaps South American wilds—dauntless men the discoverers. Keys click and words telling of the discovery fly into our homes.

The hushed silence of the frigid wastes suddenly upset by the rending of an exploration vessel against ice or by a roaring airplane. Soon unknown islands and estuaries wind themselves into view, bearings are taken, a new map is made. A few moments pass and newspapers herald the triumph of fearless men—Byrd, Wilkins, Nobile.

Persons are safely carried across vast stretches of sea in a day in epoch-making flights and mile by mile progress is known almost instantly.

The voice of the world at our window—thanks to short waves!

What are they? Why can they perform these parodoxical results? Why do they so overshadow long waves?

Well, wave lengths below 200 meters are arbitrarily called "short waves," those below five meters being called "ultra short waves." They possess certain characteristics which enable them to travel great distances with a very low amount of power.

Reception from a point 7,000 miles away during the day!

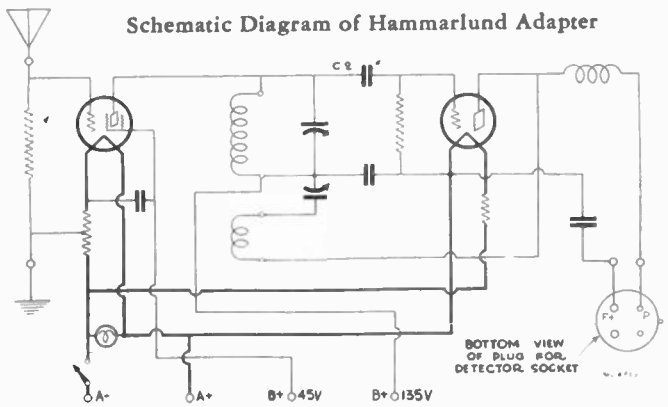
Even more distant communication is now possible with the beam system, whereby all the energy in the form of ultra short waves is concentrated in a beam directed toward the receiving station. We all know that a "headlight" reflector can be made to reflect heat. Ultra short waves are near the heat wave lengths, therefore can be concentrated into beams.

We will, however, concern ourselves now with the standard form of short wave transmission and reception. Since these short wave transmitters can use low power, they can naturally be built very compactly and with, of course, very little weight. Therefore their choice for mobile stations, especially in airplanes, where weight is so important a factor.

The following table from an article entitled "Considerations Affecting the Licensing of High Frequency Stations," by S. C. Cooper, U. S. N., which appeared in the September, 1928, issue of the Proceedings of the Institute of Radio Engineers will illustrate the tremendous carrying power of these short waves, a 1,000-watt continuous wave transmitter and a receiver of moderate sensitivity being used:

Wave length (meters)	Day Miles	Night Miles
13.0 to 21.2	7000	Not useful
24.4 to 25.6	4000	Over 5,000
27.3 to 31.6	2500	Over 5,000
31.6 to 35.1	1500	Over 5,000
41.2 to 45.0	1000	Over 5,000
48.8 to 50.0	600	Over 5,000
54.5 to 75.0	450	2,500
75.0 to 85.7	300	1,000
109.0 to 133.0	150	500
150.0 to 200.0	100	250

Schematic Diagram of Hammarlund Adapter

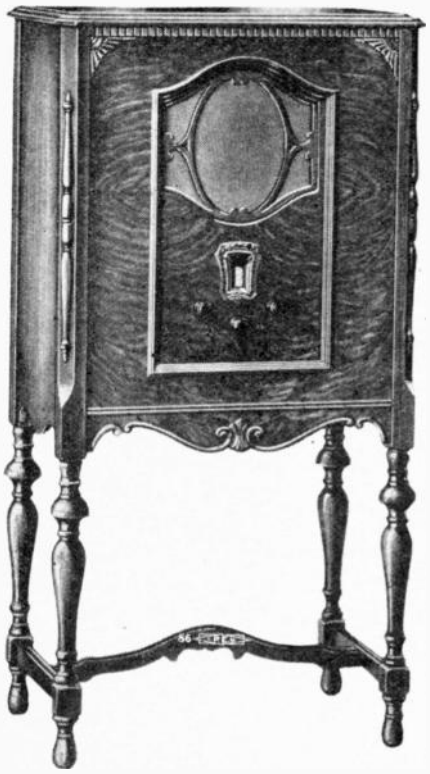


(*Continued on Page 76.*)

Trends *in* Radio Design *for the* Coming Year

A Forecast of the June Radio Trade Show

By J. H. WELCHES



Numerous requests made for photographs to be used in illustrating this article found most manufacturers unready to release pictures of their new sets. Here is shown the Bremer-Tully No. 81, which sells for $164.50, less tubes.

RADIO, being the youngest and healthiest of our major industries, moves at a rate of speed that appalls the most bizarre modernist. New set after new set appears upon the horizon and long before the advertising has had time to cool there comes an announcement of a still bigger and better receiver. This has been going on for four years now, and the pace is getting swifter if anything. A manufacturer may be healthy, but if he lacks a financial second wind, which can be put to use during one of these unannounced spurts, the chances are that he will land in the sanatorium and undergo a long period of financial reconstruction.

Not so long ago, it was the custom of engineers and manufacturers to announce their brain children at whatever time the heavens happened to send the necessary inspirations. A new receiver and constructional kit appeared in December or in July. It made little difference and every one concerned, even the customer, had a good time. Gradually the favorite kits were eased to one side and the factory fabricated sets took the center of the stage.

Then, somehow or other, the Radio Manufacturers' Association came to be organized. After a few struggles it came into its own. Today the R. M. A. is the big cog in the radio machine. So many large and important manufacturers belong to the association that this year's trade show will require three great Chicago hotels to house the exhibits and furnish living quarters for the men who make radio sets, and their equally important visiting jobbers and dealers who see them. And so it is that on June 3 to 7 thousands and thousands of radio men will stamp through the Stevens, Blackstone and Congress hotels in Chicago and get their first glimpses of 1930 radio in all of its glory. And along in the early fall replicas of these same resplendent models will appear in dealers' windows all over the world.

And you, dear reader, will probably be surprised to learn that these same models were completed for the most part last January. Perhaps it has never occurred to you that your new fall radio set will be old stuff to some designing radio engineer, who had completed most of the work a full year before. The new tubes, so proudly displayed, have been available in laboratories for over six months—and if you can stand the hardest blow of all—the engineers are now entirely disinterested in the new fall sets and have gone to work on their 1931 models.

The writer always gets a big kick out of the customers who blandly say, "Oh, well, I guess I'll wait until radio is past the experimental stage before I buy a set." Radio will probably progress for a few hundred years at least. I would advise such cautious buyers to take a chance and have a little fun while they can.

LOWER PRICES ON NEW SETS

But to get back to the new sets. After setting around a laboratory all winter and talking with a few designers, it is fairly easy to say just about what you may expect to see when you go into your dealer's store next fall. The most pleasant sight of all will be a lower figure on the price tag. Last season the average retail price of the completely equipped sets was around $190. This average figure will unquestionably fall below $160 for next season.

This price reduction is made possible by better manufacturing methods, mergers wherein more operating capital is acquired, standardization of models and sales methods, and—most important of all—new discoveries and inventions in the field. This article really starts with the application of new discoveries to the sets themselves. But standardization will also be of interest.

Most 1930 receivers will employ seven or eight a. c. tubes in circuits of the tuned-radio-frequency type and will operate directly from the lighting sockets without any accessories being employed externally. The a. c. tubes of all types are now well perfected. They have satisfactory lives and the hum, which has been so annoying in the past, has now been eliminated completely.

In numbering the tubes employed in a set, it is now standard practice to include the power-supplying rectifier as a part of the receiver. For example, many of the new sets will employ one UY224, four UY227, one UX245 and one UX280 tubes. In other words, a seven-tube set is one in which the UX280 rectifier operating in the power supply section of the receiver furnishes plate voltages to the other six tubes and possibly energizes the

field coil of a dynamic speaker. This is just an example. The average number of tubes of any given type to be employed is impossible to forecast. Some seven-tube sets, for instance, will use three of the super-sensitive UY224 tubes, two UY227, one UX245 and one UX280.

One of the chief concerns of a designing engineer is the problem of selectivity. A first-class set is supposed to select a sharp ten-kilocycle band. Some of them do, of course, but unless a manual control is provided which will allow the operator some leeway in this matter, the set is liable to have second-rate tonal quality. From twelve to fourteen kilocycles are necessary if one intends to hear the high notes as they should sound.

The Federal Radio Commission did a pretty good job of clearing the air above 250 meters and this, coupled with more selective sets, will make radio reception thoroughly enjoyable for the next season. Below 250 meters the air is a jumbled mass of squeals and howls and these faults should be laid just where they belong; namely, to too many stations in too little air space. The set designers have taken the blame for poor transmission conditions too long now, and it is high time the public went after the broadcasters who are directly responsible for the condition.

NEW CIRCUITS IMPROVE TUNING

Chief among the new circuits intended to improve tuning troubles is the band-selector or ban-pass filter. In some of the new sets this will take the form of a two or three-stage tuned section ahead of the first tube in the receiver. Thus, the incoming signals will be completely split apart before any amplification takes place. Other sets will employ circuits in which the filter action takes place through successive stages of coils, condensers and tubes. Still other manufacturers will employ a new form of self-shielded coil which allows greater amplification per stage and much sharper tuning than has been possible heretofore.

It is safe, therefore, to say that the new receivers will have much more apparent selectivity while at the same time the sensitivity will be materially increased.

The troubles which were encountered in operating sets directly from the light socket in the past have been so well overcome that the only excuse for owning anything but an all-electric set is location, or lack of electric power. New filter circuits have been worked out and large electrolytic power condensers which cannot break down are now being used in many receivers. New types of humless filaments and heaters are now being employed in vacuum tubes and even a. c. dynamic speakers have hum buckers which remove every trace of hum before the music finally reaches the ear. The humless all-electric set is here at last and it will undoubtedly be welcomed by all.

Straight battery-operated receivers for use in rural districts have been worked out which are extremely sensitive and selective, and have very good tonal quality. Two heavy-duty B batteries, operating a 90-volt d. c. dynamic, will stand up for a long time, and so there is no reason why farmers or other listeners in non-powered locations should be deprived of excellent radio entertainment. The tremendous improvement in the sensitivity of these d. c. receivers is due to the extremely high efficiency of the d. c. screen-grid tube. The eccentricities of this super amplifier are now well understood and the tube behaves very well in any of the newer sets.

For city dwellers, the new a. c. screen-grid tubes allow a realization of their radio dreams. Where long-distance reception is desired, this tube will be the all-important item in the new sets. It is expected that the UY 224 a. c. screen-grid tube will be found in a large percentage of the new models at the June show. This tube will actually amplify a signal ten times as much as a 227 tube, which is the usual a. c. amplifier. Two or three of these tubes, operating in a specially designed receiver, will permit the practical limit in radio sensitivity.

One 1930 receiver which will be seen at the show—the H F L Special Nine—employs four UY224 tubes as radio frequency amplifiers in a super-heterodyne circuit. This set is so extremely sensitive that stations over 1,500 miles away come in with full speaker volume when the sensitivity control is worked at its very lowest point. The designer—E. K. Oxner—and the writer spent many nights in his laboratory trying to hit a night which was sufficiently quiet to allow the set to be turned on full. During seventy nights of testing no one night was found which was quiet beyond the 3,000-mile mark. Stations in Japan and New Zealand were received amidst terrific static and it was estimated that the set would permit receptions around the earth if the air were sufficiently quiet. So much for the sensitivity of 1930 sets.

The recent introduction of the new UX245 audio-amplifier tube will be reflected in ninety percent of the receivers shown at the June Trade Show. This is a low-voltage tube intended for use in the last audio stage in the set and which delivers ample power for the proper operation of dynamic loud speakers. In operation it corresponds to the old UX210 tube which required expensive high-voltage equipment. Two UX245 tubes operating in a push-pull stage (which will be found in some of the sets) are even more efficient than the famous UX250 tube which brought tonal quality to its present excellent state.

TUBE AN OUTSTANDING ADVANCE

The low plate voltage (250 volts), required by the UX245 tube, permits a substantial cost reduction in the power supply section of the receiver and allows overall operation with excellent tonal quality from a single UX280 rectifier tube. The tube is one of the outstanding advances of the year.

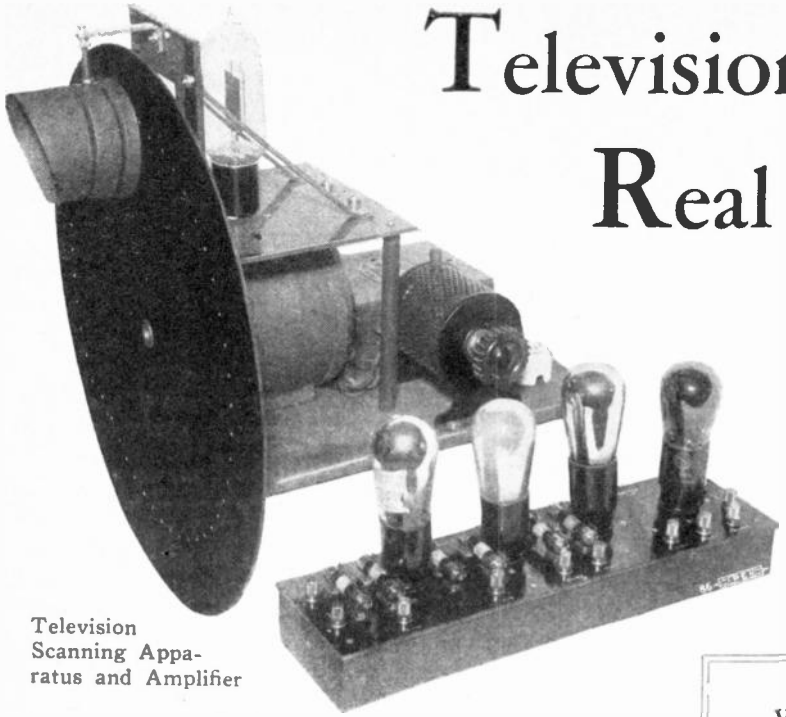
In addition to the new tubes described, another feature for 1930 is "power detection." Power detection means a detector tube which is handling a lot of power. In the years past a string of UX201A tubes would put about one volt of signal voltage onto the detector tube grid. This was all it could handle anyway, due to the limitations of the associate grid condenser and leak. This season's receiver, using a few UY224 tubes, will put a signal swing of around 30 volts onto the detector grid. The grid condenser and leak has given away to a grid biasing resistor which furnishes a high negative bias to the detector tube grid. The plate voltage is also raised a great deal and the result is a good selective detector circuit which delivers plenty of power to the audio amplifier.

Which gets us down to one stage of audio. Engineers quickly found out that with (*Continued on Page 55.*)

Television Is Making Real Progress

But Many Problems Are Yet to Be Solved

By S. J. SPECTOR
President, Insuline Corp.



Television Scanning Apparatus and Amplifier

IT has been conceded from time immemorial that sight is the most essential of any of the human senses. This statement could be easily proved true by asking a number of people which of their five senses they would prefer above all the others and there is little doubt but that the answer in a majority of cases would be sight.

Up to within a comparatively short time ago this most valuable one of our senses was totally neglected as far as radio broadcasting was concerned. All the pictures that could be received were those of the imagination and depended upon the powers of description of the man at the microphone. But thanks to the indefatigable laboratory workers it is now possible experimentally to see what is taking place in a broadcast studio as well as to hear.

Thus is accomplished one of man's greatest dreams—the annihilation of space with respect to as many of his senses as possible; to see a thing no matter where it may be. Time and space are eliminated and the possibilities that television holds are indeed unlimited.

Let us examine briefly just how far television has progressed up to the present time, for it is by inquiring of the past that we can obtain a good background of the present.

When experimenters first started to transmit a picture from one place to another by means of radio their first trials were with a photograph. They discovered that if they sent small portions of the picture at a time these portions could be put together at the receiving end and the whole picture could be reproduced with ease. These portions were horizontal slices of the picture and the light and dark portions of each slice were sent separately. Mechanical devices were made that could do these things well, but when television advanced to the point where it was desired to transmit the image of a person's face, then something was required that would differentiate accurately and speedily between light and shade of very slight variations.

This brought about the development of the photo-electric cell, a device much more sensitive than the selenium cell. Both these cells function identically in that they transform light energy into electrical energy, but the former one does the job instantaneously while the selenium cell has a definite time lag. This lag has been one of the greatest problems that scientists have had to overcome and here is the reason:

As has been mentioned previously, each picture at the receiving end is built up of a series of strips. In order to make a composite whole and a recognizable image these strips must be shown at such a speed that the human eye will be unable to tell when one starts and the next one ends. Just as in the moving pictures of today, which show sixteen complete pictures per second, advantage is taken of this retention of vision that the human eye possesses. That means that the pictures follow one another across the screen with such rapidity that the eye of the spectator sees all the pictures but the brain received the sensation of seeing but one; and if these pictures are slightly different then the effect obtained by the spectator it is that the picture is stationary but that the objects in the picture move.

We have been up against this same problem in television. It is possible to send only a single spot of an entire picture over a broadcast wavelength at

What the Home Televisor Looks Like

Thousands of homes are equipped with television receivers, yet such equipment is so rare, comparatively speaking, as to be unfamiliar to the vast majority of radio fans.

The home television receiver consists of three essential parts—a detector unit, a special amplifier and the scanning apparatus. The latter two are pictured at the top of this page.

The detector unit in the family radio will suffice—providing the signals to be picked up are on an aural wavelength. Most television broadcasts are on short waves, necessitating the use of a short-wave adapter with the detector unit of the family radio. It is better to use a special short-wave receiver as a detector.

The heart of the television receiver is the special amplifier. The diagram of a very good one is published herewith, and the finished amplifier is pictured in the illustration above.

The scanning apparatus consists primarily of a motor-driven disc which revolves in front of a neon lamp. As the plate of the lamp is viewed through the spiral of holes in the disc, the image being broadcast seems to be reconstructed on the disc within the span of the spiral, producing a picture about one inch square. A magnifying lens in the visor or hood will increase this.

a time; therefore in order to reproduce a whole picture these spots must be transmitted with great rapidity. Thus the extreme importance of the absence of lag in the photoelectric cell is explained.

TRANSMITTING THE PICTURE

Granted that we have a medium for transforming light energy into electrical energy with no loss of time, how are we going to give this medium just a single spot of the picture at a time and in a certain order so that these spots can be reproduced at the receiving end? This is achieved by what is known as the Bell system, which may be explained as follows: Imagine reading a book in a dark room with the aid of a spotlight that illuminates but one letter at a time. This light would be moved from left to right, from letter to letter, from word to word. Now the Bell system follows this same idea. A spot of light "reads" over the face of a person, whose image we wish to transmit and the reflected light from the single spot on the face is picked up by a photoelectric cell and transformed into electrical energy. If the part of the face that is in shadow is being "read" by the spot of light, naturally there will be less light reflected to the photoelectric cell than from that portion of the face where there is a high-light. The photoelectric cell will therefore send a different amount of current to the transmitter. In other words, each graduation of light has its own particular amount of electrical energy.

Now the question arises, how do we make this spot of light travel over a person's face? A disc about 12, 14 or 16 inches in diameter has a series of holes drilled in it, so that they form a spiral. When this disc is rotated about 1000 r.p.m. between a source of light and the person's face, there will appear on the face a series of lines of light and shadow; in other words, due to the rapidity of the spots of light traveling across the object they seem like strips of light, but in reality they are spots. These disc have 24, 36, or 48 holes in the spiral before mentioned. Therefore, if the disc is rotating 1000 r.p.m. we have 24,000 (at a minimum) electrical impulses per minute sent to the transmitter by the photoelectric cell.

AT THE RECEIVING END

After the electrical impulses just mentioned have been put "on the air" by a transmitter how are we to transform them again to light energy? By the use of a regular or short-wave receiver, a disc exactly similar to the one at the transmitter and revolving at the same speed, and a neon tube. This last mentioned device has a common property with the photoelectric cell: it has no time lag. It is on the plate of this tube filled with neon gas, which glows with a reddish color, that the images are reconstructed. In other words, the neon tube is analagous to the loud speaker in the ordinary set, in which device electrical energy is turned into sound energy, but the neon tube transforms electrical impulses into light.

THE EXPERIMENTER'S CHANCE

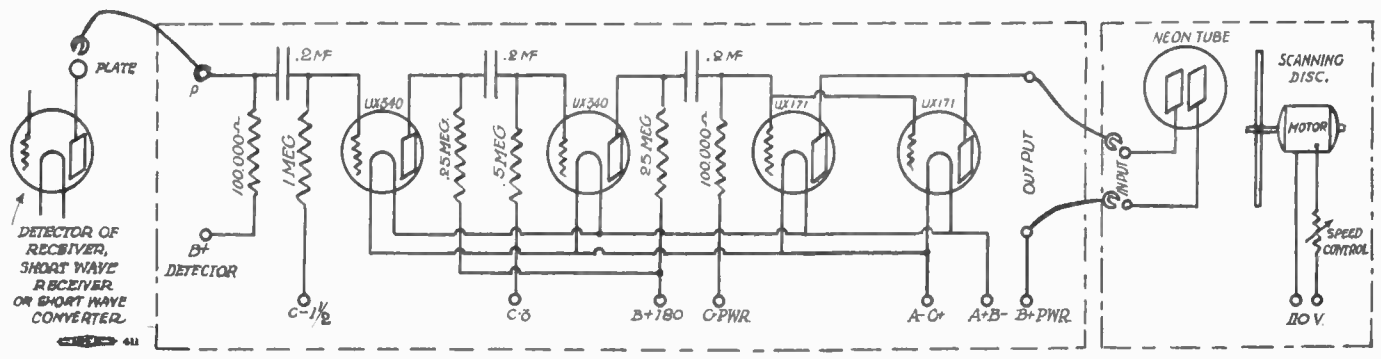
This is part of the whole in which we are most interested and it is here that the experimenter has his greatest chance to develop something new and worthwhile. Television is now an accomplished fact, in so far as it presents a starting point for the average experimenter. Practical television is now available for the man-at-home because there have been a few men in laboratories who have kept abreast of the times and have spent money and time and effort in the development of apparatus, that is simple, accurate and inexpensive.

Let us consider for a few moments the nature of the apparatus necessary for the reception of television and we will indeed find it simple to understand and far from complicated. First of importance is a radio receiver for picking up the signals and an audio-frequency amplifier for bringing them up to the proper level so that they will actuate the neon tube with best results. It has been demonstrated that a receiver employing a stage of untuned radio-frequency amplification with a 222-type tube is generally preferable.

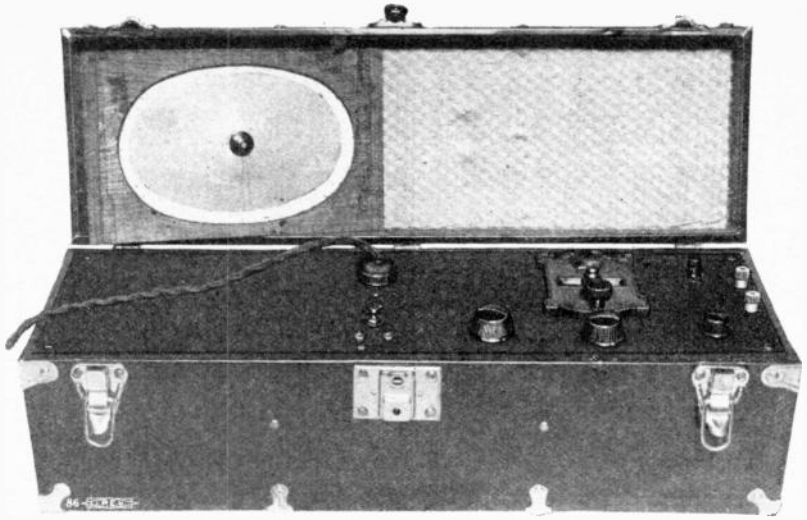
AUDIO-FREQUENCY AMPLIFIER

It is imperative that this short-wave receiver be so constructed that it is rigid. This particularly applies to the coils and their mountings and to the general wiring of the set. It has been found best to use an r.f. choke coil in the detector plate lead of the multi-section slot-wound type, as this variety of coil has a very low distributed capacity over a wide band of frequencies.

The a. f. amplifier plays a very important role in the reception of television. Of course the quality of the pictures depends primarily on the efficiency of the transmitter, but if this part of the equipment is satisfactory then it is necessary to have good apparatus at the receiving end. As the frequency range of television is between 18,000 *(Continued to Page 52)*



Television Power Amplifier **Television Kit**



The Vacation A. C. Four

A Powerful All-Electric Portable Receiver

By H. G. CISIN, M. E.

NOWADAYS, everyone wants the radio in summer as well as winter. For many, it is a real hardship to be separated from broadcast entertainments, even for a short time. In most cases, it is out of the question to think of taking the family set along on a vacation trip. If the home radio set is battery operated, there is danger of spilling acid, to say nothing of the great bulk and weight. If the set is of the modern a. c. type, it is less bulky, but even so, there are no facilities for transporting and handling it without damage, and the loud speaker is usually large and cumbersome. Several years ago the dry cell-operated portable was used to take care of vacation radio needs, but this type of receiver lacked volume, required frequent replacement of batteries and in general was more of a toy than a true radio set.

IDEAL RECEIVER FOR TRAVEL

The Vacation A. C. Four is the ideal radio receiver for travel or vacation purposes. It takes up little room and may be stowed out of the way in the smallest automobile. It can be used wherever alternating current is available. Most summer resorts now have electric illumination and in the majority of cases, this is supplied by means of alternating current. In towns and cities, alternating current is the standard source of electrical energy, so whether the stop-over is at a hotel or a boarding house, the Vacation A. C. Four will function faithfully. When holiday time is over, the Vacation A. C. Four may be used as a permanent receiver for the home, since it is modern, efficient and powerful. It might be added that in spite of its compact construction, this receiver is entirely free from objectionable a. c. hum. When used as a permanent or home receiver, the set may be installed in a fancy cabinet or console, or it may be used in the original traveling case.

The space occupied by the Vacation A. C. Four *including* A, B, and C power supply and loud speaker is practically the same as that taken up by the ordinary receiver, *exclusive* of power supply and speaker. A standard tool box has been selected as the carrying case. This is clearly shown in the illustration. While dimensions for the box or case are given in the list of parts, the set builder can use any similar tool box with approximately the same dimensions, building the set to fit the case. The weight of the Vacation A. C. Four complete is thirty-three pounds.

The illustration above shows the completed set in the carrying case, with a home-constructed elliptical cone speaker inside the cover. Almost all the apparatus is mounted on a wood baseboard. The circuit used is comparatively simple. It consists of one stage of r. f. amplification, utilizing a 226 tube, a regenerative detector, using a 227 tube, and two stages of transformer coupled a. f. amplification. In the first audio stage a 226 tube is used, while in the last stage there is a 171 power tube. The rectifying tube for the B supply is a Raytheon BH tube.

TOTAL EXPENSE LESS THAN $120

A most important item in building any receiver is the cost of the parts. Only standard high-quality parts have been specified and still the complete receiver including power supply and carrying case, but exclusive of tubes and loud speaker unit, can be built for approximately $98 (list prices). The cost of the tool box shown in the illustration was $3.75. Tubes and loud speaker unit will add about $20 more, making the total expense less than $120.

The Vacation A. C. Four has plenty of pep and more than sufficient volume. Tone quality is ex-

cellent. The receiver may be wired so as to be highly selective, thus enabling one to bring in many distant stations while locals are operating. If this extreme selectivity is not desired, a slight change in the wiring broadens the tuning, making the set easier to operate and less critical. The receiver may be operated on an outdoor aerial, an indoor aerial, or with no aerial at all. In the latter case, a socket antenna incorporated within the set serves as the aerial. Of course, local conditions will determine to a certain extent, the results obtainable when aerial is dispensed with and ground connection alone is used. The receiver illustrated was tested at Brooklyn, N. Y., on a warm evening. It brought in Richmond, Virginia, and Nashville, Tennessee, on the speaker, using only a ground. When the aerial was added, it reached farther out, bringing in Birmingham, Alabama.

Summing up the features of the Vacation A. C. Four, it may be stated that it is a compact, but powerful, electrically operated set, designed as a portable model, but well suited for permanent use in the home. This receiver is entirely free from noticeable a. c. hum and has a low cost of operation. It is selective, easily operated and will bring in distant stations.

COMPLETE LIST OF PARTS

One Aero r. f. regenerative kit, type U-95 containing an Aero Universal r. f. transformer (4) and an Aero Universal 3-circuit tuner.

One .0005 mfd. Hammarlund Dual "Mid-Line" variable condenser.

One 32 mfd. (9 plate) Hammarlund Jr. midget condenser.

One Carter "Imp" power switch.

One Hammarlund r. f. choke, 85 mh.

Four sockets, new style, UX type.

One socket, UY type.

One Variodenser, type "N".

One Electrad Phasatrol.

Two Royalty variable resistances, Electrad type "F".

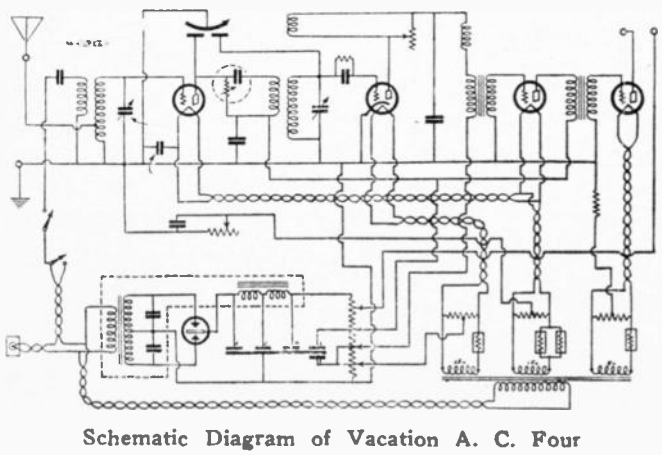
One 2-meg. Durham metallized resistor grid leak, with Durham vertical single mounting.

One vernier dial.

One .0005 mfd. Polymet by-pass condenser.

Two transformers, 6 to 1 ratio.

One .00025 mfd. Polymet molded mica condenser.



Schematic Diagram of Vacation A. C. Four

Three ½ mfd. Polymet fixed condensers, type C-903.

One .0001 mfd. Polymet fixed condenser.

One a. c. tube filament supply transformer.

One Thordarson R-171 power compact.

One 125 mill. gas-filled rectifier tube.

One Polymet condenser block, type F-1000.

One Electrad Truvolt tapped unit resistor, type C-130 S.

One Electrad center tap resistance, type V-10.

One Electrad center tap resistance, type V-20.

One Electrad center tap resistance, type V-50.

One Electrad Truvolt resistor. B-20.

One Amperite, No. 227, with mounting.

Two Amperites, No. 226, with mountings.

One Amperite, No. 112, with mounting.

Two binding posts.

One baseboard outlet.

One Carter single pole, double throw switch.

Two Carter "Imp" tip jacks.

Two rolls Corwico Braidite.

One can Kester radio solder (rosin core).

One composition panel, 6⅞"x24¼"x$\frac{3}{16}$".

One wood baseboard, 6¾"x24"x⅜".

One Gold Seal tube, type GSX227.

Two Gold Seal tubes, type GSX226.

One Gold Seal power tube, GSX171.

One direct drive (thin type) Amplion loud speaker unit for small cone.

One standard tool box—inside dimensions 7"x 24⅜"x5½" high. Inside dimensions of cover, 7"x 24⅜"x1⅜" deep.

One Amplion thin-type loud speaker unit.

Two pamphlets on the Vacation A.C. Four will be sent by the author of this article upon receipt of $1. These pamphlets contain complete instruction information, step-by-step wiring directions, a list of parts and diagrams necessary to construct this splendid receiver. Address H. G. Cisin, Allied Engineering Institute, Suite 429, 30 Church street, New York; or WCFL Radio Magazine, 623 South Wabash avenue, Chicago.

Confidential Information Available

CONFIDENTIAL information on any radio set on the market is available to readers of WCFL Radio Magazine. Just write your query on one of the Business Reply Postal Cards on page 3. No stamp required; no obligation incurred.

More Than a Hint

Sam: "Esmerelda, does yoh love me?"

Esmerelda: "Deed Ah does, Sam!"

Sam: "Two bits' wuth, honey?"

Esmerelda: "Go 'way, man—Ah don't put out no more cash till we is married."

Spring Tension

MANY a radio set "loses its pep" merely because of weak spring clips on grid-leak or resistor mountings. They should be clean and tight. Tube socket prongs should be tested for the same trouble.

Answers To Many Radio Questions

READERS of WCFL Radio Magazine were prompt to show their appreciation of the Business Reply Postal Cards printed in the front of the Spring issue. It was a service never before supplied by any magazine. However, WCFL Radio Magazine readers grasp new ideas quickly—and they certainly have made liberal use of this new convenience. Advertisers have received thousands of inquiries through these cards. The editorial department also has been deluged—so much so that the editors are far behind with the answers.

Readers have put the cards to wide use, asking questions both general and technical. That is just what we had hoped they would do. Just as rapidly as it is humanly possible with the facilities available all of these questions will be answered.

The questions have been divided into two classes —general and radio. Many of the former questions will be found answered in an article, entitled "What the Cards Show," appearing elsewhere in this issue. Many of the representative and most interesting radio questions are answered below. Others have been answered direct by mail. In the following discussion you may find answers to many of your questions.

"Why does KDKA interfere with WCFL?"—*E. O. H., 69 W. Concord street, Orlando, Fla.*

"My set is a good one, but, for some reason, cannot pick up your station; why?"—*D. N., 916 Sixth avenue, Canton, Ohio.*

KDKA broadcasts on a frequency of 980 kilocycles, WCFL on 970. Very few sets are selective enough to tune in a distant station like WCFL operating at 1,500 watts without noticeable interference from one like KDKA operating at 50,000 watts with only 10 kilocycles separating them. KDKA is allowed full time on the air, WCFL only to sundown on the Pacific coast. This matter is now being threshed out. So, until we have official relief, the best you can do is to put your sets into good condition and listen as best you can.

"What is the cause and remedy for fading and skip distances on short waves?"—*G. W. L., Box 398, Vandyke, Mich.*

These are the goblins of short waves, partially explained by varying ether conditions, according to some engineers, and to other causes not always agreed upon, and seldom curable. However, it is our experience that using the same aerial used for broadcast receivers causes most of the trouble we have observed. Use a very short aerial coupled to the set by a small variable condenser (midget) and be certain you are able to control oscillation. Use a .1 megohm resistor across the secondary of your first audio transformer for the latter purpose. These hints should help.

"What causes howling when radio is jarred?"—*Wm. T. S., 1218 W. 71st street, Chicago.*

This is caused by microphonic detector or first audio tube. Find out which, or both, by tapping them gently while the set is in operation. They should be replaced, or, if your set uses the same type of tube in all sockets, you may cure the trouble temporarily by placing the microphonic tube or tubes in the radio frequency sockets, and using the radio frequency tubes in the detector and first audio

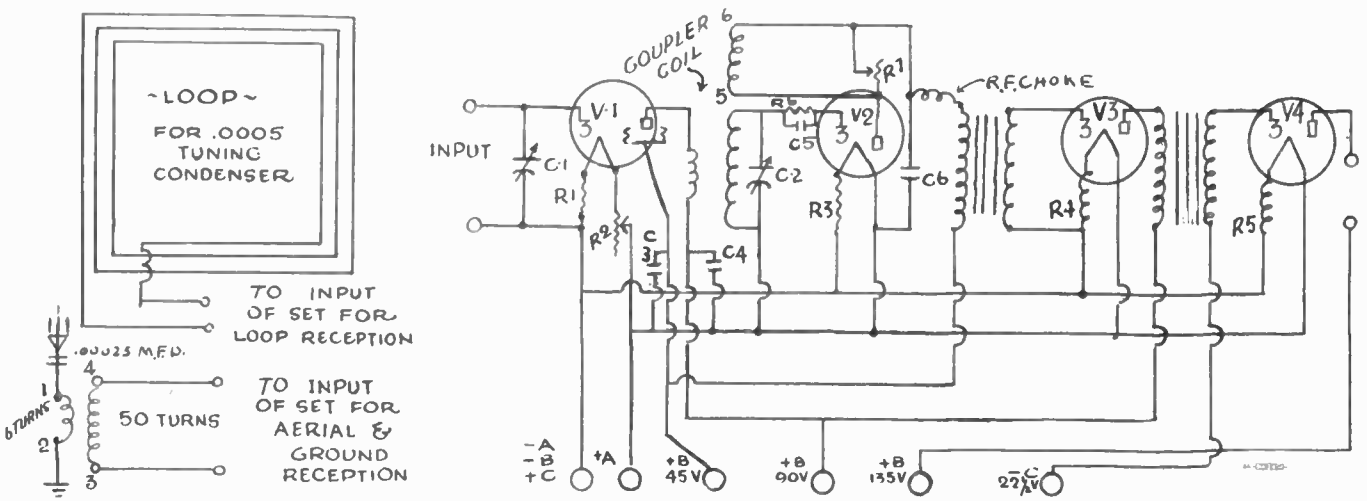


FIGURE 3—A GOOD FOUR-TUBE RECEIVER, WITH LOOP OR AERIAL CIRCUIT.

Details: A battery is 3 dry cells.
Coils are both wound on 3 in. tubes with No. 24 d.c.c. wire.
Antenna coil, primary, 1 and 2, has 6 turns; secondary, 3 and 4, has 50 turns.
Coupler coil, primary, 1 and 2, has 24 turns; secondary, 3 and 4, has 50 turns; tickler, 5 and 6, has 25 turns.
V1—UX222 or CX322 tube.
V2 and V3—UX199 or CX399 tubes.
V4—UX220 or CX320 tube.
C1 and C2—.0005 mfd. variable condensers.
C3 and C4—.006 mfd. fixed condensers.
C5—.00025 mfd. fixed condenser with grid clips.
C6—.0005 mfd. fixed condenser.
R1—10-ohm filament resistance.
R2—30-ohm rheostat.
R3 and R4—No. 4V-199—Amperites.
R5—No. 120 amperites.
R6—2 Meg ohm grid leak.
R7—0 to 2000 ohm variable resistance.

sockets. If all tubes do the same they should be replaced, or, sometimes, weighter caps on the detector and first audio tubes will help.

"How can I get clear signals although a 1200-volt power house is 60 feet away?"—*C. E. D., 2013 Cleveland avenue, Chicago.*

This is decidedly an extreme case. You probably need to have an expert look over the situation, for it is difficult to prescribe an adequate remedy without being on the ground. You might have some make of underground antenna installed under a satisfaction or no pay contract, and, by all means, have the set completely shielded. Some sets are not designed for shielding, and you may have to make some radical changes, hence our advice to call in an expert.

"Why does WEBC interfere with WCAL?"—*M. M. K., 1307 Broadway, Superior, Wis.*

Your local station, WEBC, broadcasts on 1,280 kilocycles using 1,000 watts, while WCAL broadcasts on 1,250 kilocycles using the same power, but, since it is some distance away, the signal strength impressed on your aerial is much weaker. However, if your set were really selective a separation of 30 kilocycles should be sufficient. Try a shorter aerial, and make your set more selective. See answer to question 7.

How can I make set more selective and how determine length of aerial?"—*N. R. M., 26 N. 4th street, Niles, Mich.*

The combined length of aerial, lead-in, and ground lead should be from 75 to 150 feet, depending on the type of set. The shorter the aerial system, the more selective the set, usually. The simplest aid to selectivity is a .00025 mfd. condenser connected between the aerial lead and the aerial binding post on the set. A good wave trap, or something like the new filter trap may help. See sketch No. 1.

"How to prevent man-made static and other interference?"—*W. D., 512 Bridge street, Greenville, Mich.*

First, if possible, find out where the noise comes from. Be sure it isn't a loose connection in battery leads, aerial and ground system, set, socket prongs, or a defective tube, B battery, or speaker. A trickle charger left connected all the time, a dirty storage battery top, a corroded wire, a loose plug in an a. c. set—look for trouble in all these places. Then check the electric meter and all appliances used in your house. A filter made by a reliable company, of the proper size, should be used on any electric appliance found to be noisy, and, sometimes, a filter between the set and the source of the current supply helps when the noise cannot be traced.

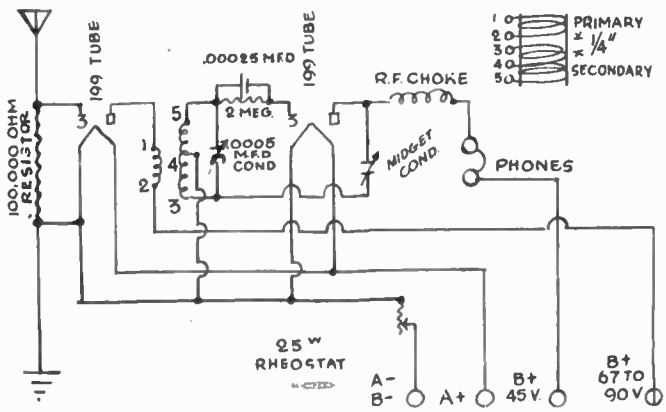


Figure 2—A Cheap Selective Two-Tube Set

Details—Primary coil, 1 and 2, 12 turns; secondary, 3, 4 and 5, 50 turns, 4 being tapped at 25 turns. Use 3-inch tube and No. 24 d.c.c. wire.

"Hook up for battery-operated Armstrong Super Regenerative set."—*Wm. H. L., 539 N. Spaulding avenue, Chicago.*

The circuit for which you ask is an old-timer which was discarded largely because it is such a powerful broadcaster that it constitutes a decided nuisance. A set of this type when oscillating violently will disturb reception for miles around. For this reason we class it with the many "bloopers" which we are honor bound not to recommend to our readers. So, if this circuit is desired for information only we shall be glad to send it on special request, but not to be used as the design for a receiver. Incidentally, very few builders were ever able to control this circuit sufficiently in a home-built set to get any enjoyment out of it.

"When father turns on his set, music comes in fine, then it fades out. The tubes are O. K. and the batteries all right."—*Thos. M. Jr., 3983 Drexel boulevard, Chicago.*

The batteries should be tested with a high-resistance volt meter after the music has faded, with the

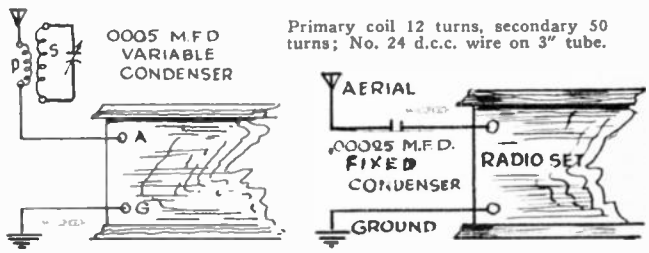


Figure 1—Making a Set More Selective

set still turned on. In nearly every case of this kind the trouble is due to run down storage or B batteries which show the proper voltage until the set has run for a few minutes. Occasionally this trouble comes from a tube which tests o.k. until it is heated up, when the expansion of the elements causes it to short. Try replacing one tube at a time.

"I want a diagram of a one-tube set."—*N. D., 4964 Kolmar avenue, Chicago.*

Since you live in Chicago, we could not give you a one-tube circuit that would be selective enough to pick up only one station at a time without making it regenerative. As in our answer to a previous question, we do not print regenerative circuits that feed back into the aerial and disturb other radio sets. However, the circuit shown in sketch No. 2 can be built very nearly as cheaply as a one-tuber, and is much more satisfactory in all ways.

"I want a short wave converter circuit."—*L. B., Route 1, Manteno, Ill.*

A very fine circuit was shown in our Spring issue, page 46. If you wish the circuit for a converter for an all-electric set, or for some special reason cannot use the one shown in the Spring issue, we will send you another on request.

"Send me a hook-up for loop set to be used in auto."—*J. D., 721 N. Hamlin avenue, Chicago.*

See sketch No. 3. Note that we have designed this circuit so that an *(Continued on Page 55.)*

As *the* Editor Sees Things

Problem of the Unemployed

ONE reason for the problem of the unemployed is the lack of definite knowledge as to how many are out of work and what are their accustomed lines of employment.

Two questions incorporated in the census taken every ten years would help greatly to get at the facts of unemployment. They are:

"If you are ordinarily gainfully employed, are you now out of a job?

"If you hold a job of any kind, are you on a layoff without any pay today?"

These questions would produce material of enduring value to industry, government, labor, welfare and scientific bodies, banking and insurance interests. More accurate statistics on employment are urgently needed.

In legislation still to be enacted for the census of 1930 Congress should not fail to appropriate funds sufficient to get at the facts on this vital subject. In a commonwealth becoming ever more highly organized the facts must be found and accurately listed or the government, as well as industrial management, will find itself helpless in meeting new problems.

The differentials of unemployment, unemployment by occupation, technological unemployment, the shifts and trends of unemployment, all could be determined. The census is the best means available to get the needed information.

* * * *

Like a Song on the Air

IN THE winter issue of WCFL Radio Magazine appeared an editorial, entitled "Why Pick on the Farmers." It was a colloquy with James Bruck, who for five years ably edited and splendidly developed The Federation News, official weekly publication of the Chicago Federation of Labor. In the columns of his paper Jim had pretended not to be able to understand the farmers—they had shouted so loudly for Al Smith yet rolled up such large majorities for Hoover. It was Jim's subtle way of getting over a message to all workers on the necessity for better organization. That was the theme he dwelt upon, in season and out of season.

At that time we had known Editor Bruck but a few months, yet esteemed him highly for his sincerity and his ability. He was a deep student, an able writer and a tireless worker. As the weeks progressed, admiration for this kindly yet keen man increased. On May 13 we journeyed to a north side chapel to view the silent form of our new-found friend. He had died on May 10, after an illness of more than three months.

Our acquaintance with Editor Bruck was like a song on the air—fading all too soon but leaving an inspiring memory. Some months ago one of the learned men of radio declared that radio waves do not perish and are not absorbed by interfering bodies but travel ceaselessly into space, some day perhaps to again pulsate our radio sets. If that be the case, surely then the life and work of James Bruck may be likened to a song on the air, inspiring the toilers of his day and lingering to bless the lives of all those who labor throughout the years to come.

* * * *

Your Next Radio

WOULDN'T you like to know what your new radio will look like? Perhaps you were not aware you were going to buy a new radio, and perhaps you're not. However, there will be one for you, and it will be different. Radio designs and features change rapidly.

Most of the new models in radio will be on exhibition in Chicago during the Annual Radio Trade show, June 3 to 7. They will be displayed, not for the admiration of the consuming public, but for the inspection of radio dealers. Three of the largest hotels in Chicago—Stevens, Blackstone and Congress—will be devoted almost entirely to the displays and to the accommodation of the visitors. More than 30,000 square feet of display space will be used, and more than 25,000 trade visitors are expected to attend.

Elsewhere in this issue J. H. Welches attempts to forecast some of the things that will be displayed at the show and some of the new things in radio. This is very difficult, for the manufacturers are guarding jealously their secrets and are promising that the show will be full of surprises. We'll try to tell you about them in the next issue.

During the show week the Radio Manufacturers' association will hold its fifth annual convention. Meetings will also be held by the Federated Radio Trade association, National Association of Broadcasters, the National Association of Music merchants and by several other organizations associated with or interested in radio.

* * * *

Efficiency Made Perfect

LONG the trend in industrial development has been toward eliminating the personal element through the use of machinery. The results of all this have been many gains, many losses and many louder demands for efficiency—a god deemed worthy of most any sacrifice.

The triumph of efficiency seems not far away when one hears of a mechanical device to simultaneously do the work of a cash register, bookkeeping and adding machine and, from another part of the building, make a

complete record of a sale at the time it is made. The name "Business Brain," seems to fit exactly.

The machine is said to function with absolute accuracy. As the operator writes out the invoice of a sale, for instance, the machine, through its central "brains," which may be located in some other part of the building, will calculate and record the prices, which are simultaneously added, figure the discounts desired, record in proper classification the discounts and net totals, multiply the pounds and fractions in weights by a fraction in price and at the end give the grand total of the various sub-totals of the column. This machine adds, multiplies, divides and subtracts and when installed in a bank will be able to do the work of almost nine-tenths of the employees, so it is claimed by its inventor.

The "brains" of the machine consists of a series of electro-magnets placed in the cabinet and connected with the keyboard of the operator by wire.

Connected with a series of registers, it simultaneously takes care of the bookkeeping, classification and statistical work of large banks, department stores and wholesale houses. Any number of operators can use the central brain from any part of the building.

Everywhere this amazing invention is hailed as marking the final triumph of matter over mind. We have at last mechanical brains.

* * * *

More Wonderful Than Magic

ON THE cover design of this issue of WCFL Radio Magazine the artist pictures his impression of the latest achievement of radio—television. He presents the wonder-worker of the East—the magus, the mystic—arching his adroit and tapering hands over a televisor, which is reproducing the image of a violinist in some remote place. Below and to one side is the discarded crystal ball, through which the fakir long has pretended to be able to view not only distant objects but to peer into the future.

It is an interesting study in contrasts—the picturesque past and the practical present. It is the artist's way of declaring that the achievements of modern science are more wonderful than the pretenses of the mystic past.

* * * *

What Every Man Wants

EVERY man wants his ladies to be good, beautiful and true, of course, but at any rate to be beautiful. The figures show it.

How else can one explain that in our country the expenditures for face powder, rouge, cosmetics and treatments reach the amazing total of $1,800,000,000 a year and is increasing at the rate of $100,000,000 a year?

Beauty is more than a craze or fad. It is a passion, almost a religion. Its promotion and culture is a business ranking with banking, automobile production and other billion-dollar enterprises. It has already passed the annual amounts spent for millinery and clothes and jewelry combined.

It is interesting that the entire feminine psychology has changed in recent years and the gals now consider the making of the face and body beautiful more important than adornment by apparel and jewels.

When the ladies are brought to task as they sometimes are for placing beauty first, their ready answer is a perfect one. They say: "The men like it and we must give them what they want."

* * * *

Another Slander Run Down

PERHAPS President Glenn Frank, of the University of Wisconsin, is quite right in insisting that a good mind is one that is able to keep itself hospitable to new impressions and to take new impressions into account in revising its opinion.

Unless late press agentry of her domestic virtues are rejected, it seems necessary to do a little revising in the case of that Morgan gal, who ascended from Danville, Ill., to queen of one of New York City's naughtiest night clubs.

We are informed that Helen is not a wicked little huzzy at all. Once she resigned a stage job rather than appears in pants too short to be nice. She has no hubby, but quite a few hobbies, the main one being her widowed mother who lives with her, as do some dogs, gold fish, canaries, etc. She shuns matrimony and babies of her own in order that she can have more time to adopt those of less fortunate stage girls.

One feels even more like apologizing as he reads that Miss Morgan's great success is mainly due to her capacity for sadness and tears. That doubtless explains why men with weeping jags were comforted by her songs.

Finally, as establishing that Helen is not a lewd and lawless creature, we learn that she has sworn off on night clubs altogether, except possibly a ring side seat now and then.

* * * *

One Who Is Not Afraid of Work

OVER in Italy they are lucky to have one big man who can do all the big things himself. In some ways it works well, although many statesmen in that up-and-coming country are jobless and sad.

When the King accepts, as he often does, the resignation of a cabinet minister, he promptly appoints Mr. Mussolini to the post. This glutton for responsibility at present has thirteen portfolios. He is minister of foreign affairs, war, marine, aviation, colonies, labor and public works, besides being commander of the militia.

The latest reports from over there are to the effect that in spite of all his burdens Il Duce keeps sweet. The notion that he is a hard-boiled, two-fisted, knock-'em-down-and-drag-'em-out dictator is pure foolishness, according to a newspaper writer who has been looking up this Mussolini person. On the contrary he finds "He has no appearance of egoism. He impressed me with his sincerity and kindliness."

So many morals might be drawn from this situation that it is difficult to begin. Evidently it is not work that kills people. Perhaps it is worry. At any rate Mussolini lets the other fellow do the worrying. Those who have problems to solve ought to get the services of a chap like the Italian dictator.

Where Do All *of the* Old Radios Go?

Your Last Year's Set Probably Is Doing Service in a Neighbor's Flat

By J. H. VAN NICE

MORE than twenty million people are interested in knowing what becomes of old radio sets. These are the owners and users of the more than twenty million sets a late estimate tells us are in actual use today. These people all want to know what the old set will bring in cash or trade when the time comes to make a change—even the owner of a spic and span new all-electric realizes that, before long, there will be something newer and better than he now has.

We know that thousands of the older sets have been traded in as part payment on the hundreds of thousands of new sets that have been sold in the last year or so. More thousands of sets have been sold to friends and neighbors, or given to someone else a little less fortunate. Still, many, many more thousands of sets are being eyed with the furtive, yet bold, glance father uses when he approaches the Thanksgiving turkey—left hand extended forward to grasp the fowl, and right hand extended backward to hide the murderous ax.

So our technical editor has been playing Inquiring Reporter—visiting neighborhood stores, department stores, large radio concerns and what not. Then, to rest his weary dogs, he has sent polite questionnaires, with requests for dealers to reveal the dark secrets of the back room, into which the old set goes when its owner forgets the thrills it gave him during the International Broadcast Tests,—when he thought he had a station in Spain, sure, only to find it was ———well, that was a radio fish story, but just the same the old music box occupied a much-worn corner of the old rug, and no new hussy in brown mahogany with illuminated dials and dynamic speaker is going to cause half the excitement or be blamed for a tenth of the loss of sleep. Our radios are old acquaintances now, very pleasant and essential, but with none of the witchery of a first love.

FINDS RADIO DEALERS HUMAN

Our reporter's visits were pleasant, and profitable; radio dealers are quite chummy. Some of them are their own best loud speakers. But the majority of them are very human men who know that business success is based on service; are willing to serve, and yet are new enough in the sales game to retain a vivid picture of the problems of the set owner.

As a rule the neighborhood dealer who takes sets in trade serves his customers in more ways than one. John Jones wants a set, but can't pay the price of a new set. Jim Smith wants to trade in his good but out-of-date set on a new one. The dealer, knowing about what John's limit is, accepts Jim's set as a trade-in at a price that will allow him to sell it to John at the price John can pay, even after the service man has cleaned and tightened it up, installed it, and put in new tubes. Jim gets full, free service on his new set; John, should he need it, pays a reasonable price for his service. Both are getting full value for their money, and will be grateful to the dealer.

However, this is an ideal picture we have painted. It isn't often that a dealer can accept a good set and turn it right over to someone else at the same price or a profit. For every case of that type there are dozens of cases where he takes the old set in on a gamble that it will be good enough to sell, and that he will find a buyer at the right price.

Just what is the truth in regard to the value of old sets? Oh my dear! You should see those sets!

. . . Bottle dropped by baby waters plant, which blooms and attracts bee that arouses father with a sting and he replaces bottle.

Johnny's first crystal set that he made from an oatmeal box, some bell wire, an old safety pin, and a discarded telephone receiver, is really worthy of a place on the relic shelf as much as are dozens of sets made by fathers and older brothers,—some of them made from kits of parts, but resembling a contraption designed by the comic strip artist, in which the baby drops the nursing bottle, which (*Continued on Page* 72)

Hundred Million Radio Tubes-- That's *the* 1929 Demand

By H. H. STEINLE, *Vice-Pres.*
Triad Manufacturing Company

IT has been estimated in a recent survey, that at least one hundred million radio tubes will be manufactured and sold during the radio season of 1929. This is double the number for 1928 and a thousand times as many as in 1922. Although these figures are staggering, when it is considered that the radio industry as a whole has had the most phenomenal growth of any of the nation's industries, it is only logical that the tube industry should show this tremendous increase.

The radio tube has often been referred to as the "heart of the receiving set" and this is equally true of the broadcasting equipment. Without vacuum tubes, broadcasting would be impossible. Development of transmitting tubes has kept pace with other phases of the industry and the high power stations were made possible only by the development of vacuum tubes of extremely large capacity. A recent achievement along this line was the construction of a transmitting tube capable of handling one hundred kilowatts, or one million watts. It is difficult for us to visualize this tremendous amount of power, but when we consider that this tube handles sufficient power to light two million ordinary electric light bulbs, it becomes more comprehensive.

Every important development in radio receiving circuits is dependent upon the action of vacuum tubes. Millions of dollars in time and money have been spent in perfecting these tubes and at present we find the tube engineers specializing on tubes for special purposes.

A. C. TUBE A GREAT FORWARD STEP

The greatest step forward in receiving tube development was made about two years ago with the introduction of the alternating current types. Up to that time all radio receivers were operated by battery current, or at least partly so. Tubes had already made it possible to supply B voltage from the light socket, but the A supply was still obtained from storage batteries. This was very unsatisfactory and there was a demand for receivers which would operate wholly from light socket. This could only be accomplished by perfecting tubes with filaments which would operate on alternating current. This was accomplished and the a. c. tube was accepted almost over night. The demand for these new tubes was so great that an acute shortage was felt by radio jobbers and dealers all over the country. The small independent tube manufacturer found a ready market for his products and every tube factory in the country worked night and day to supply an ever increasing demand. With the combined production of every tube manufacturer, there still existed a shortage. There was little time for research work and these a. c. tubes were not as good as they would have been if more time had been available to do the proper research work. The life of the tube was short and the demand for replacement made the shortage even more serious.

The first of this year, the radio business took a little rest and this gave the manufacturers an opportunity to take account of themselves. However, they did not slacken their pace; they had been caught once, but they had no intention of allowing a recurrence of this condition.

Radio manufacturers, especially tube manufacturers settled down in earnest to prepare for the next radio season. New buildings, new machinery, new methods and even new types of tubes are being rushed through. This year will be the biggest in the history of radio.

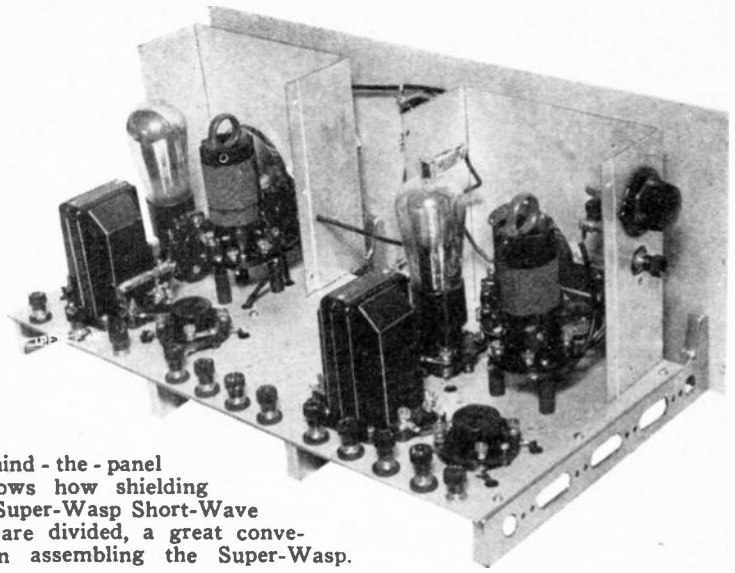
NEW TUBE VERY POWERFUL

One of the most important developments of the past few months, is the a. c. screen-grid tube, known as the type AC224. The screen-grid tube was developed for battery operation a year ago, but before it had time to gain popularity, the a. c. receivers were introduced and battery sets became obsolete almost immediately. The screen-grid tube is a special tube for radio frequency amplification and is capable of amplifying the radio frequency many times more than the regular amplifier tubes, without spilling into oscillation. Being of the separate heater type it also does away with the potentiometer necessary to eliminate the hum of the type 226 tubes. The new screen-grid tube has been accepted as an important factor in stabilizing radio-frequency circuits. One of the country's largest set manufacturers has already announced a new set, using two of these tubes.

Another development of recent release which will become very popular during the coming season, is the type 245. This tube is a power amplifier capable of producing nearly as much volume as the present type 250 with a plate voltage only half as great. The filament voltages of this new amplifier will be the same as the type 227 and 224 which will greatly simplify the construction of the power packs for a. c. sets. The lower plate voltage also has the advantage of lessening the burden on the rectifier tube. Many set manufacturers are now designing their sets for these tubes in connection with the new screen-grid type. The types 226 are also being replaced by type 227 in the first audio stage. This combination allows a uniform filament voltage throughout the set, excepting the rectifier tube. It is possible to design a rectifier tube operating on (*Continued on Page* 61.)

Pilot Super-Wasp Short-Wave Receiver

By ROBERT HERTZBERG*



This behind-the-panel view shows how shielding cans of Super-Wasp Short-Wave receiver are divided, a great convenience in assembling the Super-Wasp.

THOUSANDS of radio fans throughout the country have assembled short-wave receivers that consist for the most part of a plain regenerative detector with one or two stages of audio amplification. A great many of them have enjoyed truly phenomenal results from their inexpensive contraptions, it being no particular trick for them to pull in broadcasting stations in England, Holland, South Africa, Central America, Australia and New Zealand. Some are able to boast of signals loud enough for loud speaker reproduction—all on two or three storage-battery tubes.

However, a goodly number of these short-wave experimenters have not been so successful, their 'phone reception being confined to American stations like W8XK, W2XAD, W2XAF, and a few occasional amateurs. These people for the most part have had considerable experience with broadcast receivers, and of late they have been asking a very logical question.

PILOT SUPPLIES THE ANSWER

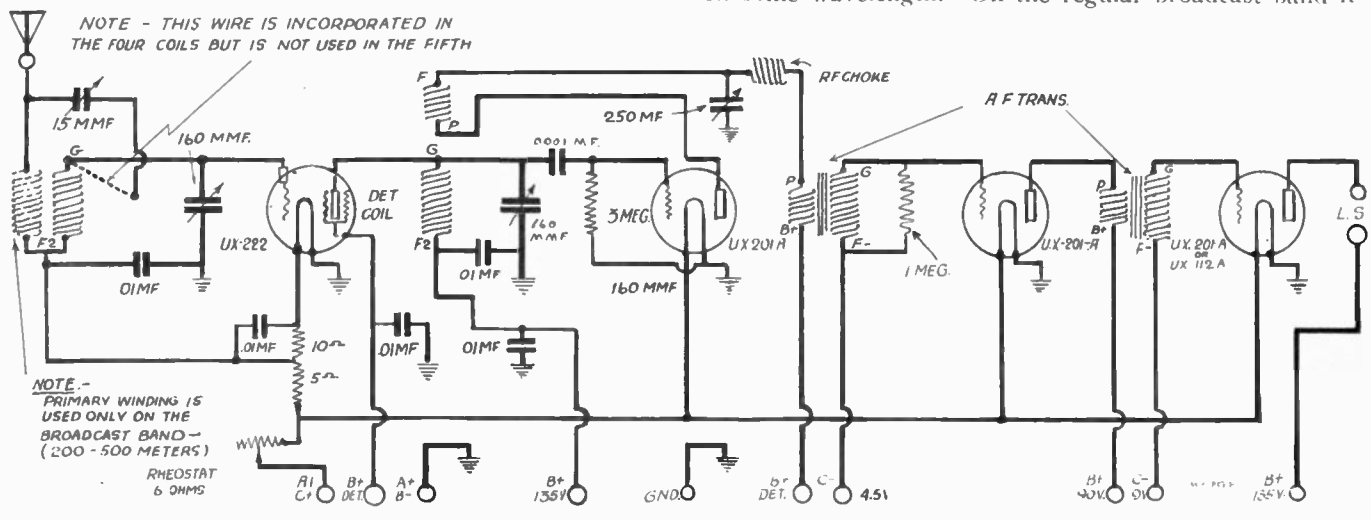
"Why can't short-wave sets be improved by the addition of a tuned radio-frequency amplifier, just as the old straight regenerators were improved several years ago for broadcast reception? We have good screen-grid tubes and we have some good shielding materials."

The Pilot Electric Manufacturing company, which was already marketing a successful short-wave kit known all over the world as the "Wasp," decided to tackle the problem, and obtained the services of a man who is unquestionably one of the foremost authorities on short waves in the United States. He is Robert S. Kruse, whose name is known and respected wherever radio magazines are circulated. With the co-operation of the Pilot engineering staff, he proceeded to beat down every one of the objections offered against tuned screen-grid radio-frequency for short waves, and when he and his associates finally decided they could go home again and see how their families had fared during their sleepless absence, they were able to demonstrate what they modestly think is the best short-wave receiver kit that has yet been produced for the amateur experimenter.

The new set, called the "Super-Wasp" because it supersedes the old Wasp, boasts of the following features:

1 It uses a tuned 222 radio-frequency stage that actually amplifies and that tunes as sharp as the proverbial razor. The tube is not a *blocking* tube; it is an *amplifying* tube.

2 It will tune down as low as 14½ meters and up as high as 500. Two sets of plug-in coils (ten coils in all) are supplied with it. Thus it is an all-round receiver, and can always be depended on to produce some signals, on some wavelength. On the regular broadcast band it



Schematic diagram of the Pilot Super-Wasp Short-Wave Receiver.

is the equivalent, electrically, of the famous Browning-Drake.

3 The increased sensitivity and selectivity provided by the radio frequency stage make the reception of short-wave broadcasting stations easier than with a highly critical straight regenerator.

4 It is doubly shielded, there being no interaction between the radio frequency and the detector stages.

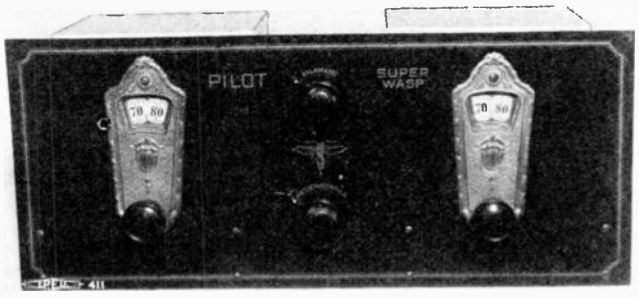
5 There is absolutely no hand capacity effect. If you have ever played with a cranky set of the ordinary kind you will know what a blessing this feature is.

6 The arrangement of the parts has been worked out so ingeniously that the whole outfit can be assembled and wired in one evening—and I mean an evening that starts at about 7:30 p. m. and ends well before midnight, not one of these flexible "evenings" that begins before supper and ends about the time the milkman's wagon comes clattering down the street.

7 It is cheap to build, the complete kit of parts, including the ten coils, costing less than $30.

By examining the accompanying diagrams and illustrations you can obtain a good idea of the general electrical and mechanical arrangement.

The signals picked up by the aerial pass through the midget coupling condenser and pass to a regular tuned



Front of panel is plain but neat.

input circuit connected across the grid and filament of the 222 tube, as shown in the schematic diagram.

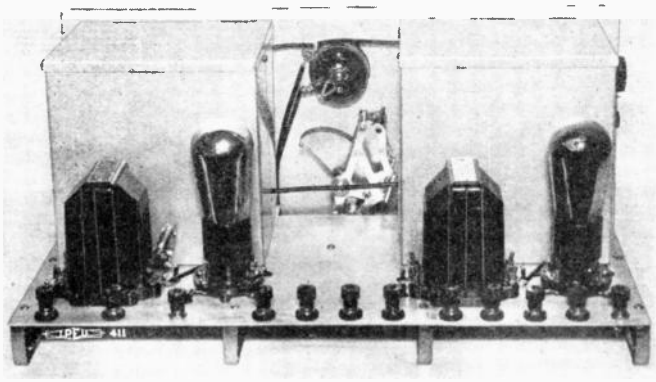
The screen-grid tube is direct coupled to the detector circuit in an exceedingly simple but effective manner, which was decided on after several other and more complicated methods had been tested thoroughly. The plate current for the 222 tube is fed right through the detector grid coil, being kept off the grid of the detector by the grid condenser.

The detector coils each contain two windings, the usual grid and tickler coils. These also are plug-in coils which fit in a five-prong tube socket, four of the five available prongs being used.

The detector is made regenerative by the tickler of L2, the action being controlled by a .00025 mf. variable condenser. The detector is followed by two standard transformer-coupled audio stages.

The mechanical layout of the parts in the final Super-Wasp is the result of many trials with seven different experimental models. The front and sub-panels are of heavy metal accurately drilled for all parts. The components of the antenna stage are contained within an aluminum shield can of unique design. These cans, as

* Formerly managing editor of "Radio News"; now editorial director of The Pilot Electric Mfg. Co., Inc.



Compare this picture with one at top of opposite page. It shows completed shielding.

shown in the picture at the beginning of this article, are split down the center. After everything is in place, the back half of the can is screwed down and the job is finished.

The condenser and the aerial binding post are mounted on the side of the antenna can. The two audio stages fit neatly along the back of the sub-panel. The under side of the latter supports the .01 mf. by-pass condensers, and the 222 filament resistor. Notice from the under view how little wiring there is. The only long leads are filament wires, which don't count much anyway. There is so little wire because one side of practically all the parts is grounded directly to the aluminum framework.

The front panel is plain but neat. It holds vernier dials for tuning condensers and, in the center, the filament rheostat and the regeneration condenser.

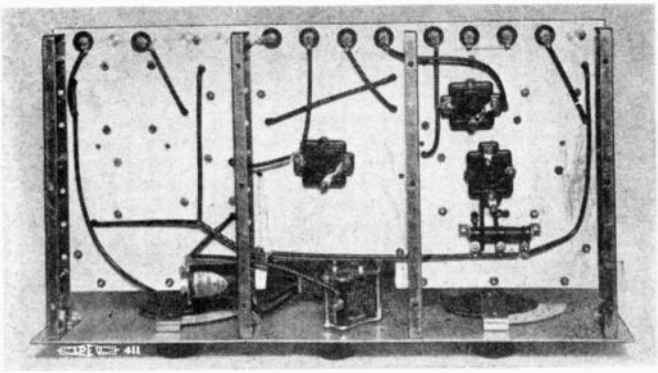
Battery connections are made to a row of insulated binding posts along the back edge of the sub-panel. Separate B and C posts are provided for each of the audio stages, so that any combination of tubes may be used.

A filament rheostat is used instead of fixed resistors so that a man not owning a storage battery can run his outfit on dry cells. The instrument also acts as a switch for the entire set.

A full-size working blueprint is furnished with the kit, along with a pamphlet containing detailed assembly instructions.

Now that we have described the Super-Wasp, you will probably ask, "What will the set do?"

Well, predicting specific results from short-wave receivers is uncertain business. (*Continued on page 74*)



This under view shows how simple is the wiring of the Super-Wasp Short-Wave Receiver.

Labor Day Celebration to Be Greatest Ever Staged

Tickets Available to WCFL Radio Magazine Readers at Low Price

Soldier Field Stadium Will Again Be Scene of Organized Workers' Annual Outdoor Jubilee

A LABOR DAY celebration on a scale never before attempted—that's the determination of the Chicago Federation of Labor in plans for its fifty-fifth annual demonstration and jubilee. It is to be made a great national labor event, including not only the unions affiliated with the Chicago Federation and other Chicago labor bodies, but also the central bodies and local unions in many other cities as well. Prominent place also will be given to the Farmers' union and strong effort made to insure a large attendance of the organized farmers.

It is to be a day of outing and enjoyment instead of a day of marching and parading—but it will be an all-day affair, with every minute crowded with something of keen interest.

The program will be the best that money can provide and will cover the widest possible range—colorful pageants, band concerts, circus acts, feats of daring, athletic contests, races—in fact the whole galaxy of outdoor entertainment. And here is an interesting feature—the price of admission will be ridiculously low: one ticket will admit a union man and his entire family, and they can enjoy the program from morning until dark. This is made possible by the large number who can be entertained.

Buckingham Memorial Fountain

The speechmaking and similar ceremonies will be limited, affording more time for sports and entertainment. Only men of national fame will be accorded recognition on the program.

Tickets will be offered for sale through the various unions. A special bargain is in store for readers of WCFL Radio Magazine. Each bona fide subscriber may procure one ticket to the Labor day celebration for only 25 cents by filling out and returning the coupon at the foot of page 33. This ticket will entitle the holder and his family to enjoy the Labor day celebration. The label on the front of your copy of this issue gives the date of the expiration of your subscription. It also indicates the union to which you belong. Clip this label and send it with the coupon and your 25 cents—coin or stamps. Any reader who is not a subscriber may procure the magazine for one year and secure one of the tickets by mailing $1.50 with the coupon.

The use of the Soldier Field stadium in Grant park has been secured for the celebration—and no better place could be found for such an event. The picture on this page shows the spaciousness of this immense bowl, where many famous celebrations and national athletic events already have been held. It will accommodate more than 100,000 people—and Labor should pack it to capacity on Labor day.

The stadium is easily accessible from the railroads, the elevated lines, the surface cars and other public conveyances. The splendid boulevard sys-

tem of the city also leads to it, and in its vicinity there is parking space for more than 40,000 automobiles, affording ample accommodation for everyone.

No institution in Chicago is perhaps more widely known than the Stadium. The Army and Navy football battle and the celebrated argument between Mr. Dempsey and Mr. Tunney took place here to capacity houses. This was some business, surely, when one ponders that the Stadium easily seats 110,000 people and 60,000 more can be crowded in. Pageants, rodeos, parades and athletic contests naturally seek this beautiful and colossal rendezvous.

Near at hand are the Shedd aquarium, under construction, and the Field museum, a magnificent new marble structure costing approximately $7,500,000. Its wonderful collection of botanical, zoological, geological and anthropological exhibits, the result of many years of world-wide expeditions and search, is known the world over. The trophies of the Theodore and Kermit Roosevelt expedition into the Asiatic wilderness, made especially for the Field Museum, are on display. Here also is the finest jewelry collection in the world and many taxidermy specimens.

Grant park also houses another of Chicago's newest outdoor attractions, the Buckingham fountain. This is a gift to Chicago by Miss Kate Buckingham in memory of her brother, Clarence Buckingham. This fountain captures the imagination of beholders. Its misty columns of water spell enchantment. The second week the fountain was in operation between 75,000 and 100,000 people visited the display, according to the estimate of park officials.

FOUNTAIN MARVEL OF BEAUTY

Standing in a garden about 600 feet square the fountain is patterned to some extent after the famous Latona fountain in the Garden of Versailles, although the Buckingham fountain is twice as large and the flow of water four times as great. The central pool is about 300 feet across, built of Georgia marble and concrete and embellished with sculptured shells, cat tails and other aquatic motifs. Within the pool are four pairs of colossal bronze horses. Each of these mythical sea horses is more than 20 feet long. The four pair symbolize the four states bordering on Lake Michigan and each spouts in the general direction of the commonwealth (Chicago) to which it is directed. The water from the central spout shoots ninety feet upward. At night the fountain is illuminated by lights hidden within which gives to the mists and rising and falling waters an indescribable beauty.

Another famous fountain is located at the west end of the Midway. This is the Fountain of Time, by Lorado Taft, financed out of a million dollars left to the city by Benjamin F. Ferguson. The figures of the fountain suggest the periods of life and history passing before the giant figure of Time.

Nowhere in the world is there such an extensive system of parks and boulevards as in Chicago. A trip along the beautiful water front shows what an enterprising people can do with their resources. Almost the entire shore line has ben turned into bathing beaches, parks, golf courses, yacht harbors. Miles of boulevards join the city's larger parks and parallel the water front.

Outdoor Beauty Right in Heart of Chicago

The city's parks, beaches, private clubs, etc., made it possible last year for 39,000,000 people to participate in sports in this city. The latitude and natural facilities here afford opportunities for most every known sport—baseball, golf, football, ice skating, skiing tobogganning, swimming, hockey, soccer, basketball, yachting, track meets, tennis, archery, fly casting, ice-boating and what you will. All are played on courses or fields maintained by the city, county or state, virtually without cost to the participants.

In all Chicago has 21 park districts and a system of forest preserves which maintain throughout the city and county 205 parks, having a total area of 37,826 acres. The park area within the city is 6,446 acres. Within the forest preserves and parks are 193 playgrounds, 62 athletic fields, 10 golf courses, 46 swimming pools, 130 miles of boulevards, 13 hockey courts, 59 gymnasiums, 16 field houses, 580 tennis courts, 15 bathing beaches, 162 baseball and football grounds.

The large and ever-growing Lincoln park is known widely for its natural beauty, statues of famous men and its opportunities for recreation. In its zoo are over 4,000 animals, including the most perfect specimens of lions and a small herd of buffalo; monkeys of all kinds, zebras, sea lions, bears and hundreds of other wild animals. A new aquarium has 42 tanks of fresh water fish.

On the West Side of the city Garfield park is famous for its conservatory, the second largest in the world.

High Spots on WCFL Programs

The opening of the Navy Pier ballroom brings to the people of Chicago another delightful summer of dancing. Last year thousands were entertained while enjoying the cooling lake breezes. The dancing concession at the pier is operated by the Chicago Federation of Labor. A notable advance in its betterment is seen in the work of Franklin C. E. Lundquist and his Navy Pier Jackies, under the direction of Norm Sherr. You see Norm in white. Mr. Sherr's success in radio broadcasting and cabaret work guarantees followers of the dance a summer of unusual recreation. The magic music of this band is heard nightly over WCFL.

Franklin C. E. Lundquist, business manager of Station WCFL, a radio program builder of distinction, who discovered the Navy Pier Jackies, popular dance musicians.

Alderman Thomas J. Bowler of the 41st ward, who gives a Safety talk to the Junior Federation over WCFL each Tuesday afternoon at 4:30. Mr. Bowler originated the important lessons on Safety that are taught in the Chicago public schools. His long experience as a street car man and his deep study make him a recognized authority on the subject of Safety.

Recent changes in the musical features of WCFL Station brings as leader of the new orchestra James Kozak, one eminent in the world of music because of his extended training and varied experience. The work of his musicians is highly pleasing to the management of the station. It embraces the classics as well as the great American jazz. Mr. Kozak's fan mail is most flattering.

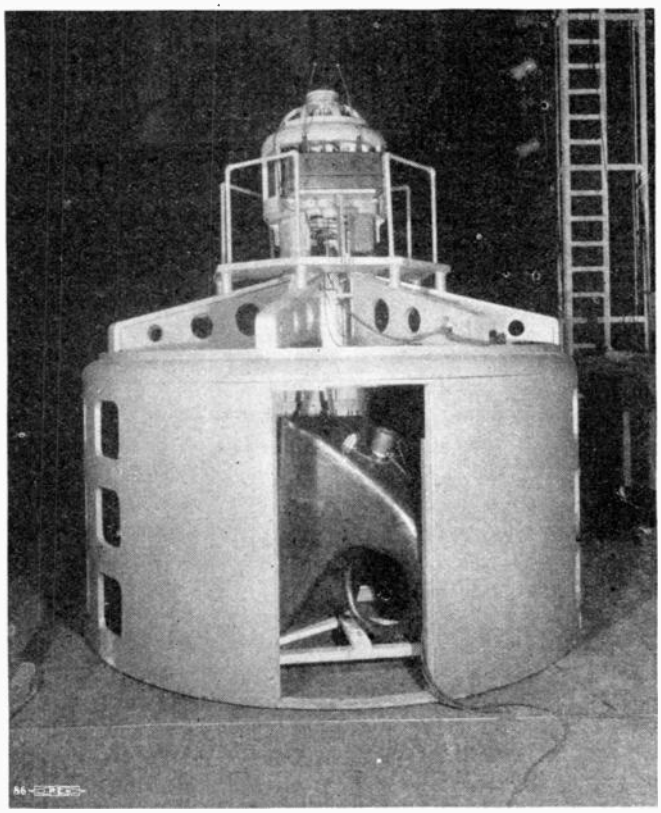
The picture shows the small studio of WCFL Station and hence the splendid Barton organ, played regularly and with such fine effect by Roy Farr, does not appear in the scenery with the other musicians.

Giant Speaker Is "Stage Prop" In New York Theater

By W. L. WOOLF*

THEATRICAL producers are now invoking the assistance of radio engineers and custom set builders, to help them create unusual and unique sound effects. As a typical example, may be cited the case of the drama "Dynamo" apparently slated for an indefinite run in New York City.

In this plan, the action centers about a huge dynamo, which controls the destinies of all the characters. It



View of Amplion giant dynamic and exponential horn mounted within dynamo on stage

was no trouble at all for the stage carpenter to build up an exact replica of a huge dynamo, but when it came to reproducing the characteristic whirring sounds of this enormous machine in operation, the stage people were at a loss as to how to proceed.

However, the engineers of the Amplion Corporation of America solved this problem expeditiously, by applying their knowledge of amplifiers and group address systems. Within the shell of the stage dynamo, they have mounted an exponential type, 10-ft. air-column horn. A special actuating unit, known as the Amplion Giant dynamic is used in conjunction with the horn. This is connected to a powderful audio amplifier located in a room beneath the stage. The problem of obtaining exactly the same sound as that created by a real dynamo has been solved with that touch of simplicity which borders on genius.

A small quarter-horsepower motor-generator set is mounted in a box along with an Amplion desk stand microphone. The microphone is connected to a portable microphone amplifier and thence to the push-pull power amplifier. When the small motor-generator set is started up, the microphone picks up the sound and converts this to electrical impulses.

These are greatly amplified and are then reproduced through the giant dynamic speaker concealed in the dynamo on the stage. By means of a suitable volume control, the sound of the generator may be varied from a barely audible hum to a stupendous roar capable of being heard throughout the theater.

The illusion created is so perfect that many old-time engineers have been misled into the belief that a huge dynamo is actually in operation upon the stage.

Incidentally, the same group address system is used during each performance to create other sound effects, such as whistling wind and thunder. To obtain the illusion of thunder, an electric motor causes two padded arms to strike repeated blows upon a leather diaphragm, stretched tightly upon a frame 4 feet square. A perforated metal disk, rotated rapidly by another electric motor, creates the desired wind effects. As in the case of the dynamo, the sounds are picked up by a microphone, are converted into electrical energy, amplified and then reproduced by the giant dynamic speaker on the stage.

*Directing Engineer Amplion Corporation of America.

Our Readers Like the Cards

IN THE spring issue of WCFL Radio Magazine a service entirely new was inaugurated—business reply postal cards were printed in the front of the magazine. With these cards readers were enabled to secure any information desired from our editorial department, or answer any advertisement in the magazine. It was the first time such a service was made available to magazine readers, and our readers promptly registered their approval. We have been literally swamped with inquiries, and they are still coming in at a lively rate.

The arrangement is repeated in this issue, and we are anticipating an increased response. The cards are for your convenience; make liberal use of them. There is no obligation involved.

Curiosity

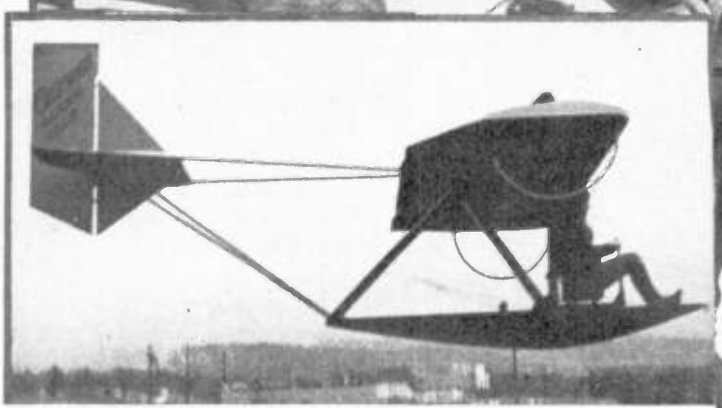
Mother: "Don't ask so many questions, son. Curiosity killed a cat."

Son: "What did the cat want to know, mother?"

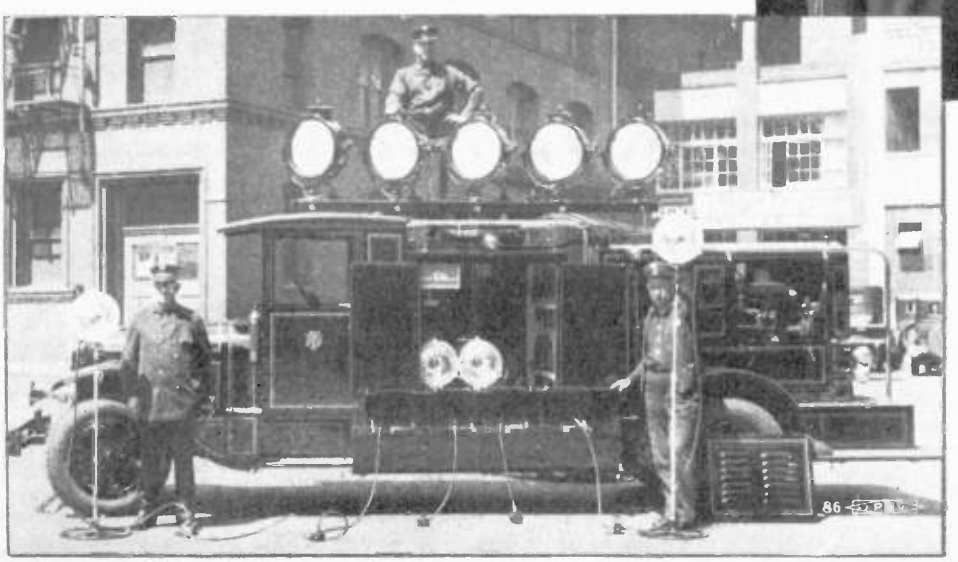
Keeping Up With *the* World

New Wrinkle in Radio for Hotels—This picture shows how Mrs. Belle Barnett turns on switch in apartment in Canterbury Court that operates a loud speaker. She has five stations at her command. Any apartment may play any of the five stations at any time without cross-talk. The master set seen in radio room off lobby. Also Mrs. Carroll Pyne.

Underwood & Underwood Photos



Here is Maxine Dunlap, 21, of Oakland, Calif., who set a new record for women and won a glider's license by staying in the air 50 seconds, 32 seconds longer than Amelia Earhart, transatlantic flyer, did.



Wide World Photos.

Joseph Dunninger, chairman of the investigating committee for psychical research in New York, puts on an amazing daylight seance by the aid of wireless showing how the public has been hoaxed by mediums for years.

The latest way of fighting night fires originates in San Francisco, where a traveling electric light plant supplies a million candle-power light with five 1,000-watt searchlights mounted atop the truck. Five hundred feet of cable is attached to each light.

Appeal *of* WCFL Again Presented *to* U. S. Senate

ANOTHER appeal of Station WCFL has been called to the attention of the U. S. Senate and has been recorded in the Congressional Record. This time it is the protest against the granting of 50,000 watts of power to Station KYW, which station operating with 5,000 watts of power already blankets Station WCFL seriously. The message reproduced below was dispatched on May 29 to Senator C. C. Dill of Washington, one of the best informed men on radio in the entire Congress. Senator Dill was so impressed with the importance of the message that he immediately called it to the attention of the Senate and secured the recording of the document in the Congressional Record for that day. The message follows:

Chicago, May 29, 1929.

Hon. C. C. Dill,
U. S. Senate,
Washington, D. C.

In furtherance of our communication addressed to the senators and printed in the Congressional Record of Monday, January 7, 1929, may we again be permitted to call to the Senate's attention that in the recent reallocation made by the Federal Radio commission on November 11, 1928, forty cleared and unlimited time channels with increased power were divided between the Radio Trust and their closely allied interests and the newspapers, and since which time the Federal Radio commission has practically declared a lockout against any and all applicants for the use of the free air. In a recent hearing WCFL, "the Voice of Labor," representing the American Federation of Labor and the Railroad Brotherhoods with a membership of some five millions of dues-paying men and women has been denied the use of one cleared unlimited time channel on the pretense that WCFL does not meet the commission's so-called requirements of "public convenience, interest or necessity."

Whereas, Station KYW at Chicago has applied to the Federal Radio commission for permission to use 50,000 watts of power and whereas Station KYW is owned by the Westinghouse Electric and Manufacturing company which also owns KDKA at Pittsburgh, a 50,000-watt station, which already blankets our station, while our own station, WCFL, the voice of five millions of working men and women, is restricted by said Federal Radio commission to 1,500 watts of power and allowed to operate only in daytime when it is of least service to the great army of organized labor and farmers, and

Whereas, said Westinghouse Electric and Manufacturing company, together with the General Electric company, the Radio Corporation of America and the National Broadcasting company as members of the Radio Trust, now control ten broadcast stations with eight cleared channels and 200,000 watts of power, and

Whereas, the air should belong to the people and not to these trusts which have undertaken to monopolize the air,

Therefore, in behalf of the entire Labor movement of these United States which has been deprived of its rights to share in the use of this great public domain, we protest against the granting of increased power to Station KYW until Congress shall have investigated the unfair apportionment of the air to these trusts and has ordered a reallocation of cleared channels held by these air monopolists.

Respectfully submitted,
WCFL, the Voice of Labor.
E. N. Nockels, General Manager.

Formal protest was also filed with Gen. Charles McK. Saltzman, recently appointed radio commissioner for the Fourth radio zone. The message sent to Commissioner Saltzman was as follows:

Chicago, May 31, 1929.

Gen. Charles McK. Saltzman,
Federal Radio Commission,
Washington, D. C.

According to the daily press, Station KYW is making application to the Federal Radio commission for a 50,000-watt construction permit. On behalf of the Labor movement of this country, we desire to enter our protest:

First, because KYW already blankets our station on 1020 kilocycles with 5,000 watts of power in Chicago; second, because KDKA in Pittsburgh on 980 kilocycles with 50,000 watts of power blankets us further, and, third, because the Westinghouse interests are not entitled to two cleared unlimited-time channels and much less to increased power of 50,000 watts in the Fourth zone, while the Labor movement of this country, representing some five millions of dues-paying members, has just been denied one lone cleared unlimited-time channel out of a spectrum of ninety channels available.

WCFL, the Voice of Labor,
Edward N. Nockels, General Manager.

Revision 22

The WCFL Radio Log

Effective May 20, 1929

Power Code	5 A	10 B	15 C	20 D	25 E	50 F	75 G	100 H	150 I	200 J	250 K	300 L	500 M	750 N	1000 O	1500 P	2000 Q	2500 R	5000 S	10000 T	15000 U	25000 V	50000 W

How to Use WCFL Radio Log

The WCFL Radio Log is the simplest, handiest and most satisfactory radio log available. It enables the operator instantly to locate any station, once the locations of the principal stations have been noted on the log. The blank columns in the center provide provide space for this purpose.

The stations are listed below in the exact order they will be tuned in as you turn your dial in one direction. Begin at the bottom; follow the column containing familiar and nearby stations; enter the settings for these stations in the space provided for this purpose. One entry will automatically log all of the stations in other columns opposite the station identified. For instance, at the place where you find Station WCFL, you will also find KJR, Seattle, Wash., and nearby you will find KDKA, Pittsburgh, and four Canadian stations.

The figures you enter will progress in numerical order, and distant stations in between may be sought intelligently—and with far better success than by any other method. The call letters of each station are followed by the name of the town in which the station is located, and following this is a bold letter. By reference to the Power Code at the top of the page it will be seen that this bold letter indicates the power of the station. This will give you some idea of the probability of success in trying to tune in that particular station—there is little use in searching for a far distant station of small power.

Technical terms such as Wave Length and Kilocycle are no longer confusing: WCFL Radio Log reduces them to simple, understandable figures applicable to your set.

*Indicates station belongs to national chain. †Columbia chain.

WCFL Radio Log is revised for each quarterly edition of WCFL Radio Magazine. However, if more frequent revisions are desired same may be had by sending $1.00 to this office for our regular Radio Log service, published in compact eight-page form from five to eight times each year.

WESTERN Wash., Ore., Cal., Utah, Etc.	MIDDLE WESTERN Minn., Ia., Neb., Mo., Tex., Etc. K.C.	Dial Setting	CENTRAL W.L. Ill., Mich., Ohio, Tenn., Etc.	EASTERN Mass., N. Y., Pa., N. C., Etc.
KWBS-KWTC-KUJ-KDB. .	KGHI Little Rock, Ark. M....1500		199.9 WAFD-WKBV-WMPC	WMBA-WLOE-WMES
.....	KGKB-KGDR-KGHX-KPJM .1500		199.9 WMBJ-WKBV-WHBW	WMBQ-WLBX-WCLB
.....	1500		199.9 WPSW	WILM-WWRL
KPWF Westminster, Cal. V	1490		201.3 WBAW-†WLAC Nashville S.	†WFBL Syracuse, N. Y. O
.....	1480	2	202.6 WORD-WSOA-WJAZ Chi. S.	WCKY Covington, Ky. S
†KGA Spokane, Wash. S...	†KFJF Oklahoma City,Okla.S.1470		204 WRUF Gainesville, Fla. S...	†WKBW Buffalo, N. Y. S
.....	*KSTP St. Paul, Minn. T.....1460		205.4	WJSV Mt.Vernon Hills,Va.T
.....	1450		206.8 *WFJC Akron, O. M.....	WTFI Toccoa, Ga. M
.....	KTBS Shreveport, La. O.....1450		206.8	WNJ-WIBS-WBMS N. J. K
KLS Oakland, Cal. K.....	WMBD Peoria, Ill. M.....1440		208.2 WNRC Greensboro, N. C. M..	WOKO-†WHEC N. Y. M
.....	1440		208.2 WTAD Quincy, Ill. M.....	WCBA-WSAN Pa. K
.....	1430		209.7 WGBC-WNBR Memphis M..	WBRL Tilton, N. H. M
.....	1430		209.7 WCAH Columbus, O. K.....	WHP-WBAK Penna. M
KFQW-KFXY-KORE-KFIF	WMBH-WLBF-KGFF-WIL ..1420		211.1 WKBP-WMBC Mich. HF....	WLEY-WSSH Mass. H
KFQU-KGFJ-KGGC-KXRO	KFIZ-KGIW-KICK-WIAS 1420		211.1 WSRO-WIBR-WAADOhioHF	WQBZ-WHIS W. Va. FH
KGRS-WDAGAmarillo,TexO	1410		212.6 WBCM Bay City, Mich. M...	.....
.....	KFLV Rockford, Ill. M.....1410		212.6 WHBL Sheboygan, Wis. M..	.....
.....	KOCW Chickasha, Okla. K...1400		214.2 WKBF-WBAA-WCMA Ind.M	WCGU-WSGH-WLTH N.Y.M
KWSC Pullman, Wash.M...	†KLRA Little Rock, Ark. O...1390		215.7 †WHK Cleveland, O. O.....	.....
KFPY Spokane, Wash.M...	1390		215.7	.....
.....	KSO Clarinda, Ia. O.....1380		217.3	KQV Pittsburgh, Pa. M
.....	WKBH La Crosse, Wis. O....1380		217.3 WCSO Springfield, O. M.....	.....
KGAR-KFUR-KOH-KFJM .	KGFG-KCRC-KGCI-KGRO ...1370		218.8 WHDF-WHBD-WJBK	WMBO-WSVS-WCBM
KZM-KRE-KGER-KWKC. .	KFJZ-KGKL-KFLX-WFBJ ..1370		218.8 WIBM-WJBO-WHBQ-WRJN	WBBL-WRAK-WELK
.....	1370	10	218.8 WGL	WRBT
KFBB Great Falls, Mont.M.	KGIR Butte, Mont. K.....1360		220.4 WGES Chicago, Ill. M.....	WMAF Dartmouth, Mass. M
KGB San Diego, Cal. K....	1360		220.4 WJKS Gary, Ind. M.....	WLEX Boston, Mass. M
.....	*KWK St. Louis, Mo. O.....1350		222.1	WMSG-WKBQ-WBNY
.....	1350		222.1	N. Y. K
KVI-KMOTacoma,Wash.OM	KFPW Siloam Springs, Ark.F.1340		223.7 †WSPD Toledo. O. M.....	.....
.....	KSCJ Sioux City, Ia. O.....1330		225.5 *WSAI Cincinnati, O. M.....	WDRC New Haven, Conn.M
.....	WTAQ Eau Claire, Wis. O....1330		225.5	.....
KID-KGIQ Idaho K.....	KGHF Pueblo, Colo. K.....1320		227.1 *WSMB New Orleans, La. M	†WADC Akron, Ohio O
KMED-KFBK-KGEZ	KGHG-KTSL-KFXR-KCRW .1310		228.9 WKBI-WHFC-WEHS-WJAK	WOL-WKAV-WEBR
KFUP-KFXJ-KOY	WDAH-WLBO-WKBS-KFJY .1310	12	228.9 WRK-WAGM-WBMH-WFDF	WSMD-WGH-WNAT
.....	KFGQ-WKBB-WCLS-WIBU .1310		228.9 WMBL-WTHS-WBOW	WABY-WNBH-WHBP
.....	1310		228.9 WRBI	WFBG-WRAW-WSAJ
KTBR-KFJR Port., Ore. M.	†KFH Wichita, Kans.M.....1300		230.6	WBBR-WHAZ New York O
KGEF-KTBI Los Angeles O	†WIBW Topeka, Kans. O.....1300		230.6	WEVD-WHAP New York M
†KDYL Salt Lake City O...	KFUL-†KTSA Texas, O.....1290		232.4	†WJAS Pittsburgh, Pa. O
†WRR Dallas, Tex. M.....	*WEBC Superior, Wis. O.....1280		234.2 †WDOD Chattanooga,Tenn.O	.....
.....	WDAY Fargo, N. D. O.....1280		234.2	WOAX-WCAM-WCAPN.J.M
KOL-KTW Seattle, Wash. O	†WDSU New Orleans, La. O..1270		236.1 WASH-WOOD Gr. Rpds. KM	WFBR Baltimore, Md. K
.....	KFUM Colo. Springs, Colo. O..1270		236.1	WEAI Ithaca, N. Y. M
KRGV-KWWG Texas MO..	†KOIL Council Bluffs, Ia. O...1260		238 *WJAX Jacksonville, Fla. O.	†WLBW Oil City, Pa. M
KFOX Long Beach, Cal. O..	WLB-WGMS-†WBHM M. O....1250		239.9	WODA Paterson, N. J. O
KXL Portland, Ore. O.....	KFMX-WCAL Northfield O...1250		239.9	WAAM-WGCP Newark M
.....	KTAT Ft. Worth, Tex. O.....1240		241.8 WRBC Valparaiso, Ind. M...	WQAM Miami, Fla. O
.....	WJAD Waco, Tex. O.....1240		241.8 †WGHP Detroit, Mich. N....	.....
KFIO Spokane, Wash. H...	1230		243.8 †WFBM Indianapolis, Ind. M	†WNAC-WBIS Boston O
†KYA San Francisco, Cal. O	1230		243.8 WSBT South Bend, Ind. M..	WPSC State College, Pa. M
.....	KFKU-*WRENLawrence,Ks.O.1220		245.8	*WCAE Pittsburgh, Pa. M

Courtesy of HAYNES' RADIO LOG, 608 So. Dearborn St., Chicago, Ill.

Revision 22

The WCFL Radio Log

Effective May 20, 1929

Copyright, 1928—By Walter Haynes—Patent Pending

Power Code	5 A	10 B	15 C	20 D	25 E	50 F	75 G	100 H	150 I	200 J	250 K	300 L	500 M	750 N	1000 O	1500 P	2000 Q	2500 R	5000 S	10000 T	15000 U	25000 V	50000 W

WESTERN Wash., Ore., Cal., Utah, Etc.	MIDDLE WESTERN Minn., Ia., Neb., Mo., Tex., Etc.	K.C.	Dial Setting	CENTRAL W.L. Ill., Mich., Ohio, Tenn., Etc.	EASTERN Mass., N. Y., Pa., N. C., Etc.
KPQ-KPCB Seattle,Wash.H	KFYS-KWEA-KDLR	1210		247.8 WLBV-WEBE-WSIX-WRBQ	WJBI-WGBB-WINR
KFEY Kellogg, Idaho B...	KFOR-KGCR	1210	20	247.8 WGCM-WHBU-WCBS	WCOH-WPAW-WDWF
	WHBF-WIBA-WOMT	1210		247.8 WSBC-WCRW-WEDC	WBAX-WJBU-WMBG
		1210		247.8	WRBU-WMBR
KFWC-KPPC-KXO-KMJ	WBBZ-WMT-WCAT-WMAY	1200		249.9 WFBE-WLAP-WABZ	WABI-WCAX-WEPS-
KSMR-KWG-KGEW-KVOS.	KGDE-KFJB-KGFK	1200		249.9 WRAF-WWAE-WJBL	WKBE-WIBX-WBBW-
KGY-KFHA-KGEK	KFWF-KGDY-KFKZ-KGCU	1200		249.9 WJBC-WCLO-WHBY-WFBC	WLBG-WPRC-WKJC
		1200		249.9	WBBY-WRBL
KEJK Beverly Hills, Cal. M	*WOAI San Antonio, Texas S.	1190		252	WICC Easton, Conn. M
KOB State College, N. M. T	WDGY-WHDI Minneapolis M.	1180		254.1	WGBS New York M
†KEX Portland, Ore. S.		1180		254.1	
	KTNT Muscatine, Ia. S.	1170		256.3	†WCAU Philadelphia, Pa. S
		1160		258.5 †WOWO Ft. Wayne, Ind. S.	WWVA Wheeling, W. Va. S
		1150		260.7	*WHAM Rochester, N. Y. S
	*KVOO Tulsa, Okla. O.	1140		263 *WAPI Birmingham, Ala. S.	
*KSL Salt Lake City, UtahS		1130	24	265.3 WJJD Chicago, Ill. U.	WOV New York O
KFSG Los Angeles, Cal. M.		1120		267.7 †WISN-WHAD Milwaukee K	WCOA Pensacola, Fla. M
KMIC Inglewood, Cal. M.	KUT-WTAW Texas M.	1120		267.7 CFRC Kingston, Ont. M.	WDEL Wilmington, Del. K
	KSOO Sioux Falls, S. D. Q.	1110		270.1	*WRVA Richmond, Va. S
		1100		272.6	WLWL New York S
KGDM Stockton, Cal. F.		1100		272.6	WPG Atlantic City, N. J. S
	†KMOX St. Louis, Mo. S.	1090		275.1	
		1080	27	277.6 WCBD-WMBI Chicago S.	*WBT Charlotte, N. C. S
KJBS San Francisco, Cal. H	WDZ-WCAZ Illinois H.	1070		280.2 *WTAM-WEAR Cleveland R	WAAT Jersey City, N. J. L
KWJJ Port., Ore. M.	WJAG Norfolk, Nebr. M.	1060		282.8	*WBAL Baltimore, Md. T
KNX Los Angeles, Cal. S.	KFKB Milford, Kans. S.	1050		285.5 †WFBM Indianapolis, Ind. V	
†KRLD Dallas, Tex. T.	*KTHS Hot Springs, Ark. S.	1040		288.3 WKAR E. Lansing, Mich. O.	WKEN Buffalo, N. Y. O
CNRV Vancouver, B. C. M.		1030		291.1	CFCF Montreal, Que. P
		1020	30	293.9 *KYW-KFKX Chicago, Ill. S	WABF-WRAX Penna. K
	KGGF Picher, Okla. M.	1010		296.9 WSIS Sarasota, Fla. K.	WPAP-WQAO N. Y. K
KQW San Jose, Cal. M.	WNAD Norman, Okla. M.	1010		296.9	WHN-WRNY N. Y. K
KPLA Los Angeles, Cal. M.	*WHO Des Moines, Iowa S.	1000		299.8 *WOC Davenport, Ia. S.	
		990		302.8	*WBZ-WBZA Boston UM
		980		305.9	*KDKA Pittsburgh, Pa. W
†KJR Seattle, Wash. S.		970	36	309.1 *WCFL Chicago, Ill. P.	
CKCK-CNRR Regina M.	CJBR-CHWC Regina, Sask. M	960		312.3 †CFRB King, Ont. O.	CKGW Toronto, Ont. S
KPSN Pasadena, Cal. O.	†KMBC Kansas City, Mo. M.	950		315.6	*WRC Washington, D. C. M
KFWB Hollywood, Cal. O.	WHB Kansas City, Mo. M.	950		315.6	
KOIN Portland, Ore. O.	KFEL-KFXF Denver K	940		319 WFIW Hopkinsville, Ky. O.	*WCSH Portland, Me. M
KFWI San Francisco, Cal.M	KGBZ York, Nebr. M.	930		322.4 †WBRC Birmingham, Ala. M	CHNS Halifax, N. S. M
KFWM Oakland, Cal. M.	KMA Shenandoah, Ia. M.	930		322.4	†WDBJ Roanoke, Va. M
*KOMO Seattle, Wash. O.	*KPRC Houston, Texas O.	920		325.9 *WWJ Detroit, Mich. O.	
CFQC-CNRS Saskatoon M.	CJHS Saskatoon, Sask. K.	910		329.5	CJGC London, Ont. M
KHJ Los Angeles, Cal. O.	*WKY Okla. City, Okla. O.	900		333.1	†WMAK-†WFBL N. Y. N
KGBU Ketchikan, Alas. M.		900		333.1 WLBL Stevens Pt., Wis. Q.	WFLA-WSUN Florida O
	KFNF Shenandoah, Ia. M.	890		336.9 WMMN Fairmont, W. Va. K	WGST-WMAZ Georgia K
	KUSD Vermillion, S. D. M.	890		336.9 WILL Urbana, Ill. K.	*WJAR Providence, R. I. K
KLX Oakland, Cal. M.	KFKA-KPOF Colorado M.	880		340.7 WCOC Columbus, Miss. M.	WGBI-WQAN Scranton K
		870	43	344.6 *WLS-*WENR Chicago SV.	
KFQZ Hollywood, Cal. O.		860		348.6	†WABC New York S
	KWKH Shreveport, La. S.	850		352.7 WWL New Orleans, La. S.	
CHCT-CKLCRedDeer,Alta.O	XEX Mexico City M.	840		356.9 CFCA-CNRT Toronto M.	CMC Havana, Cuba M
	*KOA Denver, Colo. U.	830		361.2	WHDH Gloucester, Mass. O
		820		365.6 *WHAS Louisville, Ky. T.	
	†WCCO Minneapolis T.	810		370.2	WPCH New York M
	*WBAP Ft. Worth, Tex. T.	800		374.8	
	*WFAA Dallas, Tex. T.	800		374.8	
*KGO Oakland, Cal. T.		790		379.5	*WGY Schenectady, N.Y.W
KELW-KTM California M.	CKY-CNRW Winnipeg S.	780		384.4 *WMC Memphis, Tenn. O.	†WTAR-WSEA Virginia M
	KFAB Lincoln, Nebr. S.	770	55	389.4 †WBBM-WJBT Chicago, Ill. T	
	WEW St. Louis, Mo. O.	760		394.5	*WJZ New York V
		750		399.8 *WJR-WCX Detroit S.	
	KMMJ Clay Center, Nebr. O.	740		405.2 *WSB Atlanta, Ga. T.	
	XEN Mexico City Q.	730		410.7 CNRM Montreal O.	CHYC-CKAC Montreal NO
		720	63	416.4 *WGN-WLIB Chicago, Ill. V	
KFVD Culver City, Cal. K.		710		422.3	†WOR New York S
		700		428.3 *WLW Cincinnati W.	
CFAC-CNRC Calgary M.	CFCN-CJCJ Calgary PK.	690		434.5 NAA Arlington, Va. O.	CNRO-CKCO Ottawa MO
*KPO San Francisco, Cal. O		680		440.9	*WPTF Raleigh, N. C. T
		670	70	447.5 †WMAQ Chicago, Ill. S.	
	WAAW Omaha, Nebr. M.	660		454.3	*WEAF New York W
		650		461.3 *WSM Nashville, Tenn. S.	
*KFI Los Angeles, Cal. S.	XFG Mexico City Q.	640		468.5 WAIU Columbus, O. S.	
CFCT Victoria, B. C. M.	KFRU Columbia, Mo. M.	630		475.9	†WMAL Washington, D.C.K
CJGX Yorkton, Sask. M.	WOS Jefferson City, Mo. M.	630		475.9 WGBF Evansville, Ind. M.	
KFAD Phoenix, Ariz. M.		620		483.6*WTMJ Milwaukee, Wis. O.	WLBZ Bangor, Me. K
*KGW Portland, Ore. O.		620		483.6 WJAY Cleveland, O. M.	WDBO-WDAE Florida O
KFRC San Francisco, Cal. O	WOQ-*WDAF Kas. City, Mo. O	610		491.5	WIP-†WFAN Phila. M
KWYO Laramie, Wyo. M.	CJRM-CJRW Saskatchewan M	600		499.7 †WREC Memphis, Tenn. M.	*WTIC-WCAC Conn. K
KFSD San Diego, Cal. M.	WEBW Beloit, Wis. K.	600		499.7 WOAN Lawr'b'g, Tenn. M.	†WCAO Baltimore, Md. K
*KHQ Spokane, Wash. O.	*WOW-WCAJ Nebraska OM.	590		508.2 WEMC Berrien Sp., Mich. O.	*WEEI Boston, Mass. O
CJCA-CKUA Edmonton M.	WSUI Iowa City, Ia. M.	580		516.9 WOBU-WSAZ W. Va. K.	*WTAG Worcester, Mass. K
	KSAC Manhattan, Kans. M.	580		516.9 CKCL-CKNC Toronto M.	CJSC Toronto, Ont. M
†KMTR Los Angeles, Cal. O	WNAX Yankton, S. D. O.	570		526 WKBN-WSMK Ohio MJ.	WSYR-WMAC N. Y. K
KXA Seattle, Wash. M.	KGKO Wichita Falls, Tex. K.	570	91	526 WPCC-WIBO Chicago MO.	†WWNC Asheville, N. C. O
KUOM Missoula, Mont. M.	KUOA Fayetteville, Ark. M.	570		526 WHA Madison, Wis. N.	WMCA-WNYC N. Y. M
†KLZ Denver, Colo. O.	KFEQ St. Joseph, Mo. R.	560		535.4	*WFI-*WLIT Phila. M
KFDM Beaumont, Tex. M.	WOI Ames, Iowa R.	560		535.4 WNOX Knoxville, Tenn. O.	*WIOD-WMBF Miami MO
KFDY Brookings, S. D. O.	*KSD-KFUO St. Louis, Mo. M.	550		545.1 †WKRC Cincinnati, O. M.	*WGR Buffalo, N. Y. O
KTAB Oakland, Cal. M.	KFYR Bismarck, N. D. M.	550		545.1 WEAO Columbus, O. N.	†WEAN Providence, R. I. M

Courtesy of HAYNES' RADIO LOG, 608 So. Dearborn St., Chicago, Ill.

Leave It *to* Eddie

A Story of the Trials That Modern Inventions Bring to the Ice Man

By

ELLIS PARKER BUTLER

Author of

"PIGS IS PIGS"

"For goodness sake, Pa," exclaimed Annie, "don't act like Eddie was trying to borrow money from you."

JOHN CASEY, the Third Ward Ice Company, came in from his stable on the rear of the lot, and he was mad.

"Annie!" he shouted. "Annie, where th' divil are ye? The fried potatoes are burnin'."

There was no reply, and he threw his cap on the floor vehemently and grasped the handle of the frying-pan. It was almost red hot, and he let go of it so suddenly that both potatoes and pan went into the bowl of water standing on the floor for the dog. The bowl split in two equal halves and the water spread over the floor.

"What next? What next?" Mr. Casey asked the air of the kitchen in the tone of a man with whom things have gone just a little too far. He was in an irritated mood, partly because he was always in an irritated mood, but especially because he had been spending half a day over a sick mare in his stable and the mare had just died—one hundred and sixty good dollars gone to nothing and more to go to have the mare hauled to the bone-yard.

"Annie!" he shouted again, and Mrs. Casey put her head in from the hall.

"Easy wance, Jawn!" she said in a loud whisper. "Stop yellin'. Sneak up th' stairs and get into your good clothes. Mamie has fetched her young man home for dinner."

"Me get into my good clothes!" cried Mr. Casey. "I will not! What does she mean fetchin' some young squirt to th' house for dinner?"

"Not so loud, Jawn," whispered Mrs. Casey. "He's in th' parlor this minute tellin' me how her and him is goin' to be married."

"Married, she says!" cried Mr. Casey. "Like fun you mean. Mamie'll do no marryin' this long while yet. Annie, wait now—th' potatoes burned, and I slang them in the dog bowl——"

"No matter," whispered Mrs. Casey excitedly. "They're waitin' for me."

She closed the door, and Mr. Casey stared at it.

"What next?" he demanded bitterly of the door. "Mamie'll be marryin' will she? And I do but finish payin' for th' stenography schoolin' for her! There's a fine way to ack. Ye give a girl an eddycatin an' th' momint she is fitted t' earn a part of what ye spint on her she quits ye. I will not put on anny clothes. Be hanged if I put on anny clothes!"

The hall door opened again, and Mamie came into the kitchen and closed the door.

"Pa," she exclaimed ecstatically, "Eddie is here! And what do you think? I'll give you three guesses."

"Eddie!" said Mr. Casey sarcastically. "Eddie who, may your father take th' impertininee t' ask you? And I need no three guesses with your mother already yellin' her head off at me. But hark ye, Mamie—ye'll not be marryin' no Eddie nor yet no Jimmie nor no Sammie. Get your mind off it if it's on your mind."

"Yes, that's all right," said Mamie hurriedly, paying no more attention to what her father said than she usually did. "You'll just love him, Pa. He's the dearest thing! But—oh, yes, go right up and put on your other clothes, and rush over to the store and get a quart of ice-cream. Peach. No, peach and strawberry mixed. And, Pa, don't forget to put on a necktie. And—oh, yes; get a bottle of olives—big ones."

"Olives!" cried Mr. Casey. "Me buy a bottle of olives! Do you think I'm crazy? Me buy olives!"

"Stuffed ones," said Mamie. "And hurry, Pa."

"Indeed!" said Mr. Casey sarcastically, but Mamie was no longer there to hear him. "'Put on your other clothes and go get a bottle of olives! And hurry, Pa!' Sure I'll hurry! I'll run me head off t' buy olives for some grease-haired jazz-hound to eat at my expinse. I will not! I see Jawn Casey puttin' on his Sunday-go-to-mass clothes t' go t' th' store an' say, 'Please do up a quart of peach ice-cream and make it half strawberry,' because some young pup that don't earn enough to pay his board has come to my house to eat on me. Since when have I been messenger boy for a college-cut cake-eater?"

He picked up the two halves of the dog's bowl, and, seeing no place to put them except the floor, put them back on the floor. This brought him near the sink, so he washed his hands, using the brown soap.

"What next?" he said. "Olives for the fine gintleman that's done me th' honor of comin' to th' house for a free eat. Will I get them? I will not—not in ten thousand years. 'Annie!'" he yelled.

There was no answer.

"Annie," he shouted, "I'm goin' out, and I'll not be back till late."

He glared at the door and took up his cap and drew it on so viciously that his ears stuck out beneath it. Then he went out into the dusk. Ten minutes later he opened the kitchen door and put a bottle of stuffed olives on the kitchen table; the ice-cream, half peach and half strawberry, he put in the refrigerator. There was one thing of which the Caseys always had plenty—ice.

Five minutes after that Mrs. Casey in the parlor heard a loudly whispered "Annie!" from the head of the stairs, and went into the hall to have Mr. Casey ask her where his collars were, and not long after that Mr. Casey came down the front stairs, looking for all the world like an iceman ready for church. He went to the parlor door, and a young man in a neat blue serge arose to greet him.

"How do ye do?" said Mr. Casey.

"Pa, this is Eddie," said Mamie. "His name is Eddie Murphy, Pa."

"How do ye do?" said Mr. Casey again.

Eddie Murphy took Mr. Casey's hand and shook it and found it hard and horny but unresponsive.

"Oh, for goodness sake, Pa!" exclaimed Mamie. "Don't act as if you were afraid Ed was going to borrow money. All he's going to do is marry me, and that ain't anything to have fits about, is it? I've got to marry some one some time."

"Mr. Casey ain't feelin' very well," said Mamie's mother. "One of his horses that was a mare got I-don't-know-what and is like to die on him anny minute."

"It's dead, if it does you any good to know it," said Mr. Casey sourly, "though little enough anny of this family cares what happens."

"Ah, th' mare is dead!" exclaimed Mrs. Casey. "Mamie, the mare is dead."

"Well, I heard Pa say so, Ma," Mamie responded. "Gosh knows, I'm sorry. We'll never hear the last of it now."

"That's the trouble with horses," said Eddie, politely ignoring Mr. Casey's slightly unfriendly demeanor. "Horses will die. Now, that's one thing about an automobile truck. Of course, if an automobile truck is not taken care of——"

"Is that so!" said Mr. Casey rather rudely. "An ottymobel truck will not die, will it not? You must be profissor of a college t'know such a lot about ottymobel trucks, Mister Murphy. I am pleased to meet a gintlemen with so much knowlidge. No doubt you can inform me, do ottymobel trucks git th' colick or suffer th' heaves an' th' glanders."

Eddie Murphy colored. He was not angry, because he could not be angry with Mamie Casey's father, but he knew that Mr. Casey was trying to be insulting, and Eddie Murphy was not normally a young man to accept insults. He was no child. He was twenty-nine, and for five years, beginning when he was twenty, he had dallied with the profession of prize-fighter and had not been such a poor user of footwork and fists. Only his desire to be something finer than a fighter had caused him to leave the ring. He had considered that a fighter's successful days are not long, and that a good salesman is always in line for better and better jobs, and Eddie Murphy had become a good salesman. With what he had won in the ring and his savings from his salary as salesman he now had quite a tidy little sum invested in good stocks that were listed on the Stock Exchange. He still retained his fighter's physique, and, big as Mr. Casey was, he could have picked him up and thrown him through a window, but he was disinclined to do so not only because he was in love with Mamie, but because his was not the temper that leads to throwing men through windows.

"Well, there's a lot in that," he said pleasantly to Mr. Casey. "I guess I do shoot off my mouth a little too freely, Mr. Casey. You know a lot more about your business than I do. If you thought automobile trucks were better than horses, you'd have trucks, I guess. I beg your pardon."

"I don't need annywan to tell me how to run my business," said Mr. Casey, still belligerently.

"Of course you don't," agreed Eddie Murphy.

"I know how to run the ice business the way it should be run," declared Mr. Casey.

"You bet you do," said Eddie heartily. "How long have you been in the ice business in this town, Mr. Casey?"

"Too dang long," said Mr. Casey. "It's a dog of a business."

"Lots of work and small profits," said Eddie agreeably. "I know how it is. And everybody yelling at you because a fifty-pound piece of ice isn't as big as a house or bigger."

"You said it!" said Mr. Casey as Mamie gestured at Mrs. Casey and Mrs. Casey retired to the kitchen. "Maybe ye'd like t' smoke a cigar, Mr. Murphy?"

"Well, thanks, no," said Eddie. "I don't smoke."

"It's no matter," said Mr. Casey. "I have no cigars at the prisint momint, annyway, but I thought maybe if you wanted a cigar we would walk around t' th' store and buy wan. Yes, th' ice business is a dog's life, like you say, Mr. Murphy. Twinty-sivin years next May th' first I've been th' Third Ward Ice Company, mind you, and where has it got me? Keep out of it."

"That's right," said Eddie. "That's good advice from a man who knows."

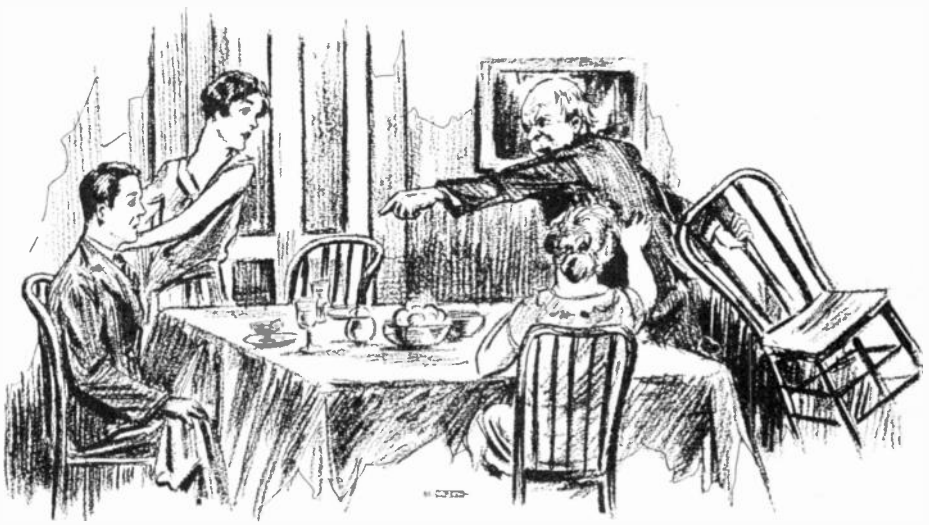
"What line might you be in?" asked Mr. Casey.

"Well," said Eddie, "when I was twenty I took up prize-fighting. Light heavy-weight class——"

"Well, that's a good business, too," said Mr. Casey. "Now, you take this Delaney feller. You take Dempsey. Take Fitzsimmons. But none of them was th' equil of old Jawn L. Sullivan. I was named after him—Jawn L. Sullivan. Jawn Casey. Arter Jawn L. Sullivan."

"You don't mean it! He was a grand old man. But I quit the prize ring," said Eddie.

"Well, I don't know but what you done good," said Mr. Casey, nodding his head approvingly. "As man to man," he added, "this collar is chokin' me to death."



"Git Your Young Man Out Before Murder Is Done"

"Pa," said Mamie, "leave your collar on. I think for once in your life you might wear a collar when it is Eddie's first visit to the house."

"Oh, well!" said Mr. Casey, with resignation. "It won't be long till dinner is done. What did you say your business was, Mr. Murphy?"

"Tst!" sibillated Mamie warningly, but not to her father. Eddie looked at her with surprise.

"Eddie is a salesman," said Mamie.

"An' there's no better way to get started," said Mr. Casey. "What line did ye say ye was in, sir?"

For only a moment Eddie hesitated, but when he glanced at Mamie he saw her shaking her head vigorously.

"I'm in the—ah—mechanical appliance line, you might say," said Eddie. "Just now, I'm selling a—well, a sort of household necessity. I believe in the modern improvements. Labor-saving by machinery, don't you see?"

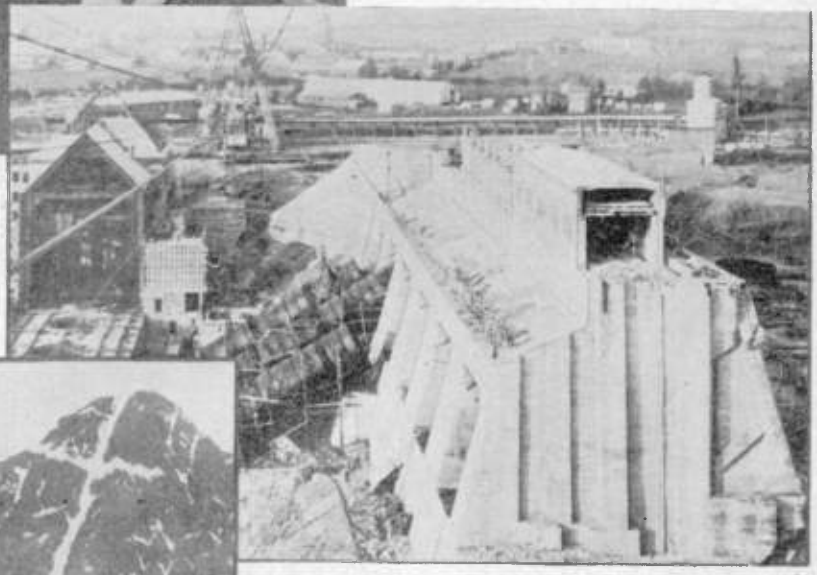
"Well, yes," said Mr. Casey, in a tone that gave labor-saving machinery his thoughtful approval. "There's a lot to be said for them things. Take th' vacuum cleaner, f'r instince. There's quite an invintion— (*Continued on page 68*)

Some Picture Broadcasts

Another Mystery Solved—How chorus ladies keep their backs so beautiful. Here we see Gladys Astor, Geraldine Wright, Edna May French and Ray Davis of George White's Scandals taking their daily bath in violet rays. Makes up for loss of natural sunshine.

The biggest hydro-power works in the world at the Shannon River, Ireland, will be completed soon. Costs so far are about $18,000,000. This plant will deliver 70,000,000 millions of kilowatt hours, and produce 36,800 H.P. and are able to furnish all Ireland with electricity.

Pilgrims Lift Up Their Eyes Unto the Hills—A devout party of travelers on Notch Mountain in the Colorado Rockies holding services in view of the Holy Cross Mountain. Note the variety of costumes and the evident earnestness of the worshippers under primitive conditions.



Wide World Photos.

Here is the latest development in the field of television—portable transmitting or broadcasting set—being demonstrated at Station WYG. David Wark Griffith speaking and being televised.

Underwood & Underwood Photo.

Yacht Mayflower, which served five presidents in the last 33 years, being towed into Philadelphia Navy Yard. President Hoover has decided to forego the use of the yacht and at the same time reduce the national expense by $300,000 yearly. Originally the Mayflower was a private yacht.

Summer 1929

Farmers Union Directory

National President.....C. E. Huff, Salina, Kansas
National Vice-pres., Joe Atkins, Wissington Springs, South Dakota
National Secretary-treasurer, James O'Shea, Billings, Montana
Farmers Union Northwest Headquarters, Guardian Life Building, St. Paul, Minn.
Farmers Union Mutual Life Ins. Co., Des Moines, Ia.
Farmers Union Mutual Fire Ins. Co., Des Moines, Ia.
Farmers Union Mutual Ins. Co. of Kansas, Salina, Kas.
Farmers Union Terminal Association, Guardian Life Bldg., Saint Paul, Minnesota
Farmers Union Livestock Commission, So. St. Paul
Farmers Union Livestock Com., U. S. Yards, Chicago
Farmers Union Service Association, Des Moines, Iowa
Farmers Union Exchange, Guardian Life Building, St. Paul, Minnesota
Farmers Union Herald (National Paper), Guardian Life Building, St. Paul, Minn.

Farmers Union Radio Committee

Milo Reno, Des Moines, Ia.; C. A. Guthrie, Salina, Kas., and D. D. Collins, Belle Fourche, So. Dak.

Joint Radio Endeavor

The coming together of the Chicago Federation of Labor and the Farmers Educational and Co-operative Union of America significantly points the way to accomplishment through solidarity of toilers. The agreement between these two bodies is unique in that the greater weight of burden was assumed by the Federation of Labor. The outstanding features of the contract provide that:

The time for broadcasting be equally divided between the two organizations.

The entire expense of operating the station be maintained by the Federation of Labor.

The Farmers Union to pay 25 cents a quarter for a subscription to WCFL Radio Magazine for each member as the states in which the Union elects to become a party to the contract.

After the expense of operating the station and publishing the magazine are paid the revenues are to be divided equally between the two organizations.

Volume 2
No. 3

Issued Quarterly

Farmers Union Section

WCFL RADIO MAGAZINE

Voice of the Farmer and Labor

OFFICIAL QUARTERLY PUBLICATION OF

WCFL RADIOPHONE BROADCAST STATION

and the Co-operative Farmer-Labor Radio Listeners' Association

EDWARD N. NOCKELS, Chicago
Managing Editor

150

L. W. AINSWORTH, Des Moines, Ia.
Associate Editor

Solving *the* Farm Problem

Men of Vision Say Job Will Be Done Within the Next Ten Years

THE agricultural millenium is due within the next ten years, we are told by men of vision and experience. The old "farm problem" is soon to pack up his kit of troubles and vamoose. He is to be gone a long while, perhaps never to come back. The golden age of farming is soon to be upon us.

A number of movements under way are expected to contribute to the glorious consummation. Dr. A. F. Woods of the United States Department of Agriculture mentions as the three chief agencies of prosperity for the farmer, the further development of co-operative marketing organizations, better methods of production and a restriction of the amount of new land opened to farming.

Already the business done by co-operative marketing concerns in the United States amounts to over $2,500,000,000 annually, but a still wider growth is expected to follow the passage of the farm relief bill now before Congress.

BETTER PRODUCTION METHODS

It seems significant that among agricultural leaders there is a practical agreement on the necessity of better production methods to insure agricultural prosperity. Since efficiency experts have taken hold of this problem some startling plans have been developed for a new agriculture.

Applying the methods of scientific laboratory research and business efficiency to the problems of food production, a distinguished engineer, Arthur J. Mason, obtained results that have led to the following recommendations on the production problem:

(1) To stop sheet washing and erosion use a crop to bind the land together in the manner the ancient prairie sod did.

(2) An agriculture in which men will work in groups as men in cities work in groups.

(3) Continuity of operation.

(4) Lengthening the growing season.

(5) In handling the product at every stage use only machinery.

(6) An increase in yield per acre of animal feed at least threefold that which we now accomplish.

(7) A remuneration two or three times as much as that now obtained to all engaged in the production, which can be done without increasing the market value of the product.

One of the most amazing proposals of Mr. Mason, which has the endorsement of the Department of Agriculture, is the substituting of green harvests for golden or mature harvests—the cutting of crops while green and immediately putting in others. Listen to Engineer Mason:

"Crops are three or four times more valuable when green. When green crops are cut more frequently it overcomes a frightful waste. The poet may look upon the harvest as beautiful, but to the scientific farmer it is a dreary waste."

When Mr. Mason handles his green harvest, he applies heated air to take out the moisture and this permits grinding or baling the crop for distribution. He calls his method a "portable summer," which consists of a huge fan and heater. Alfalfa or other hay crops may be cut in the rain and within a half hour baled and ready for shipment.

Not only does this method multiply by three the dollars per acre yield, but the product is higher in protein and nitrogen and other valuable constituents. Thus two or three crops are taken instead of one.

It is by this method that Mr. Mason hopes to solve the problem of soil erosion, which is costing America one-sixteenth of an inch of its soil every year due to washouts by rain.

Mr. Mason contends that his plan permits the growing of crops in places now considered impractical, if not impossible. He urges the raising of more alfalfa because it contains the flesh building nitrogen and is a greater, better crop than corn. In fact, he would substitute to a very large degree the growing of alfalfa for corn.

When oats are cut green and the moisture removed, they are found to be much more digestible. Green oats dried smell and taste like malted milk. The oats contain more protein. The plant contains eight per cent of minerals of which only two per cent are in the grain. The main object of animal feeding is to get minerals, particularly lime, in the milk. While this crop is rich in vitamins, any crop loses its vitamins as it turns yellow in the field.

VALUABLE FEED CROP WASTED

Pea vines artificially dried are declared to be worth more than the bean and are better food than alfalfa. Yet in Wisconsin and other pea states acres of valuable pea crops are wasted.

As the new order approaches we are seeing farms designed just as an engineer designs a specific machine for a particular use.

Farm operations appear to be based on the antiquated idea that 160 acres is the best size. In the purchase of land the amount of money available is the chief factor in determining in the mind of the purchaser how much he will buy. It is after he has made his purchase that he plans his operation of the land.

In years gone by there were undoubted advantages in this method, but now the size of the farm could well be determined by the available or desired number of labor units and by the acreage, under any particular system of farming, which can be operated most profitably and

economically with the designated number of workers and most suitable units of power and machinery.

Many present-day farms can well be redesigned. The constant replacement of machinery, mechanically sound but economically obsolete, has helped bring the manufacturing industry to its present high state of efficiency and low production costs. Due to the many and, in some cases, revolutionary changes that have come in production machinery, it probably would pay every farm operator to study his layout, his available labor and machinery, set up a theoretical plan for modernizing his methods and equipment and then work toward the completion of this plan as fast as practical.

The farm is fast coming to be recognized as a specialized factory and the farmer as a manufacturer whose raw materials are the minerals in his soil, the gasses of the air and the rain and dew, which through the life process by use of solar energy as power are converted into organic materials for the use of man.

FARM FACTORY—CITY FACTORY

The logic of events points to a closer alliance between the farm factory and the city factory to the benefit of both. The manufacture of hides into leather, or straw into paper, potatoes into starch and of many other agricultural raw materials into industrial products constitutes a line of important chemical activities with which the farmer should have close relations.

The widening utilization of farm by-products is seen in the history of cottonseed, which in 1860 was garbage, in 1870 fertilizer, in 1880 a cattle feed, and in 1890 human food and many other things. There are reasons for confidence that the residue of the cotton fields and grain fields, which is five times in weight that of the lint and grain obtained, will find a way into profitable uses in the manufacturing industries.

The master of the National Grange, Louis J. Taber, is bold enough to say that chemistry can provide more farm relief than any legislation congress may pass. Through the discovery of new uses for agricultural product the troublesome surplus will disappear. It is surplus that forms a large part of the agricultural problem.

FIFTY PRODUCTS FROM CORN

More than fifty products are now made from corn. These include soap glycerine, salad oil, glue, rubber substitute, fertilizer, sirup and starch. Bills are before congress to make possible the use of 43,000,000 additional bushels of corn in sugar, 38,000,000 additional bushels in the manufacture of industrial alcohol, 20,000,000 additional bushels in the lacquer industry, 17,000,000 additional bushels in cattle feed in place of imported oil cake, 60,000,000 additional bushels in starch in place of imported tapioca and sago starch, and 1,200,000 additional bushels in place of imported sesame oil.

The most eminent and worthy medical authorities, as well as the Department of Agriculture, recognize the purity, wholesomeness and food value of pure corn sugar dextrose as now manufactured and widely used in many food products.

Legislation that will give adequate protection and also remove the discrimination against sugar made from corn will be a mighty boost for the corn belt farmer.

Mr. Glucose, the Farmer's Friend

RELIEF for the corn belt farmer seems to be coming faster through manufacturers of glucose or dextrose than through Congress. This produce is what is commonly called corn sugar. Its use has become phenomenally large and is bound to get still bigger and contribute still more to maintaining corn prices at the present high level.

In 1919 the total corn sugar produced in this country was 100,130,000 pounds. In 1928 the production was 968,600,525 pounds—almost 1,000 percent increase.

The importance of these figures is better understood

Mass Production in Egg Industry

How many are 100,000 eggs? This picture may help to answer the question. Gathered in buckets and laid out for inspection are three-fourths of the average day's output at Runnymede Farms, Los Angeles, the world's largest poultry plant.

One hundred acres are devoted to the raising of chickens. The farm houses 300,000 laying hens and 200,000 baby chicks, and the annual egg production is 30,000,000. More than 1,000,000 pounds of poultry feed is consumed yearly.

when one realizes that at least 25,000,000 bushels of corn were required to fill the demand for corn sugar last year.

Bakers, confectioners and ice cream makers use considerable corn sugar, in spite of discriminatory acts against it. The tanning and silk industries take quite a bit, and glucose forms an integral part of some cattle feeds. Perhaps it finds its largest outlet in the manufacturing of intoxicating drink. According to Prohibition Commissioner Doran, 95 percent of the whiskey consumed in United States is made from corn sugar.

It is sold in almost any store in forms, ranging from syrup to dry sugar. Crude sugar forms the market bulk of the entire product—already a big infant industry.

About The Farmer Who Feeds Us All

Perils of the Food Producer

THE business of growing foodstuffs is about the most ticklish business of all. The farmer-producer has to sell his perishable goods at today's market. They cannot be held. He is sure to make a bit of money or go flat broke, and do it pretty quickly. Little wonder that farmers are down on all gambling. They are conspicuous victims of crop and market hazards.

Often when there is a bright outlook, the farmer rushes in for expansion. Particularly is this so in truck crops, and he has sorrow for his reward. As an instance the lettuce acreage in the Imperial Valley of California was lifted from 20,000 acres in 1924 to 34,000 in 1927, increasing production 41 percent. The net result to growers was that in 1927 they received $4,796,000, whereas for the smaller 1924 crop they got $6,327,000.

Missouri in 1925 had 11,960 acres of strawberries. The average yield was 2,100 quarts an acre, the average price to growers 19 cents a quart, and the total farm value of the crop was $4,772,000. In 1928 the acreage in Missouri was increased to 26,490 acres and the yield per acre was only approximately half that of 1925, or 1,065 quarts an acre. However, total production increased: the average price paid to growers as a result declined to 11 cents a quart and the total farm value was $3,103,000.

Strawberry planting increased over 57,000 acres or 40 percent in 1928 in the United States as compared with 1925, while the total farm value of the berries increased only about $40,000,000 or about 9 percent.

So it seems that the more the farmer raises the worse off he is, while the manufacturer can store his product and wait a favorable market turn. Wheat, other grains and cotton are sometimes held by raisers financially able to do so, but most of them have to sell early in the season at what is offered.

The producer seems often the victim of circumstances beyond his control and a proper subject for divine aid.

* * * *

Farm and City to Change Places

IT is predicted that in another generation two-thirds of our population will be living in cities. More than one-half do now and the curve is strongly upward.

The one-third who will then run our farms will have things pretty much to their liking. They will have a ready and steady domestic market for their products. The shoe will be on the other foot with the city dwellers protesting against the high cost of living as a direct result of this change in status.

With the groups changing places the cities will be battling to abolish tariff restrictions on food stuffs and to permit an influx of low-priced beef and grains from the Argentine. The farmers, instead of hoping for a cut in levies on some of the imported manufactured products which they could profitably use under present conditions, will be faced with the double problem of keeping import duties intact and devising trust funds and other convenient tricks for lowering their individual income taxes.

Farmers are sometimes mislead into hating the cities for getting so big. But evidently the best service a farmer can render himself is to pursuade another farmer to move to town and become a customer for farm produce instead of continuing as a competing food producer.

* * * *

Processing Cornstalks

EVER since civilized man has cultivated corn, the cornstalks have been used for rough feed and fire. If the grower had livestock around the farm, he used the stalks for winter feed. What weren't fed, were raked up in the spring and burned. If he had no cattle, he broke down the stalks in the spring with a disk, raked up the whole "crop" and burned it in windrows.

In fact, for years before beef cattle became a part of farming, the corn grower would like to have had a species of corn developed that grew on something else than stalks. The growth of a ten-foot cornstalk to bring one ten-inch ear of corn looked to him like a mistake on Nature's part.

Then one day a chemist discovered cellulose. Cellulose is a basic chemical compound which is the skeleton structure of all plant growth. Now it happens that cellulose is the basic constituent in the manufacture of literally hundreds of industrial and household necessities, such as rayon silk, insulating materials, building board, explosives, men's collars (if you still wear the old washable celluloid), combs, hairpins, imitation leather, paint, knife handles, door knobs, print paper, or what have you.

Cornstalks are plant growth, and therefore can be changed into cellulose, so that all of the articles mentioned in the preceding paragraph, plus a hundred others, are now made of cornstalks. Print paper is the latest addition to the commodities being made from cornstalks, and bids fair to lead them all. For more than half a century the paper industry has depended wholly upon wood pulp to manufacture the 12,000,000 odd tons of paper used annually in the United States. Forests are rapidly disappearing, and the industry to protect itself has bought vast forests in Canada.

Cornstalk pulp can be used for any grade of paper used today. It has a greater tensile strength than wood pulp paper, and lends itself to processing more readily than wood pulp.

An acre of corn will average 2,000 pounds of merchantable cornstalks. A ton of cornstalks will net about 800 pounds of cellulose. The "left over" or by-products are being investigated by the chemists, and it is

expected that every ounce of the cornstalk will be used when certain discoveries are verified and refinements of processing made.

About 100,000,000 tons of cornstalks are wasted every year in the corn belt. Special machinery is being developed to handle cornstalks where processing plants have been set up. The possibilities of this new use of an age old farm waste are nearly beyond imagination.

* * * *

Public Relations Engineer

ONE would hardly suspect that this high sounding title, when put in its lowest terms, is only press agent. To get into editorial offices and have the needed good word said in print for their employer requires a good front. Press agents are not in the best repute; public service engineers rank with cabinet members, ambassadors and generals and sometimes the words suggest presidents.

The big point is that the fat octopi who subsist upon the public and wish to flourish more, need smooth workers for press handlers. These gents must have eclat, aplomb, finesse. As dignified as an executive secretary and as cunning as a shell man at a county fair, the official agents of trusts know exactly when to flatter, when to coax and when to put on the pressure.

Sometimes the game is played boldly, like the grabbing of the Radio Trust, but usually monopolists move more covertly. They hire more public relations engineers. The Power Trust magnates sneak their pamphlets into schools and colleges. They look to the future. They seek a favorable state of mind on the part of the new generation. Investigations made by the Federal Trade commission show a studied and systematic effort to corrupt the public viewpoint and make things easy for monopolies. A task like this is worthy of the highest talents of diplomats. The laborer is worthy of his hire in this case and it is generally not a small one.

The work of the gifted public relations engineers sometimes moves too slowly. The magnates step on the gas. They put on a newspaper buying campaign. Recently the Power Trust has taken over two eastern city papers, where utterance on the question of trusts and monopolies will surely be inspired and dependable.

* * * *

The Passing of the Family Cow

DAIRY farmers who have been petitioning Congress to save the gentle cow from extinction by prohibiting imitation butter cunningly contrived of vegetable and animal oils, which sells for much less than regular butter, are threatened from other directions. The cow tree, which bears a milk, has been discovered and milked in Guatemala by Prof. Samuel J. Record of the Field Museum staff, who declares that the milk is not hard to take and that a cow tree dairy is easily imaginable.

In appearance and taste, milk from the Guatemala cow tree is not unlike the ordinary variety. It sours in about the same length of time, and half a liter of it taken straight produced the same effect on Professor Record as a good square meal, he declares.

It is not only the more familiar animal and vegetable fats that are competing with the dairy farmer's butter, but, through the latest triumphs of science, fish oil is emulsified and solidified and given a beautiful golden dairy color with annotto dye procured from the seeds of a tropical tree. Like the other butter substitutes, this fish oil concoction looks like butter and tastes like butter but is not butter.

The situation from the farmer's point of view is becoming more tense, because, notwithstanding the tax of ten cents a pound on margerines, they are, compared with the present price of butter, relatively cheap and are being sold in larger quantities than ever. Still cheaper, of course, is the uncolored margerine, taxed at only one-fourth of a cent a pound and sold with separate capsules of coloring matter. Since the latest substitutes for butter are not classified as margerines but as cooking compounds, they are colored and sold without tax.

If competition is the life of trade, it seems to be something that most men in business shrink from as one does from death itself. In this struggle, spokesmen for the butter men admit that the real reason for the legislation they ask of congress is that they do not like to compete with the makers of substitutes.

* * * *

Much of Chicago Lies Outdoors

HE who would understand Chicago and the secret of its magical growth within the span of a lifetime from a mere trading post to a world metropolis will find it in the fact that here is the Mecca of health and beauty as well as of trade. Its unparalleled opportunities for business have never exceeded its outdoor wonders. No wonder Chicago is called the "city of parks" and also called rightfully "the playground of the nation."

"More and Better Outdoors" continues to be the slogan of Chicagoans. One of the most thrilling pieces of late news is that we will soon have a 26-mile continuous drive along the lake front. This was assured when plans were agreed upon for the bridge that is to span the Chicago river almost at the very point where Lake Michigan empties into it. Thus united will be the north and the south.

The call of the open ever brings new highways and other ways of getting out there. It is certain that one street is to be made into a high roadway through the great west side to what lies beyond. We read of other plans for a fuller outdoor life—a north of the river drive and outlets in various directions.

As a sample of the public mind, the state legislature is being urged to acquire 2,500 acres of dunes on the north shore near Wisconsin that will be a fit rival for the wonderful dunes near Gary. And so it goes.

Nature evidently intended Chicago to be an outdoor city. Located at the southeast corner of the lake, a cool expanse of water in the summer, with prevailing easterly winds, protects the city from long periods of high temperatures. Likewise in winter the relatively higher temperature of lake water moderates and prevents cold waves. Lake breezes are rich in ozone and stimulate the mind and body.

Do you get your share of stimulant?

Another Friendly Chat About Labor *and the* Farmer

Legislation to Encourage Profitable Production in Agriculture Needed by All Classes of Toilers

By L. P. STRAUBE*

ED STRONG, secretary of the Central Trades council, in response to the insistent ringing of the door bell, turned the porch light switch. Opening the door he greeted his visitor.

"Welcome, Jim Bailey! What brings you around?"

"Your own suggestion, Ed," came the response as both men advanced to the blazing fireplace and dropped into inviting chairs. Bailey continued.

"You remember, Ed, giving me the low-down on the recent tie-up of the Farmers Union and the Labor movement? Well, I broadcasted your stuff, and it got a big hand, but your other dope didn't take so good, so I'm here for further ammunition."

"Just what is it you want cleared up, Jim? I am no mind reader. Our previous discussion covered a lot of territory. You will have to particularize," smilingly replied Strong.

"Well, Ed, our farm-born-and-bred members say you are all wet, throwing the hooks into the bankers and big business for the farmers' misery."

"In a measure they were right, Jim, for the farmers themselves are responsible. They know who is exploiting them, how the trick is turned and what it is costing them in hard dollars and cents; but, talk organization to them as the only practical means of protection, even at a fraction of what they now pay to their exploiters, and they insist they are being robbed. In this commercial age, Jim, no organization can exist without an income and the size of that income, limits the character, range and effectiveness of every organization's activities. Bankers and Big Business recognize these facts and utilize the knowledge, by playing on the farmers' stupidity and greed,—a course that prompts even organized farmers to act as traitors to their own co-operative enterprises for the sake of a few pennies more a pound for their produce, a course that destroys the very machinery of distribution on which their salvation as producers is dependent."

"Gee, Ed! The way you put it makes it seem like a hopeless mess. If these bone heads would sooner trust a slick-tongued con man than pin their faith on the honesty of some one of their own gang, why waste any time on such nuts?"

"Frankly, Jim, self-preservation is the answer. However foolish he may seem, the farmer is human. When farm returns and conditions suggest slavery, farmers will quit farming and flock to the cities to compete with labor, in its organized as well as unorganized form. This situation invests the farmer and his problems with a degree of selfish interest for organized labor, which makes it a subject that must be studied in order to find an effective remedy that will safeguard both."

"But, Ed, if the farmer won't deal on the level with his own people, how can organized labor put any faith in his promises to play the game fair and square?"

"Jim, our every activity is a speculative venture. Life itself is a gamble; progress can't be made without taking chances. The redeeming feature of the situation is that the honest and reliable element maintains so encouraging an average equality in every field of human activity as to serve as an adequate foundation upon which to erect those co-operative enterprises, which constitute an expression of practical self-help, more effective than all the faulty remedial legislation ever urged, could offer either in theory or practice."

"Speaking of legislation, Ed, raises the question, how can trades unionists, however willing, play Moses to the organized farmers and lead them into the promised land flowing with milk and honey, when most of them have not even served a farm apprenticeship, and even the legislative Solomons, with the assistance of the best of agricultural experts, can't frame up a legislative program generally acceptable?"

TOO MUCH LAW—TOO LITTLE SENSE

"I have often said, Jim, and will repeat for your benefit, that, particularly as applied to its legislative functions, this country suffers from too much law and too little common sense. The great trouble is, that too many laws are framed in the interest of favored business groups. We are living in a commercial age, ruled by money. Modern politicians are a product of the age. They regard serving self as their first and highest duty; reserving for second place, those whose wealth and consequent influence makes their enmity a calamity to be avoided; while the patient long-suffering and generally exploited public are regarded and treated as unthinking, dumb-driven cattle, lacking a memory that will carry them from one election to another, and therefore, can be treated with scant consideration. How does this explanation sound to you, Jim?"

"You're right as far as you go, Ed. Trouble is you don't go far enough to answer my question, how can Labor hope to frame a practical plan for farm relief, when the farmers themselves are so hopelessly divided?"

*This is the second of a series of discussions of the Farmer-Labor tieup by a recognized leader in the cause of Labor. He is at the front in all conflicts. His years of study and experience coupled with his first-rate ability always command attention.

"By being guided by political history, Jim, which informs us that in 1924 and again in 1926 Congress defeated the farm relief bill which was backed by the agricultural interests, due, so it was claimed, to faulty construction that made their provisions impractical. These alleged weaknesses were eliminated in the McNary-Haugen bill of 1927 which passed both houses and was vetoed by President Coolidge on the ground of economic unsoundness, and————."

"Stop a minute, Ed! Most folks invest the President of the United States with the halo of infallibility, but to me he is just a two-legged human radish, like you and I, and is just as liable to be wrong in his conclusion. To decide whether he was right or wrong calls for more knowledge of the McNary-Haugen bill and its effects, than I or the average trade unionist or farmer possess. What do you know about it?"

McNARY-HAUGEN BILL PROVISIONS

"To put it briefly, Jim, the McNary-Haugen, or agricultural surplus control bill, provided for a federal farm board to be appointed by the President, with power to dispose of surpluses of certain commodities, such as cotton, wheat, corn, rice, tobacco and swine. Each marketed unit of these commodities would contribute, in the form of an equalization fee, its share to a stabilization fund. Until the stabilization fund was collected, the United States treasury was to advance $250,000,000.00. The equalization fee system was planned to work out something like this: Suppose the domestic crop of wheat was 750,000,000 bushels. Assume 600,000,000 bushels as necessary for domestic consumption and seed purposes. The 150,000,000 bushels remaining as surplus would be bought up by the Farm Board and sold in foreign markets at the world price, which, for sake of illustration, we will say is $1.00. With the surplus taken out of the country, the bulk of the crop would sell for, let us say, $1.50. The farm board would pay $1.50, or 50 cents more than it sold the surplus for. The loss would be $75,000,000 on 150,000,000 bushels exported. The expense of handling would be about one cent a bushel or, $7,500,000. Hence, $82,500,000 would have to be made good by the sellers of wheat. Each bushel would pay an equalization fee of at least 11 cents. But in order to provide a margin of safety, the farmer would pay 20 cents a bushel. He would receive, however, $1.50 on all the wheat he sold in the domestic and world market, and would lose only 20 cents on one-fifth of the total. At present he sells all his wheat for $1.00, the world price, and cannot make both ends meet. Do you get the idea involved?"

"The only idea that looms up like a headlight to me, Ed, is the increased cost of living involved in that scheme."

"The Senate committee, Jim, after a more exhaustive study of this bill and its possible effects than you or I could give it, in the majority report favoring the bill, said in part: "The cost of wheat is a very small part of the cost of a loaf of bread. The cost of raw cotton is a very small part of the cost of the cloth. So it is with other staple crops. The real cost to the consumer lies elsewhere than in the price the farmers get. The margin between the farmer and the consumer has approximately doubled, and in many instance more than doubled, in the cost of most of the farm staple crops since the period immediately before the war. The representative of the A. F. L. at the hearing on the bill placed the Trade Union movement on record as unreservedly for this bill, because the farmers in common with all toilers, are entitled to a living wage and a fair income."

"But, Ed, how can such an act be legal, when it is purely class legislation, a phrase that the supreme courts of both states and nation invariably make use of in declaring Labor legislation to be unconstitutional.

"Well, Jim, as the proponents of the McNary-Haugen bill point out, as food producers, farmers feed the world, and in the present stage of scientific advancement, must still be regarded as essential and indispensable. Therefore, self-preservation dictates the adoption of legislation that will encourage instead of, by its absence, discourage such production. Tariff acts, the Federal Reserve act, the Anti-Trust law, the Adamson law, and the Transportation act of 1920 have influenced prices and income by favoring certain classes. The farmers, as a specially valued class, have a perfect right not only to expect but to demand equal consideration. Under the Esch-Cummins law, it is claimed that the railroad owners received hundreds of millions of dollars, as proven by the index of freight rates which in 1925 was 172.5 as compared with 100 in 1913. Also the government bore the expense of dismantling war-time city industries, while it has made no serious effort to aid the farmers and apparently would not do so now, if not fearful of what the public might do under the stimulus of a fear, inspired by thoughts of possible starvation."

"Your explanation is mighty interesting, Ed. Now if you could shed some light on the debenture idea we are hearing so much about, everything would be jake, so far as practical comparison between these two relief schemes is concerned."

HOW DEBENTURES ARE USED

"The term debenture furnishes its own explanation, Jim. It means nothing more nor less than a writing or certificate signed by a public officer as evidence of a debt, or of a right to demand, or receive a specified sum of money. It is, therefore, commonly applied to a custom house certificate entitling an exporter of imported goods, to a drawback of duties paid on their importation, or of home produce to a sum such as a special bounty granted by law. In its latter application it was included as a special provision in the farm relief bill, authorizing the farm board to provide an export bounty on any or all farm products, this bounty to be equal to one-half of the existing tariff rates on the same commodity. Debentures equivalent to these rates would then be issued by the treasury department to exporters, who could realize cash by selling them to importers, since these debentures would be redeemable in the payment of customs duties on all kinds of imports. Is that clear to you, Jim?"

"Yes, Ed, that is clear as crystal, but what still remains dark as mud is what changes did the present administration cause to be made in the McNary-Haugen bill, which was vetoed by President Coolidge, to make it acceptable and how can any relief measure be enacted, if the upper and lower houses both stand pat for their respective measures?"

"You must bear in mind, Jim, (*Continued on Page* 51.)

Some New Uses *for* Radio---Also Some Old Ones

By J. H. VAN NICE

DO YOU really get as much out of your radio set as you are entitled to?

Radios are like autos, in the way people use them. Some people are like the old fellow in the big house on the corner. He has a shiny, quiet-running car that is not less than ten years old. True, he hardly ever uses it, and never abuses it. On the other hand, he desn't get much fun out of it. He doesn't know what he is missing, either. He has no pleasant memories of rides through a countryside flushed with Spring, with picnics in a nook next to Heaven, and return trips in the moonlight.

There is more to radio than just keeping the cabinet dusted and the "internal workings" in good electrical and mechanical condition. Most people realize now that a radio set is like an auto—a delicate thing which repays intelligent care. This means careful handling, and an occasional inspection by a reliable service man. But how many of these same people know how to get a thrill out of the old music box, day after day? Listen in!

Did you know that today's radio stations are deluging you with smiles, the live-long day, if you only twist the dials intelligently? WCFL's Early Risers' club is an example. Haven't you heard people—hard-headed, serious-minded business men, too—quoting witty sayings from a radio minstrel show, or ending a hard luck story with, "I'se re-gusted!"

ENTERTAINMENT POSSIBILITIES

The radio programs are there, if you want them, but there are more entertainment possibilities in the modern set than most people realize. Some of these are worthy of everyday use, while others are novelties.

Electric phonograph pickups afford a brand of entertainment that pleases a great many people who don't care much for radio. The average record sounds thin and scratchy when played on most phonographs in comparison with the round and full tones of the same record reproduced through the amplifier and speaker of a good radio set by means of an electric pickup. Think of the programs you can build for yourself by the judicious selection of records!

When you hear the startling reality of record music through a good radio set with a good loud speaker you will never go back to using the radio set for radio only. For dancing, the electric pickup and phonograph records are far superior to the more or less hit or miss radio dance music programs. And don't forget the collections of children's records affording hours of entertainment and instruction for the little folks.

Are you a distance fan? Single dial radio sets are not usually good distance getters, although some of them are exceptions. The skill of the person tuning is a big factor in this. But, for real distance-getting thrills, short-wave sets are far ahead of our best broadcast receivers. Of course, short-wave sets run into disagreeable barrages of dot and dash messages—that is, disagreeable to those unable to read the code. However, the ability to go flitting around the country to pick up good programs from extreme distances more than makes up for this. Then, too, the thrill of occasionally hearing a program from across the water makes a dyed-in-the-wool short-wave fan out of most anyone.

MAY HEAR SHORT-WAVE PROGRAMS

Short-wave sets or the so-called adapters that enable one to hear the short-wave programs over a regular set are not expensive. The better ones have a consistent receiving range that will enable the fan to pick up nearly any short-wave broadcast station in the country, and, surprisingly often, programs from Chelmsford, England, or points even more distant.

The regular short-wave sets are easily fitted with equipment for receiving television programs. This is not possible with the short-wave adapters because the amplifier in the regular radio set will not transmit the picture clearly.

While television is really in the experimental stage, kits and even complete sets are available at reasonable prices. The person who starts with television now will be the expert to whom other people will look for advice and aid in the next stage of development.

Home broadcasting has taken the fancy of thousands of radio fans. You sit before the radio set and listen to programs, clever imitations of the real thing, with announcing and personal messages that are both clever and funny. This is made possible by the use of a microphone attachment that plugs into the radio set. A long cord permits the microphone to be placed in another room, so that the fake broadcasting can be done in such a way as to fool an audience not in on the secret.

Churches, lodges, and private parties are often entertained in this way with the best of results. It is merely another way of using the radio set.

Community service is one of (*Continued on page* 53)

The Farmer-Labor Tieup

(*Continued from Page 49*)

that all political issues are fundamentally economic problems. The McNary bill, which in its present form includes the administration program for a farm board, commodity advisory councils, stabilization corporation and a 500 million dollar revolving loan fund, besides the debenture, if passed by the senate would then go to a joint conference representing both houses for reconciliation. Since President Hoover is known to be definitely committed to the veto of any bill including debenture provisions, the senate will be forced to either agree to its elimination or stand branded before the nation's farmers, as the chief cause for the non-enactment of any farm relief measure, a position that requires more courage than most of the politicians in the senate can lay claim to, Jim."

"I see it all plainly, now, and only hope that others get the same slant, but you haven't answered the question yet about how the bankers and big business work their end of the racket to get rich at the expense of labor in factory and field."

"I know I haven't, Jim, and don't intend to tonight, for my bedtime is at hand. At my age regularity is essential to the preservation of health, so you had better trot along home. By the way, suggest to all trade unionists and organized farmers, you come in contact with, to give you, or mail you in written form such questions as they would like to have discussed and analyzed; this will enable us to serve them more efficiently than we can by our present methods. What say, Jim? Does the idea appeal to you?"

"I'll say it does, Ed, and I know it will hit others just as it strikes me. So prepare yourself for what is coming. Accept my thanks for information given, coupled with a pleasant good-night."

For a Dreary Day

I wonder what to wear today,
A smile, a scowl, or a frown?
The skies are looking mighty gray
And sleet is coming down.

My feelings say I ought to wear
A scowl, they're quite in style,
But better judgment whispers no,
I'd best put on the smile.

All right, here goes. . . say, that fits fine,
It's neat beyond a doubt,
And now that sunshine's streaming in
I see my frown's worn out!

Use the Mails Without Cost

Only members of Congress and other government officials are supposed to be able to use the U. S. mails without paying postage. However, WCFL Radio Magazine has made a clever adaptation of a recent postal regulation which makes it possible for you to enjoy the privilege of using the mails without paying postage. See the Business Reply Postal Cards on page 3.

Television Making Real Progress

(*Continued from Page 21*)

and 20,000 cycles we must have an amplifier that is capable of magnifying all frequencies within these limits.

It should be said at this point that the experimenter must bear in mind that television, although an accomplished fact, is still far from being perfect It may be best compared to the broadcasting of music when we first started to listen in with our crystal receivers back in 1921; but just as then the experimenter was only too glad to listen to anything that was on the air, so now most experimenters are willing to see anything that is being broadcast. But we are further along the road now than we were then for we know a great deal more about radio apparatus in general and can therefore make more intelligent selections for our experimental apparatus. That is the reason why we have selected a resistance-coupled a. f. amplifier to step up the received television signals after they have been detected. The amplifier uses one power tube in parallel.

HIGH GRADE RESISTORS NEEDED

This amplifier should use in the first two stages two 340 or two high-mu 20 tubes; the third and last stage should use two 171 or 210 power tubes in the output. In order to reduce the microphonic noises to a minimum it is recommended that spring suspension sockets be employed. It is also necessary that the highest grade of resistors be used in the grid and plate circuits of the tubes.

Poor resistors, together with vibrations, are two most common sources of noise in a resistance-coupled amplifier. In the television amplifier vibration is sometimes introduced by the motor of the scanning disc. It is always well to test the amplifier for noise by connecting a pair of head phones to the output terminals and thereby find just how much noise is to be expected from any amplifier of high gain, but the difference can be found by tapping a tube with a finger and comparing this noise with that of the amplifier. However, in a three-stage amplifier the noise will be unappreciable unless there is a defective resistor or tube.

Vibration from the scanning disc will introduce a periodic noise which appears on the plate of the neon tube as a black streak across the field of the picture. The 60-cycle hum of the motor will also cause streaks but these will not remain stationary. They will move either up or down across the picture.

THE TELEVISION TUBE

As has been mentioned before the output circuit of the receiving system is so arranged that the neon tube replaces the loud speaker. This tube is always illuminated and when a signal is received, the brilliancy of this illumination varies in accordance with the signal.

The construction of the tube is much simpler than the ordinary 201-A type of receiving tube, in that there are two flat metal plates placed parallel to each other and very close together. They are one and a half inches square, presenting an area of two and a quarter square inches. The tube instead of being evacuated is filled with neon gas.

When the current through the tube is varied due to a change in the impressed voltage, the amount of light emitted is also changed and it is thus that the picture is reproduced. A resistance must be connected in series with the tube because like all gaseous conductors, it has a negative resistance coefficient. A good background will be obtained if the current is limited to 10 or 20 milliamperes. A greater current would make the tube glow more brightly, but there is no advantage in this as far as the picture is concerned and it will also shorten the life of the tube. Therefore, care must be exercised to see that the current is adjusted to its minimum satisfactory value.

THE SCANNING DISC

This part of the apparatus is one of the most important. It must be so made that it will run true and the holes must be drilled with the greatest accuracy in order to avoid streaks in the reproduced picture.

It is also best not to mount the radio receiver and amplifier in the same cabinet with the scanning disc as the vibrations of the motor will introduce a noise resulting in a series of horizontal lines across the image.

The tube should be placed at such a height that its plate will be in line with the holes in the scanning disc; i.e., the top hole of the disc should be in line with the top of the plate and the lowest hole should be aligned with the bottom.

Then the following connections should be made. The plates should be brought out to the "plate" and "filament" prongs. The plate terminals of the tube socket into which the neon tube is placed should be connected to the plate of the 171 or output tube of the a. f. amplifier. The filament terminal should be connected to the current-limiting resistor.

OPERATING RECEIVER

In his experiments the amateur may find that the image is turned upside down or reversed, both of which can be easily corrected. The object at the transmitter is scanned from top to bottom during a revolution of the disc. Therefore, if the experimenter is rotating his disc so that the plate of the neon tube is being scanned from bottom to top, the picture will be reversed. To reverse the direction of scanning the plate of the neon tube vertically, it is necessary to reverse either the direction of rotation of the motor or to remove the disc from the motor's shaft and turn it around so that the other face is toward the neon tube.

It is, of course, absolutely necessary to have the scanning disc at the receiver rotating at the same speed as the one at the transmitter. This is generally accomplished by the adjusting of a variable resistor in the line to the driving motor. With a little experience the experi- (*Continued to Page 63*)

New Uses for Radio; Also Some Old Ones

(*Continued from page 50*)

radio's possibilities. Farmers' meetings take on a practical aspect when a good radio set is made use of to pick up special talks for farmers, or, along general business lines. By keeping close tab on stations that make a specialty of serving the farmer it is possible to arrange a regular schedule of meetings in a central location, with a good set to pick up the programs, leaving a chance for a good discussion, and a social hour with radio music when the program is done.

Nor are all the possibilities exhausted in the weekday broadcasts. There are dozens of communities having no regular church services in which the radio brings a group of people together to listen to broadcast sermons and music, with the added inspiration of the personal prayers and devotional influence of the people gathered together.

Radio has taken away many a dark hour in the sick room and hospital. So true is this that hospitals are rapidly installing sets, with head phones for each bed, and loud speakers for the convalescent wards. How much more important to get this service from your own set if someone is sick!

Aside from the special applications of radio listed above, do you really get the most out of your set? Is the set really in good shape? Is it properly installed? Remember, most any type of aerial and ground will bring in music, but that an expert will astonish most people with the results he gets by making a few charges here and there. Are your batteries and tubes right? Is there corrosion hiding somewhere to partially choke your music? Is your speaker handicapped by the way it is connected or installed? Oh, there are hundreds of "little" things that a radio expert would put his finger on at once—if he had the chance.

Calling a real service man in to test your set once every six months is not too much, if you want real service from your set. You don't allow your car to limp for fear it will be permanently injured, but this should be equally true of your radio set.

Then, too, the radio set can't select programs for you. If you tune in hit or miss, don't expect the best of programs. You know what you like—why not go after it systematically? Regular features that are always popular should be searched for. Write to the stations whose programs you receive best and ask them to give you a schedule of their regular features.

Of course, to be at its best, radio must go with you about the house. Wire your house so that, although the set itself can't follow you around, a loud speaker or head set can be plugged-in whereever you are. Put Mother Goose in the playroom, recipes in the kitchen, dance music in the living room, dinner music in the dining room, entertainment in the bed room, band or orchestra in the basement, and a real go-getting short-wave set in the den! Do you really get the most out of your radio set? It's up to you.

What *The* Cards Show

Some Questions Asked By Readers of WCFL Radio Magazine

THE editorial workers on WCFL Radio Magazine are not putting in their time exactly as the artist's accompanying sketch would indicate. However, we are dealing quite extensively in cards—and a good many interesting things are being revealed in this way. We refer to the Business Reply Postal Cards printed in the front of the Spring issue of WCFL Radio Magazine. Thousands of our readers have found these cards a convenient means of making their wants and opinions known. We are swamped with cards but the deluge is an enjoyable one—we are always glad to hear from our readers, even if we can't answer all of their questions. More of the cards are printed in this issue —and we are anticipating even a larger response.

Many interesting facts are revealed by these cards as well as by other communications reaching the editorial desk. In the first place they indicate a tremendous interest in radio set building and radio problems. These questions were all turned over to the technical editor, and an interesting discussion of them will be found elsewhere in this issue. Likewise television is shown to be a popular subject but here again we must fall back upon the technical editor and upon Engineer Marquardt, in charge of Station WCFL, who has devoted extensive research to this fascinating development.

This article is dedicated to the more general subjects mentioned by correspondents. Our farmer friends want to know when the new station will be in operation, complaining that they cannot tune in on WCFL. At the same time other friends out in Kansas and even on the Pacific coast report having picked us up clearly. Such are the vagaries of radio broadcasting and reception. Friends in Chicago and vicinity write in to ask when WCFL is going to have more evening hours on the air. Well, that's what we want to know, too. The Federal Radio commission has turned down our appeal but we will carry the fight further.

Boys and girls write about how to join the Junior Federation. Older ones shower requests for more details about our radio course. Many subscribers appear to have automobiles that they want to put into shape and ask advice.

One letter out of many that illustrates what is in the minds of some of our readers, is from Isador Rosen, 310 S. Fifth street, of Brooklyn, N. Y. He says: "I have read your magazine and I must say it is one of the finest radio booklets I have read. I am a dealer and would like to receive circulars or catalogues which advertisers distribute occasionally. I would be grateful to you for placing my name with other manufacturers and jobbers of sets, speakers and accessories."

Proud to be called the first member of the Farmers' Union in the state to become a subscriber to WCFL Radio Magazine, J. H. Higbee of Cottonwood, S. D., writes to mention that newspapers in his state failed to give any space to protests made to the Federal Radio commission for its treatment of WCFL. He adds: "If the common people don't wake up, laws will be put into effect to stop them breathing the air nature provided for common use of man and all living creatures."

"Your programs are perfect," says one enthusiastic friend who declines to make suggestions for improvement. Others are also extravagant in their praise. "We really do enjoy your programs," is about the way those write when they are able to hear, which they do when Pittsburgh or some other high-powered station is not smearing all over us.

HAND IT TO WCFL PERFORMERS

The way the public reacts to the personnel of the program will be a comfort to all our performers when they read this. One is not sure whether Vella Cook and Roy Farr are more popular than the others. They seem to be mentioned oftener. At least two men write in words and letters as follows: "I am interested in Vella Cook." Dr. Copeland Smith comes in strong as a morning radio feature. Daddy Hal and Brother Burt have valiant followings. So do the Early Risers' program, Edith Detrich and Pauline E. Stephens. Band music records come in often for warm commendation, along with the ensemble orchestra.

Every known taste for music, provided it is good, seems to be present among WCFL people. While they like it all, some write "frevins sake" to give more jazz and dance music. That would be easy but for the fact that the same mail brings an equally strong demand for classical and more classical. This shows perhaps that the program makers are hitting *(Continued on Page 57)*

What Your New Radio Will Look Like

(*Continued from Page* 19.)

power detection and two UX245 tubes in a push-pull output stage, the usual first audio stage was unnecessary. Down went the cost some more and up came the quality of tone. Obviously, that first audio tube and transformer did distort some and I for one am glad to see it go. At this time, arguments for one or two stages of audio are long and many. However, one large manufacturer (Sparton, to be exact) used power detection—one stage of audio and a band-pass radio frequently amplified last season—all with marked success. So there isn't a great deal of room for argument any more.

Loud speakers have come in for their share of attention and several improvements of importance have been made. The main one is the bucking out of the a. c. ripple in the voice coil of a dynamic. This is accomplished by a small variable resistor and the system is entirely effective. The hum departs and stays gone. One speaker has a hum bucker and a tone control both. This last item permits the tone of the speaker to be raised or lowered to please the listener's ear. The 1930 prices on dynamic speakers will be lowered along with the sets, due to the simpler methods of construction and greatly increased production facilities.

Information on the new condenser speaker is scarce. It is known that a few engineers have built models, but the writer does not know whether these speakers will be released at the trade show or not. It is believed that dynamics will remain in the lead for another season at least and that the condenser speaker will come into the field gradually. Such excellent quality of tone can be realized with almost any of the newer sets that a new type of loud speaker would have to have some very fine advantages before it could replace the new dynamic units.

Questions and Answers

(*Continued from Page* 25.)

aerial and ground may be used when desired. Use spring tube sockets, and mount the set so that it will be well protected from vibration.

"A few three-tube diagrams. Selectivity, distance and volume wanted."—*Geo. H., 824 Wrightwood avenue, Chicago.*

We assume you want loud-speaker volume. This is nearly an impossibility on distant stations with three tubes, if you are to have selectivity, and no regeneration into the aerial. So we are referring you to sketch No. 3 which calls for a four-tube set which can be built at slight additional cost, which is really nothing compared to the added value of the set. Will be glad to send three-tube circuits for special purposes, if so requested, but cannot send "bloopers." See answer No. 9.

"Information on making a dynamic speaker out of a Magnavox horn speaker."—*T. M., 1813 S. Twelfth street, Maywood, Ill.*

This is not practical. There is too much difference between the two types, so that a dynamic made in this way would not be as good as the original speaker, which, although not of the modern dynamic cone type, really was "dynamic."

Indiana Town First to Outlaw Static

IF towns as well as men are to be accorded fame for radio progress, then Warsaw, Indiana, is entitled to a place in the sun. The little Hoosier municipality is the first to outlaw that past of radio—man-made static.

A recently adopted Warsaw ordinance seeks to regulate the operation of electric motors, transformers, X-ray machines and other electrical equipment so as to minimize the disturbance such appliances cause to radio listeners. Operators of sputtering and sparking motors and other disturbing elements are liable to fine and imprisonment. Most any listener who has ever tried to operate an a.c. radio set against such noise makers will protest that the penalties are too mild. Boiling in oil would be the fate of the offenders if left to radio fans.

Sentiment in favor of legislation similar to the Warsaw radio ordinance seems to be quite widespread. As these lines are written, there is spread out on the editorial desk a copy of an ordinance introduced in the council of Fairfield, Iowa, and a copy of a similar measure presented to the board of trustees of the village of Boonville, N. Y. Bills seeking to regulate man-made static are now pending before seven state legislatures.

SOURCES OF MAN-MADE STATIC

Man-made static arises from such a variety of sources that it is almost impossible at times to tell from whence it comes. Chiefly it is caused by electric motors. With the battery-operated set of the past this interference was not so vexing, but with the all-electric radio set, with its filament connected directly to the lighting and power mains the situation becomes serious. Buzzes, crackles, hums and roars make radio reception often almost impossible.

Practically all the electrical apparatus on the market today was designed with no thought of radio, and not being filtered the apparatus produces the electrical disturbances that make one's set screech.

Realizing the seriousness of the situation, most power and light companies have established radio interference departments and much trouble has been eliminated in this way. In correcting troubles which caused electrical disturbances the companies did themselves a service, too, since they found in their investigations many parasitic leaks, grounds, poor contacts and faulty installations.

Manufacturers of electric devices have been studying the subject but not so much has been accomplished in the way of preventing radio interference due to their machines. As a great deal of this interference, even with the all-electric set, is only objectionable on the shorter wave lengths, between 200 and 300 meters, it was not until the recent re-allocation of radio channels that this trouble was serious.

The listener is sometimes surprised to find that the awful roar from the loud speaker was caused by his neighbor's oil furnace. Motors on oil burners are particularly bad offenders. Generally it is some vacuum cleaner, hair dryer, massage machine, fan motor or sewing machine that is responsible for the unearthly whine one often gets over radio. The electric refrigerator is another culprit, as are washing machines, electric mangle motors, dish washers and practically all types of household electric appliances. The apparently meek and lowly electric warming pad is a notorious trouble maker and one of the sources of that intermittent roaring and buzzing sound.

Electro-surgical apparatus, such as X-ray, violet ray and diathermic machines produce another type of interference. Sign flashers cause a great deal of static. Interference in factories is created in ways too numerous to mention here.

LOCATING CAUSE OF TROUBLE

If one is to suppress radio disturbances he must be able to find what is causing the trouble and where it is located.

The interference caused by universal motors used on appliances is generally heard as a high-pitched whine or singing tone, either running steadily or varying in intensity. In other cases it is heard as a buzzing sound.

The disturbance set up by the ignition system of oil burners is heard as a steady rough buzzing with a wavering intensity and crackling sounds at frequent intervals. One may guess the electric refrigerator is interfering when is heard an intermittent crackle. Sometimes it is steady and coarse in tone for several seconds at a time. A low-pitched buzz, generally very steady, without any fluctuations characterizes the disturbance set up by battery chargers of the bulb type. The disturbance due to heating pads comes as a rough crackling noise at intervals of from one to five minutes.

In order to avoid running afoul of the Warsaw, Ind., ordinance and other similar regulatory measures now being projected, it will not be necessary for users of electric motors to cease operation. Suitable filters have been devised to eliminate practically all of the interference, as for instance, Filterettes made by Tobe Deutschman, Inc. Filterettes are made in a wide variety of sizes and capacities so as to meet most all requirements. They are comparatively inexpensive and are easily attached. Thus, friend wife does not have to sweep with a broom just because hubby wants to use the radio—a neat little filter will keep the vacuum motor from disturbing the radio set.

Full information on how various kinds of electrical equipment can be shielded so as to minimize interference to radio sets will be sent to readers of WCFL Radio Magazine upon request. This magazine is ready to help municipalities or radio clubs or other clubs or persons interested in forming ordinances for eliminating radio interference in their locality. Use the Business Reply Postal Card on page 3 and avoid the trouble of addressing an envelope and procuring a stamp.

What *the* Cards Show

(*Continued from Page 54.*)

a pretty fair average after all. Popular songs have an idolatrous following. The orchestra and the German band are in great demand.

Believe it or not, labor talks and religious programs are among the most popular WCFL offerings. Letters that come show it. They compare favorably with the Vaudeville hour in filling the popular demand.

A story of overproduction or bad marketing systems seems to lie behind the request from L. Blakeslee, R 1, Dunningville, Mich., for "some commission house that will handle our strawberries."

"When are we to get full time on the air, say between 9 and 12 p. m.?" the Anderson Sign company, wants to know. "Why can't something be done to have WCFL heard at night," roars Myron F. Kaufman of Williamsport, Pa. Another troubled friend, E. H. Sampson of What Cheer, Ia., writes that he has not been able to get WCFL. These are a few samples of hundreds of similar complaints.

"I like WCFL Radio Magazine and WCFL Broadcasting station", writes Howard Bray of Colby, Kan., in asking information about the radio course.

Joseph Wolski, Jr., of 2407 S. Washtenaw avenue, wants to visit the station. He is welcome at anytime, just as are others. Still he was prudent enough to write asking if we allowed visitors and if reservations are needed to come at a certain time.

"Talks to the Unorganized" is the program feature most enjoyed by W. H. Lewis of 539 N. Spaulding. "We love WCFL and enjoy the programs."

Information regarding the stock market is requested by Pearl Novak of 5721 West 23rd Court.

A. W. Raffel, 1539 North Kostner, writes that WCFL programs are very satisfactory and enjoyable.

Showing that interest in radio does not preclude concern in matters of great import, one of our most enthusiastic fans takes his pen in hand to say that he is "interested in beers and light wines."

A wail comes from someone who says he wrote asking for a sample of Renuzit for polishing autos and received three packages of Baby Ruth gum. Of course, his getting the gum had nothing to do with his letter. He merely happened to get the sample packages of gum about the time he was expecting the auto polish. The trouble is likely due to the fact that when he wrote he did just what he did when he wrote his complaining letter to this office—he forgot to sign his name. The letter was mailed at Ogden Park substation April 30. We hope he reads this and writes again.

Sign of Homecoming

"Has you wife left you?"

"I don't think so—I got a C.O.D. package only yesterday."

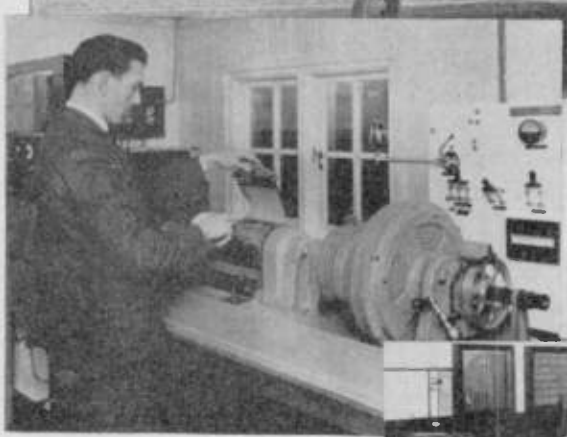
A New Service for Our Readers

On page 3 of this issue are printed three Business Reply Postal Cards. These are for your convenience in answering advertisements or writing to WCFL Radio Magazine for information. No postage is required.

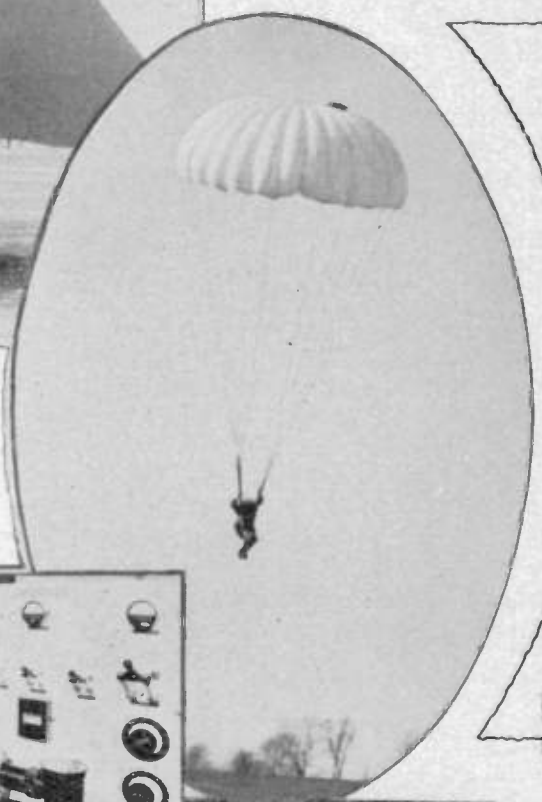
Conquest *of the* Air Goes Right On

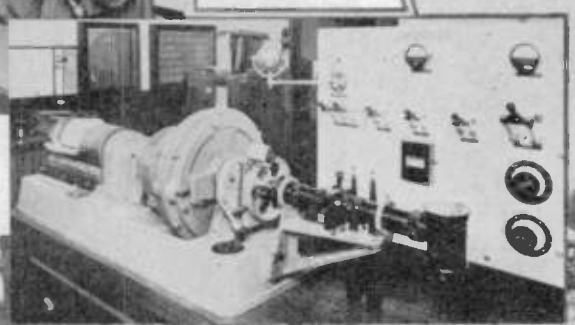
The latest thing in aeronautics is the bat-wing monoplane. The propeller turns through the wing structure affording great lifting power. Earl E. McClary is making ready to send his ship in the air for the first time at Long Beach, Calif.

Wide World Photos.



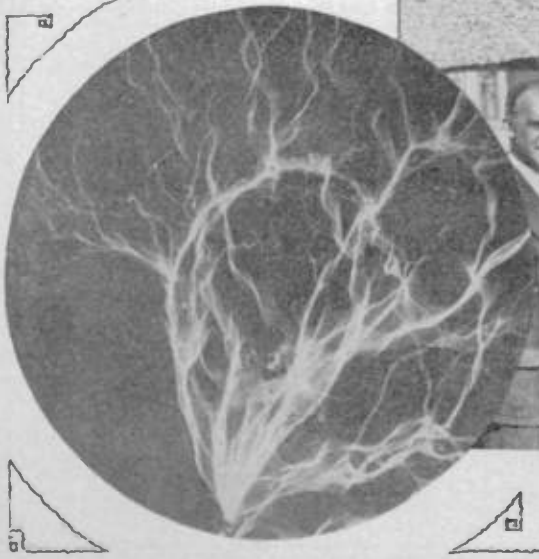
Captain George H. Stuart after a test of the new Smith Airplane parachute safety seat, lands at Mercer Airport, Trenton, N. J.





New Marconi Facsimile Telegraph system that may revolutionize trans-Atlantic transmission. The photo shows the receiver. On the left the cylinder upon which the message is received, also placing a message on the transmitter.

E. Winter of Fareham, Eng., tests his invention, which flaps its wings through action of foot pedals. A small hydrogen tank will lift him off the earth.



Biggest "Ball of Power" ever recorded, 3,000,000 volts, as it left terminal.

Champion model airplane builders call upon Secretary of Commerce Lamont and proudly display their prize-winning models.

New Improved 1930

Davis Dynamic Speaker

Exceptional Performance — Distinctive Appearance

Full, True, Rich Tones Without Distortion

Built to the requirements of the particular fan by skilled acoustic engineers.

Free from annoying hum—evidence of advanced engineering principles.

Be convinced! Attach a Davis Dynamic to your present receiver —satisfy yourself of its superiority—note how a good dynamic speaker will modernize your old receiver.

THE NEW IMPROVED 1930 DAVIS DYNAMIC SPEAKER is especially designed for those discriminating owners who insist on the finest in radio reception.

It reproduces perfectly all the tones of the seven octaves of the orchestra range, without blare or distortion—mechanically and acoustically perfect whether the volume be adjusted to a whisper or its maximum.

Davis Dynamic Speaker improves the reception of even the finest receiving sets.

Ask your neighborhood dealer to show you and let you hear this marvelous 1930 model speaker.

D.C. 6 to 8 volt
D.C. 90 to 120 volt
A.C. 105 to 120 volt

Table Model

Rich and dignified in quality and appearance. Its beautiful genuine walnut cabinet harmonizes perfectly with the furnishings in the finest of homes.

Chassis Only

Designed especially for installation in all standard make cabinets, and suitable for all types of receiving sets. Careful construction assures unequalled reproduction.

DAVIS INDUSTRIES, *Inc.*
Radio Division
314 W. 43rd St. Chicago, Ill.

"CHI-RAD"

Ray A. Joyce

Headquarters for all Amateur Radio Sending and Receiving Apparatus.

We recommend the new Davis Dynamic Speaker to our customers. Come in and hear it. It will satisfy you that it can improve your present reception. Write for our latest catalog. We are one of Chicago's oldest radio dealers. Special discounts to Service men and dealers.

Chicago Radio Apparatus Co.
Phone Harrison 2276-7
415 So. Dearborn St. Chicago

NEWARK ELECTRIC CO.

CHICAGO

Nothing But Radio

Improve your present receiver with the new Davis Dynamic Speaker. It will add to the tone quality of your reception.

Special discounts to Dealers, Set Builders, Radio Service Men. Write for prices on all sets advertised in WCFL Radio Magazine—and all latest sets for 1929—complete accessories—and parts. You can save money and be sure of prompt, reliable service—just call in person or write at once.

NEWARK ELECTRIC CO.
"Nothing but Radio"
226 WEST MADISON STREET
TELEPHONE
DEARBORN 0063

Getting the Most Out of Radio in Summer

(*Continued from page* 13)

one, the one you will use most, is a little, short indoor aerial for reception of local stations when there is a storm area too close to make distance reception possible without static, and when the regular aerial would make static noticeable even through local stations. This aerial also has the advantage of requiring no lightning arrestor. Then, purely for distance when conditions are good, use a good, meaning tightly-connected, outdoor aerial that can be grounded during a storm, or that is fitted with a real lightning arrestor.

All-electric set owners need not say, "Pooh! MY set is always in condition!" You may not have batteries to worry about, but you better get a new, noiseless detector tube, clean and tighten all your connections, and be sure that all dust is removed. See that there are no leaky resistances or condensers in the set, and take the same precautions as to aerials as for any other set. Remember that an a. c. set is prey to more noises than is a battery set, and be more careful, accordingly!

SOME SUMMER DELIGHTS

Now that these purely technical matters are out of our way, just what may we expect from radio in the summer?

Baseball broadcasting is the old standby, with other sports such as racing, golf, and water fun not far behind. Remember hearing the roar of motors as the cars passed the "mike" during the big auto races?

Dance music is, of course, the life of many a summer evening. That's where many a radio set gets hours of punishment, and is one reason for being sure it is ready for the grind. However, a great many people are learning that the best radio set is better still when supplemented with an electric pick-up which permits the playing of phonograph records through the amplifier and speaker of your set. There are several advantages. Of course there is no static at any time. Then, with a good selection of records, there is no pause while you wait for a soprano to stop warbling. You dance every minute, if you wish. There is no better dance music than that furnished by a good record played through a good radio set. Almost any old phonograph can be used, for it has only to turn the record. Portable phonographs with electric pick-ups are the real thing!

Then there is the portable set, that real vacation chum. Perhaps it is installed in your car, giving you music on the way to the camp, and more music around the mosquito smudge. Many people are finding that sets built into cars are especially satisfying for there is a good, steady source of current. The speaker may be furnished with a long cord, and a good aerial and ground be added for the best reception in camp.

The real portable, of course, is the little fellow you carry around with you, or put in the boat—music while the old out-board motor is puttering you upstream. Can't you imagine father, with earphones clamped on his head, listening to Hack Wilson's latest trip to home plate while he watches the ripples around the red and green bobber, hoping for a bite, but too lazy to play with the game fish?

No permanent summer camp is complete without a radio set. Here a real good aerial and ground may be installed, and a good standard set be used to give you all the radio comforts of your regular home. Radio is almost a rainy-day necessity, in camp, and will come in for hours of use on the finest of days.

Nor should you neglect to make the most of the radio possibilities in your home. Radio on the porch where you spend so much of your summer can be had, usually, by merely buying a long extension cord for the loud speaker. A better way is to have the porch and other rooms of the house wired with radio jacks. The type of jack that fits into a standard wall box, and with a volume control built-in, is best. Of course a console set with a built-in speaker presents more difficulties. It isn't practical to move the set from place to place, so you either have to be satisfied with putting it in the place most frequented by the family, or to have the set arranged so that you can plug in a portable speaker. The latter is best in the long run.

Radio used outdoors is often a great disappointment, because people do not know how to get the speaker to work to advantage. A speaker, particularly a cone, placed in the open air, loses volume, and sounds unnatural, but place the speaker inside a sound-reflecting medium like an ordinary wash tub, which is placed on edge, and the music will be thrown where you want it, and with plenty of volume.

Remember your neighbors when you use your radio in the summer. Open windows and volume turned too high are a nuisance, particularly late at night, or if people are sick.

Radio in summer is just like radio in winter—it is an ever-present companion, willing to entertain you no matter what your mood, or to keep quiet if that is your wish. A little time and money spent in putting the set in shape, a little study of what the stations have to offer you, and radio forgets 99 percent of the static scare, and becomes your constant chum, again, with the electric fan and the ice cream cone replacing the fireplace and the hot chocolate.

One Radio Service Call That Cost a-Plenty

THE following incident illustrates the trials of the radio service man:

The phone rang.

"Say, you double-dash-blank of a thief, you, what kind of a radio set do you call this blankety-blank thing, anyway, hic, hic?

"Just three days old, and the first time I throw a little party we can't get music to dance by. I'm sore, I am; I don't care if you don't like swearing over the phone."

It was 11 o'clock Saturday night. Service of any kind held little attraction for me right then, least of all a seven-mile trip to Jim's place, with Jim half drunk, and altogether unreasonable.

"Jim," I countered, "I'll come on one condition. If the set or any of my work is wrong it won't cost you anything, and I'll pay you fifteen dollars to boot! But, if it isn't my fault, or the fault of the set, I get thirty dollars from you!" Jim was an inveterate gambler. He snapped up the offer, but I asked him who his guests were, and had the bet confirmed by a fellow I knew never drank. I based my willingness to bet on the fact that Jim was always addled, but positively unconscious when drunk!

On my arrival, we each paid our money to our sober friend. Then Jim showed me how he tuned-in the set, trying to get his dance music. He tuned properly, but no music—that is, until I called the crowd's attention for purposes of obtaining a witness and then snapped the switch! The music boomed forth.

Jim's old set had used a filament-control jack, and he was just too drunk to remember the switch on the new set.

The ridicule of Jim's whoopee friends hurt him worse than the loss of the cash, but I still think the thirty bucks were about right for the cussing I took that night!

Defective Power Plugs

THE heavy, rubber-covered plug that connects to the power pack of an all-electric set is very easily injured because there are so many contacts in such a small space, and the fibre backing is easily broken. The plug must be pulled straight out or pushed straight in without any twisting or jerking.

For your convenience in writing for information or answering advertisements, two Business Reply Postal Cards are printed on page 3. These cards require no postage; using them does not obligate you in any way.

A Hundred Million Tubes

(Continued from page 29)

the same filament voltage as the 227, 224 and 245, but there is no advantage to this until some method is devised to use the same winding to light the rectifier filament and the tubes in the receiving circuit. This cannot be done with the present type power packs as the polarities of the two types are reversed.

The new trend in the set designs has changed the complexion of the tube market for the coming season and will put a severe strain on the output of types 227, 224 and 245. New markets have also opened up for vacuum tubes and especially for the special types and large amplifier tubes. These include, phonograph combinations, public address systems, talking moving pictures and television.

The progress of the talking movie was made possible by the development of vacuum tubes. Special tubes were necessary for this work and there is no doubt that in the near future the still movie will be as obsolete as the old crystal receiver.

Television has made great strides during the past year and is also entirely dependent upon the development of vacuum tubes. This new art is by far the most complicated and difficult of the modern achievements. Briefly it consists of breaking a picture (still or living) into thousands of tiny pieces, transforming them from light variation to electrical impulses, transmitting these impulses by means of a radio broadcasting station. The impulses are picked up on a receiving set in practically the same manner the regular programs are received. These impulses are reconstructed after being transformed back to light variations. Thus the picture is actually sent through the ether, a dot at a time. All of this is done in one-sixteenth of a second, so that engineers are confronted with the time element as well as the actual electrical and radio problems. The transforming of the light variation into electrical impulses is made possible by means of a photo-electric cell which is one of the newer types of vacuum tube. Another type of tube has been made which reconstructs the impulses into light variations. Advantage is taken of the persistence of vision which causes the human eye to retain an image for at least one-sixteenth of a second.

The future holds much in store for the world in unexplored vacuum tube fields. No one can imagine the marvels which will be performed with these mysterious glass tubes. We have seen in the past eight years, the most remarkable advance in the history of the world, made possible by the vacuum tube.

Not the Bunny

Mother (after relating a pathetic story): "Now, Reggie, wouldn't you like to give your bunny to that poor little boy you saw today who hasn't any father?"

Reggie (clutching rabbit): Couldn't we give him father instead?"

You can answer any advertisement in this issue of WCFL Radio Magazine merely by filling in the Business Reply Postal Card on page 3. No stamp is required.

The Lure of the Canadian Northwest

By PAUL STEPHENS

MEMORIES of two of the most pleasant tours of a life-time—both through the Canadian northwest—are vividly recalled by an advertisement of the Canadian National railway, appearing elsewhere in this issue. The lure and enchantment of western Canada abide forever. To one who has been privileged to "swing around the triangle", a bit of that mountain scenery, a picture of entrancing Lake Louise, or a view of quaint Prince Rupert—next door to Alaska—arouses an almost irresistible longing to once again revel in those wonderful scenes. And there is something so inspiring in the freedom of the broad Canadian wheat prairies, spread as a vast carpet before the towering mountains.

All of these delights would, of course, be as music on the desert air, were it not for the splendid facilities that make it possible for tourists to enjoy them. The Canadian National's tourist trains are the last word in travel elegance and comfort. For instance, they not only are equipped with radio for the enjoyment of passengers but maintain a wireless-and-wired telephone service for the convenience of patrons. While speeding along over the smooth way of the Canadian National, the tourist can hold telephone communication with his office or home! The railroad also maintains hotels in all the principal cities and at the leading pleasure resorts. These hotels are the delight of all who travel that popular route. Officials and employees, both of the railroads and the hotels, fairly radiate courtesy and a sincere desire to serve intelligently. This is splendidly augmented by the genuine hospitality of the citizenry.

We will not pause to explain why two vacation trips were made in quick succession over this same wonderful region. Suffice to say that the opportunity to take the second was seized with even more eagerness than the first—and we are looking longingly toward a third.

It is only an over-night trip from Chicago to Duluth, en-route to the Canadian northwest. An easy day's journey through small timber, scattered lakes and rolling prairies brings the tourist to Winnipeg, the metropolis of western Canada, where the wonders quickly start. The tourist learns that Winnipeg is the world's greatest primary grain shipping center. Inquiry into grain marketing releases an inspiring story of co-operative enterprise and triumph over seemingly insurmountable obstacles. The new country and the great open space ever have challenged the best that is in men, and the progress in western Canada is a refreshing story.

However, there is more than wheat growing to interest the tourist in western Canada: Portage la Prairie, Melville, Brattleford and finally the great Buffalo Park at Wainwright, before the city of Edmonton is reached. On the map Edmonton seems to be far north—surely the place where agriculture ceases. But not so—it is the very center of a gigantic agricultural development and the doorway to the Peace River country, far off to the north!

Another night's journey and then Jasper National park—the world's largest national park, comprising more than 5,000 square miles of mountain grandeur. The lodge is rustic in every detail but complete in all its appointments. The service is the very best. The snow-crowned mountains, the dense woods, the rushing streams challenge all who would hike or ride. A golf course that is truly scenic affords a bit of welcome sport. A day at Jasper is a real treat yet a week's stay is all too short.

The journey from Jasper National park is through a wilderness of mountains, among which Mt. Robson stands out bold and prominent, seeming to banter the tourist to attempt the assent of its icy slopes. Many try but few succeed. Through the mountain-guarded, cedar-scented valleys of the Nechako, Buckley and Skeena rivers, with occasional stops at Indian villages where tower age-old totem poles, the rails lead to Prince Rupert, the most northerly port of western Canada—just a short distance from the border of Alaska. It is from Prince Rupert that most of our halibut comes. It is also famed for its luxuriant roses.

The trip from Prince Rupert down the coast to Vancouver is a delightful cruise of 550 miles through the fiords.

Vancouver is a marvelously situated city of 250,000 inhabitants. The journey is hardly complete without a boat trip to Victoria, quaint and picturesque, over on the island.

Up through the Fraser river valley, famed for its fruit as well as its scenery, the return journey leads to the northwest, back to Jasper National park. A wonderful motor trip through the delectable mountains bring the tourist to the world-famous Lake Louise. When first we viewed its placid waters, after a hurried journey, we exclaimed: "And this is Lake Louise that we have traveled so far to see! My, how small!" Yet, a few hours spent in hiking along its shore and into the headland mountains, and the matchless beauty of the place was indelibly impressed. A picture of Lake Louise adorns our living room wall—and we would use that picture for a cover design on this magazine but for the fact that we have used it previously in a similar capacity.

Passengers on the Canadian National railroad's splendid trains can maintain frequent telephone communication with their offices and homes. A radio device on the train throws the voice to the telegraph wires along side the track, and a telephone operator in the train dispatcher's office completes the connection. The picture above shows Vice-president W. D. Robb of the Canadian National railroad telephoning from a fast-moving train.

Banff is next. It is just a delightful bus ride through the mountains from Lake Louise. Both places are truly wonderful but so different. It is only about forty miles by auto from Banff to Calgary.

Many thrills are saved for the remainder of the return journey. There seems to be no end of interesting things in western Canada as for instance the beautiful flowers and wonderful vegetables. And the service afforded by the Canadian National railway—the world's largest government-owned transportation system—is a pleasure that is long remembered. There is nothing quite like their tour around the triangle. We're going again, we hope quite soon.

Progress of Television

(Continued from Page 52)

menter will find that he has no trouble in keeping the image in the field of the neon tube's plate. It is merely a matter of practice.

Much has lately been written about the future of television, but little has been said about the source of future improvements. Just as in radio telephony we are all looking to the experimenter who works in his attic shop. To a very great extent these attic experimenters were the ones who made radio broadcasting popular and the chances are that they will have much to say about the future developments of television.

There are still many "bugs" in the apparatus. They have to be traced down, but in order to do this it is necessary that the tracer must have something with which to work so that he can learn the fundamentals of the art. Apparatus is now available so that there is nothing to stop the experimenter from starting in. Many stations throughout the country are broadcasting television daily. The cost of the apparatus is far from excessive when it is compared to a year ago, when it was practically impossible to buy even a neon tube of the proper construction.

The possibilities are unlimited. Experiments of greater fascination are now offered than ever before. Television and radio form a perfect pair and if experiments are conducted with the same zeal as those of radio were, then in a few years we will be able to see our public men address us as well as hear them; see our favorite artists performing in the studios of broadcast stations—in short, these two marvelous inventions will make audibility and visibility simultaneous.

[Editor's Note.—The author of the foregoing interesting article on television will be pleased to answer questions from readers of WCFL Radio Magazine. Just write your question on one of the Business Reply Postal Cards on page 3. They are self-addressed and do not require stamps.]

This Amazing Generation

THE girls surely do work fast these days.

One became a grand opera star at 19, and at 22 she retires with a snug half million. Marion Talley quits the Metropolitan cold to go back to the fertile wheat plains of Kansas, there to be a lady farmer.

"How come?" you ask.

Listen to Marion:

"I have money enough."

"I don't want to sing."

"I don't like New York."

If these are not three valid reasons, will someone kindly tell why?

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The Air Tied Up With a Shoestring

(*Continued from Page* 16)

and its subsidiary organizations is reported to be around $4,000,000.

No small concern with any prudence bucks such an aggregation of wealth unless it is compelled to fight.

How much of a cash investment was made in the Radio Corporation of America, I have no means of knowing. Probably it was very small.

Last year, there were 1,155,400 common shares of no par value outstanding. In February, these shares were worth $85.25 each. In December, they were worth $420 each. They went above $500 each in January of this year.

Since the first of the year, the R. C. A. has split its stock five for one. The split stock has sold as high as $109.75 per share, which is equal to $548.75 for each of the old shares.

And if they cost their original owners more than a dollar a share, I miss my guess.

Let no one imagine that this is merely a "ballooned price." The General Electric and the Westinghouse keep control of the R. C. A., and neither of these parent companies deals in balloons.

The income of the R. C. A. in 1928 was just short of $102,000,000. Of course that is not enough to warrant present prices of the stock—but unless everybody who deals with the subject is mistaken, radio has just started. The ultimate value of a monopoly of the air would run into billions.

PRIVATE MONOPOLY ESTABLISHED

When an effort was made to bring order out of the wireless chaos at the close of the war, Josephus Daniels, Secretary of the Navy, strongly urged a government monopoly of communications; at least for a sufficient length of time to take stock of this new means of communication, and see how it would develop.

His advice was not followed; and in spite of the efforts of such far sighted legislators as Senator C. C. Dill of Washington, and Representative E. L. Davis of Tennessee, we seem in for a private monopoly instead.

I do not believe anybody at this time can set limits to the development of radio communication. Right now it is an emergency service which would keep the world fairly well linked if every telephone and telegraph wire on the planet were cut.

Radio telephony is in its babyhood—has hardly cut its first tooth—yet it is a threat to the older system right now.

One does not need much imagination to see the day when our present telegraph and telephone systems, with their enormous investment in copper wire, to say nothing of other materials, will be outdated and replaced by radio communications. When that day comes, *what will a radio monopoly be worth?*

At present, R. C. A. has two competitors over a part of its field. Whether their rivalry is serious or not need not be discussed. *Previous experience shows that when competition narrows to such limits, it is always replaced by combination in some form.*

The situation would be a great deal more hopeful if Organized Labor, the only force at all capable of standing up against commercial monopoly, had been given a fair chance. But while the radio law is probably about as good a measure as could be drawn at the time it was passed, it was administered in direct opposition to the wishes of the senators and representatives who framed and passed it.

President Coolidge "packed" the Radio commission just as he "packed" the Tariff commission and the Trade commission: in the interests of Big Business and privilege.

WCFL, the Voice of Labor, belonging to the Chicago Federation of Labor, was permitted to use only 1,500 watts power, and has to divide time with a station on the Pacific coast.

But right in the same neighborhood, WGN, for the Chicago Tribune, has 15,000 watts power and a cleared channel. Is it necessary to say more?

There is a strong probability that monopoly control already is slowing up the technical and scientific progress of radio.

For example, any developments in wireless telephony made in the laboratories of the General Electric company become at once the property of the American Telephone & Telegraph company, by virtue of a licensing agreement.

But the American Telephone is not anxious to hurry the day of wireless telephones. Quite the contrary, it wants to protect its existing investment in the other kind of telephones.

And the General Electric is not likely to work very hard developing devices which it is not allowed to use. In both ways, progress is hurt.

The Radio Corporation of America at present stands condemned for violating the anti-trust acts. If that judgment is made final, the R. C. A., under present law, will forfeit its license to broadcast. But of course the company will fight the matter to the highest court, and meantime, it is moving heaven and earth and particularly its representatives in Congress to get the law changed.

Lowell was a great poet; but sadly behind the times. If he were writing now, he might tell us

> "Tis the ether alone that's given away;
> 'Tis only the air may be had for the asking—"

provided the asking is done by a sufficiently powerful group of corporations.

But at least, let us not fool ourselves with the notion that we handed over this public heritage to "private enterprise" because of the vast sums necessary to develop it.

The truth, as nearly as a layman can get at it, is that the Radio group tied up the air with a shoestring, and bought the limitless ether with a Rockefeller dime.

Listening In On Phone Gossip By Radio

"OF all the radio service calls I have had," relates an old service man, "one of them stands out as having the most peculiar reason behind the call.

"Mrs. Blank is known as a gossip, but I was very much astonished when she showed me a newspaper clipping which told of telephone conversations being picked up by a radio set located some distance away. Then, to complete my discomfiture, she ordered me to fix her set up so that it would do the same thing, and specified the phone line she wished to listen-in on!

"Naturally I lost my professional reputation, as far as she was concerned, when I told her it was just an accidental happening, and that I was not genius enough to fix her set so that it would do the same thing, especially to receive from a particular line, whose users she felt sure were withholding information from her.

"However, I retained my self-respect, and this gossip's neighbors thanked me heartily when she publicly complained about my refusal to aid and abet her in eavesdropping!

"The thing this gossipy old woman wanted done sometimes results from having the radio lead-in wire too close to a telephone wire. However, as explained to her, it is an accidental occurrence, resulting from conditions that are very difficult and sometimes impossible to reproduce. It is a thing that no right-thinking person would want to have happen."

Using Shorted Condensers

SHORTED small condensers can be used in emergency cases by placing them across the 110-volt alternating mains for a second. This burns out the short, but the condenser must be tested for opens before it is used.

Use the Mails Without Cost

Only members of Congress and other government officials are supposed to be able to use the U. S. Mails without paying postage. However, WCFL Radio Magazine has made a clever adaptation of a recent postal regulation which makes it possible for you to enjoy the privilege of using the mails without paying postage. See Reply Postal Cards on page 3.

Pokes Fun at Our Weaknesses

OUR friend Jack Woodford has written a book. We knew he would do it some time soon, for he has written so many delightful short stories and sketches, two of which have appeared in recent issues of WCFL Radio Magazine. Our readers will recall with pleasure "The Crooked Hero," appearing in our winter issue, and also "Help Wanted," appearing in our spring issue. Both were from the pen of Jack Woodford.

Jack Woodford

And now he has published a number of his most interesting stories and articles under the queer title, "Evangelical Cockroaches." These studies and sketches ferret out the many foibles of human beings, their love for societies and clubs, their slave-like attitude to convention and their ever-present fear of their neighbors', or even their own, beliefs.

For instance, there is the story of "Mary, Mary, Quite Obstreperous," or another concerning "Enoch Ardent." Other titles include "The Story's the Thing," "These Putrid People," etc.; all equally funny, biting, satisfying.

Mr. Woodford began life as a telegraph operator, had a hand in unionizing his craft and then turned to writing. He has contributed to most of the important magazines in America and his literary talents have been recognized for some time. In these short stories he brings to bear a very agile intellect, penetrating observation, and a fund of humor.

New Device Eliminates Line Noises

CONTRARY to the layman's supposition not all the interfering noises heard through an electric receiver are picked up by the antenna for much of this disturbance is caused by defective electrical apparatus operating near or in close proximity to the receiver and carried back through a power line which furnishes power for the unit. Engineers have experienced difficulty in silencing such interference without affecting the efficiency of the radio receiver. Insuline Corporation of America recently has announced the Filtervolt, which accomplishes this purpose. Insuline engineers maintain that this device includes an application of filter systems which has not been used previously in the construction of eliminators. The following details are technical data concerning the construction taken from a recent statement made by the company's engineers.

The Filter Volt

"The first filter section employs a special case of cambeti filter in a 'low-pass' connector arranged for the filtration of an a. c. line. The application of certain well-known formulae determines the frequency above which the current is alternated (diminished) either greatly or completely. We wish to pass the 60 cycle line current with no loss, but we must so proportion the filter constants as to completely eliminate frequencies not of that order, short period crackles and snaps caused by switches opening or closing and high pitched whines from various electrical apparatus extending in frequency from a few hundred cycles up to well outside the audibility range.

"In a second section is used a slightly different arrangement consisting theoretically of resistance and reactance elements as opposed to the inductance on capacitance elements.

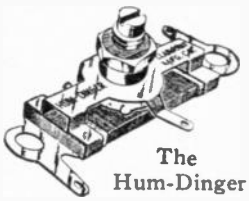
"The resistance elements in the second section are wound from a special alloy and by virtue of a peculiar temperature, resistance coefficient not only aids in the suppression of short-period line variations but also in the voltage regulation of the power supply. The inducter elements are capable of handling heavy loads and are designed to have constant reactance over a wide range of high frequencies."

FILTERVOLT can easily be installed by the layman and requires absolutely no attention after its installation. The plug from the receiving set is removed from the house current outlet and the plug from the eliminator inserted in the outlet in its place. A receptacle provided on top of the eliminator is used for the connection between the set and the eliminator. There are no working parts that require attention.

Filtervolt may also be used at the source of disturbance when some faulty electrical appliance is broadcasting interference which is picked up by the set antenna.

The Hum-Dinger

AN adjustable center-tap resistance of extreme compactness, simplicity and convenience is provided in the Hum-Dinger, just introduced by the Clarostat Mfg. Co., Inc., of Brooklyn, N. Y. The Hum-Dinger is smaller than any other adjustable center-tap resistance. Over the center portion of the winding slides a positive contact, actuated by a slotted shaft which is turned by an ordinary screwdriver. The Hum-Dinger may be mounted on a panel or sub-panel, by means of a single hole, or on the baseboard by wood screws slipped through holes in the end lugs. Connections are made to the three soldering tabs. The wire winding is held by a threaded fibre support, so that the turns cannot slip and short-circuit. The contact arm is protected from bending. The entire device is extremely rugged, with nothing to get out of order and nothing to wear out. The standard resistance value for the usual A-C tube circuit is 30 ohms, but other resistance values from 6 to 500 ohms are available.



The Hum-Dinger

The main application of the Hum-Dinger is as a center-tap grid return for A-C filament tubes. It takes the place of the center-tap transformer winding and provides a simple means of compensating for circuit and filament unbalance, in reducing A-C hum to an absolute minimum.

Clarostat Strip Resistors

IN THE Clarostat Strip Resistors, the Clarostat Mfg. Co., Inc., of Brooklyn, N. Y., has endeavored to provide a better grade fixed resistance. To begin with, the fibre support is threaded so as to hold the turns firmly in place, preventing short-circuited turns and altered resistance. The fibre has rounded sides, for less strain on the wire and also for neatness. The ends are firmly clamped for positive contact and mechanical strength, and have mounting holes as well as soldering tabs. The resistance value stamped on one end is maintained to within 10 per cent. The Clarostat Strip Resistors are available in any resistance value from 1 to 3000 ohms, and can be furnished in an adjustable model, if preferred.

Your inquiry written on one of the Business Reply Postal Cards on page 3 will bring as prompt a reply as a personal letter. No stamp is needed.

A Little Nonsense---

Passing the Buck

"Doesn't your wife ask you for money?"

"No she says that's the bill collector's job."

* * *

How Much?

"Would you like some nice spaghetti, Mrs. Nuwedd?"

"Why, yes. How many yards would I need for two of us?"

* * *

Our Expectation

A clergyman advised a parishioner, a somewhat morose woman, to take up some subject of study that would lend variety to her daily routine.

"Oh, I could never master any subject," she replied.

"What! not even your husband?" exclaimed the clergyman, with an effort at humor.

"My husband!" came the retort. "He's not a subject; he's an object."

* * *

The Eternal Pastime

Paige: "Is your wife through house cleaning yet?"

Ashley: "No."

Paige: "No! How long has she been at it?"

Ashley: "We've been married sixteen years!"

* * *

Prepare

A student failed in an exam in all the five subjects he took.

He telegraphed to a brother: "Failed in all five. Prepare papa."

The brother telegraphed back: "Papa prepared; prepare yourself."

—Exchange.

* * *

Thoughtful Wife

Gangster: "I'm only going to a prize fight, honey."

His wife: "Take your machine gun, anyhow. You might not get good seats, dear."

* * *

Movieland

A colored man was hired as an extra in a picture studio and was told to go into a cage with a lion.

"No, sah!" he objected. "Ah ain't gwine in no cage wif no lion, nohow."

"But," said the assistant director, "that lion's a pet. He was raised on a bottle."

"Yas, sah, Ah know. Ah was raised or a bottle, too. But Ah still eats meat."

—Modern Woodman.

* * *

Suspicious

Mrs. McTavish came into her husband's shop with a rush one morning about half-an-hour after opening time. "What's the matter wi' ye, wuman?" demanded the old man. "Oh, Jeems," she began, breathlessly, "an awfu' thing has happened. My weddin' ring! It was slack a wee, ye ken. I've lost it! And I've hunted high and low but canna find it." "Awa hame wi' ye," said McTavish, "I've fand it a' richt." "You!" "Aye, me; I came across it in the hip-pocket o' my trousers."

—Modern Woodman.

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STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912

of WCFL RADIO MAGAZINE, published quarterly at Oak Park, Ill., for April 1, 1929. State of Illinois, County of Cook, ss.

Before me, a notary public, in and for the State and County, aforesaid, personally appeared Paul Stephens, who, having been duly sworn according to law, deposes and says that he is the business manager of the WCFL RADIO MAGAZINE, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Co-operative Farmer-Labor Radio Listeners' Association, Chicago, Ill.; editor, Edward N. Nockels, 623 So. Wabash Ave., Chicago, Ill.; managing editor, Edward N. Nockels, 623 So. Wabash Ave., Chicago, Ill.; business manager, Paul Stephens, 623 So. Wabash Ave., Chicago, Ill.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.) Co-operative Farmer-Labor Radio Listeners' Association, not incorporated, composed of members of Labor Unions and members of the Farmers Educational and Co-operative Union of America; address, 623 So. Wabash Ave., Chicago, Ill.

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

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stocks, bonds, or other securities than as so stated by him.

PAUL STEPHENS,
Business Manager.

Sworn to and subscribed before me this 27th day of March, 1929.

[Seal.] Sybil Mollie Levitas

(My commission expires January 14, 1931.)

Leave It To Eddie

By ELLIS PARKER BUTLER

(Continued from page 41)

th' vacuum cleaner. An' the illictric iron. That's quite an idea, th' illictric iron. An' then there's th' illictric wash-tub—that's another wan. . . . Mamie, how soon will the dinner be ready? Or do I have to choke t' death with this collar?"

"I'll ask Ma," Mamie said, and started for the door.

"I put the ice-cream in th' refrigerator," said Mr. Casey; "half peach an' half strawberry, on th' top shelf by th' ice. Th' olives are on th' table."

"All right," said Mamie, "but you don't have to tell everybody everything you know."

"Just for that," said Mr. Casey, "I won't tell you th' corkscrew is in th' stable, where I took it t' open a bottle of med'cine for th' mare."

"Ma don't need it," said Mamie. "She can open the olives with a fork."

"You don't happen to know," said Mr. Casey to Eddie, "where I can buy a good horse cheap?"

Intrinsically, Mr. Casey was of the salt of the earth, but he had his troubles, and his troubles sometimes fretted him to such an extent that he lost that dignified placidity of demeanor characteristic of a bronze statue of a sheep. He loved his family, but he shouted when he was irritated, and, since the ice business had become so exasperating, that was all the time. Now, however, as he conversed with Eddie Murphy he began to accept matters philosophically. Perhaps his good clothes and his collar made him feel a little as if he was in church and ought to behave accordingly.

"No, I don't know much about horses," Eddie said. "I'm sorry, Mr. Casey; but I'll ask around if you want me to."

"Let be! Let be!" said Mr. Casey in his most friendly manner. "Put yourself to no trouble, Mr. Murphy. There's plenty of horses. Now, they're tellin' me you're goin' to marry my Mamie."

"I certainly am," Mr. Casey," said Eddie Murphy eagerly. "With your consent, of course. I was saying to Mrs. Casey——"

"She's a fine girl, is Mamie," Mr. Casey said. "Yes, she's a dang fine girl, if I do say it."

"Now, Pa!" begged Mamie, but Mrs. Casey put her head in the room and suggested that the table was ready to be set. "Don't let Pa give you any of his hot air about me, Eddie," Mamie said, and went from the room happily. As soon as she was gone, Mr. Casey edged his chair nearer to Eddie Murphy and leaned forward with his elbows on his knees. He motioned to Eddie to move his chair closer.

"Them women," he said in a hoarse whisper—"they're so ixcited when a lad comes courtin' a girl they don't know are they afoot or horseback, Murphy. Th' first lad that comes makin' sheep's-eyes they think is the king of the world or I don't know what. But you an' me are men, Murphy."

"Yes, sir," said Eddie. "That's so."

"An' if th' father of a girl don't look out for what's what, who will Murphy?" asked Mr. Casey.

"That's right," agreed Eddie. "And I'll tell you anything you want to know, Mr. Casey. I know it is a big thing to come and take away the last of a father's daughters, especially when she is such a splendid girl as Mamie is. I'll answer anything you want to ask me, sir."

"Sure! That's the way to talk," whispered Mr. Casey. "Well, now, are ye a respectable young feller?"

"Why, yes," said Eddie. "Yes, I am, Mr. Casey. I can say that honestly."

"Fine!" said Mr. Casey. "That's one load off me mind, annyway. I'd not be wantin' Mamie to marry one of these harum-scarums, ye mind. Now—have ye a good stiddy job, Murphy? Does it pay ye good money?"

"I'll say it does," said Eddie enthusiastically. "I wouldn't trade my job for any other job you can mention. I like the work. It gets me out in the open air and keeps me moving around and meeting new people. I love it. Some fellows don't like canvassing, but I'm crazy about it, Mr. Casey. Everybody treats me fine, men and women both. You see, in this job of mine I mostly have to meet the women first—give them a talk and get them interested at their homes—and then I have to see the husbands and close the sale. And they all treat me fine."

"You have a nice friendly way wit ye," said Mr. Casey approvingly. "I can see ye're a lad everybody would take a fondness for. Wellin' now this article ye're agent for——"

"Come and eat," said Mamie, opening the door.

For a hurried pick-up dinner Mrs. Casey had done well. There was a ham, and she had sliced it and fried eggs to go with it, and she had fried a new lot of potatoes, and with the other contents of the refrigerator and the olives stuffed with pimentos it was a good enough dinner for anyone, although Mrs. Casey loudly proclaimed that she was ashamed to set it before a guest.

Mr. Casey was busy for a while. He had his eating to do, and, as usual when he ate, he discoursed of the ice business. Until the ice-cream was served he told Eddie Murphy in gloomy detail the tribulations of an iceman.

"It's a slave's job," he said as he dipped into his peach and strawberry. "Look at this ice-cream now. It's from th' store, and where does th' store get it? From th' city. And where does th' feller in th' city git his ice? Not from me, Murphy; not from annywan. He makes it. Wance there was a day when it was 'More ice today Casey,' and 'About twice as much today, Casey,' for what was everybody doin' but makin' their ice-cream! And now look at thim! 'We'll not be wantin' but half as much ice today, Casey; we're dinin' out at the Stewed Beef Tea Room,' and 'You needn't leave anny ice today, Casey; we're goin' on an ottymobel trip for a week.'"

"Oh, forget the ice business, Pa!" begged Mamie.

"Wouldn't I like to!" said Mr. Casey. "It's a dog's life. Up at daylight t' go t' th' fact'ry, and no end of th' ice meltin' on ye this hot weather, and around ye must go, rain or shine, breakin' y'r back carryin' th' stuff all around t' the back door, and lift out sivin milk bottles and two raw tomatys and what not, and h'ist th' stuff in, and put all th' things back, an' some Swede or Pole or I-don't-know-what yells at ye, 'look at my clane floor! You mek all dirty. We get new iceman.' A dog's life!"

"Yes, it's a mean job," said Eddie.

"An' gettin' worse," said Mr. Casey, shaking his spoon at Eddie. "These furrin hired girls yellin' at me I can stand, an' soakin' with sweat on a hot day an' soakin' with rain on a wet one, I can stand. Yes, a mare dyin' on me now and again I can stand, Murphy, but dang these fellers that's going around sellin' everywan machines t' put in their refrig'rators to make their own ice! I'd like t' lay me hands on one of thim wance."

Eddie Murphy colored.

"The's a feller I on'y want to meet wance," said Mr. Casey, getting red with anger at the thought of the fellow. "I've heard th' talk he hands me customers: 'Why go on usin' ice that ye don't know what th' dirty iceman has had in his wagon, or maybe a dead pig for all ye know, ma'am,'" mimicked Mr. Casey in a whine that was supposed to represent the voice of the ice-machine salesman. "'Why put up with the mud-covered feet of the filthy iceman, trackin' up your nice clane kitchen day by day?' That's th' talk he gives thim, Murphy."

"I think this is nice ice-cream, don't you, Ma?" said Mamie.

Mr. Casey scowled at her.

"Ice-machines!" he scoffed. "'All ye do, ma'am, is turn on th' illictricity an' see the dear little cubes iv ice for th' cocktails!' A swell lot of cocktails there is in this house, Murphy! Or like to be. Sivin of me best customers quittin' on me this very week! 'No dirty ice in'amongst the food, ma'am; nawthin' but a current of cold air like from th' North Pole!' An' six of me customers quittin' me last week! 'We'll want no more ice from ye,

(Continued on page 70)

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Re-hash stuff, so sadly prevalent in present day radio magazines; pictures of the latest radio mast in Timbuctoo; stories how Roxy killed a fly on the mike; picture gallery of radio broadcast announcers flanked by goggle-eyed sopranos; radio mathematics that are swell food for Einstein, but that give you indigestion; curves, graphs and charts of everything imaginable—glorious dope for university professors, but a total loss to you.

No, sir, if we know anything about you at all, we know that you want PRACTICAL RADIO STUFF, and that's what you will find in RADIO-CRAFT.

BUT we want also your letters, your comments, your thoughts. **And then we want your articles for which we shall pay good rates upon publication.**

You may not be a radio writer, but you probably know of some new radio wrinkles, a new circuit, an odd radio experience. That's the stuff we want. Remember RADIO-CRAFT will be YOUR OWN radio magazine, a chummy sort of paper, one where all the readers chip in and have their say.

And if by any means you can't dig up an article, well then we know you will have lots of questions to ask. Shoot 'em along, but don't ask more than three at a time. Remember we can only publish those of most interest to all of you.

RADIO-CRAFT is the radio builder's and constructor's paradise; it is well edited, well printed and **profusely illustrated with hookups,** diagrams and constructional illustrations.

Don't forget to tell your radio friends about this advertisement and get them to subscribe also.

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Enclosed, find $1.00 for which enter my subscription to your new monthly magazine, RADIO-CRAFT for 8 (eight) months. Please mail all copies to address below:

Name .....

Address .....

City and State.....

Leave It To Eddie

By ELLIS PARKER BUTLER

(Continued from page 68)

Casey; we've boughten us wan iv thim Aurory Borealis ice-machines. Good day to ye, Casey. Go home an' starve, an' the divil take ye!'"

Mr. Casey paused to glare at Eddie Murphy, and he saw that Eddie was as white as the table-cloth—whiter.

"Oh, ho!" crowed Mr. Casey menacingly. "So that's the' fine business ye are in, is it, Mr. Murphy?"

He arose and laid his napkin carefully on the table, but he did not take his eyes off Eddie Murphy who had once been a prize-fighter.

"Don't hit him, Eddie! Don't hit him!" cried Mamie, grasping her lover's arm and clinging to it with both hands. Having put down his napkin, Mr. Casey grasped the back of his chair with his right hand and swung it behind him, waving it to and fro.

"Out of my house!" he shouted. "Out of my house!"

"I think I'd better go, Mamie," said Eddie hastily. "You don't want a ruckus here."

"Jawn!" shouted Mrs. Casey.

"Eddie! Eddie!" cried Mamie, still clinging to Eddie's arm as he backed toward the door, his left arm raised defensively.

"I better go, hon," Eddie said. "It'll be all right. Don't you worry, peaches. You throw my hat out the front door. It'll be all right."

"Eddie?" wailed Mamie, but the door shut behind young Mr. Murphy.

Regardless of Mr. Murphy's hat, Mamie threw herself into a chair and hid her face in her arms and burst into tumultuous tears. Mrs. Casey, her hands on her hips, talked to Mr. Casey at her highest rate of speed, but Mr. Casey did not hear her because he was shouting so much louder. He was raging up and down the kitchen, shaking his hands in the air. He was indeed very angry. He seemed to be angry with Eddie Murphy, but even more angry with Mamie, because she had taken to her heart the man who had been putting Aurora Borealis Refrigerating Machines in the homes of all his best customers.

"What next?" he cried. "I raise a daughter, an' she does this t' me! I hand her an ixpinsive eddycatin in typewritin' an' she t'rows it t' th' birds an' ties up to th' murderer that is doin' whativir he can t' roon th' ice business I'm in! What next? Th' mare dies on me, an' I must put on a stiff collar an' feed ice-cream t' th' blue-eyed defamer of her old man with a spoon! What next? Six of thim hellion machines last week an' sivin of thim this week already, an' nawthin' will do for th' fine lad but olives with stuffin' in thim! What next?"

"I don't care! I don't care! I love him; I do! I don't care!" wept Mamie.

"There! There!" comforted Mrs. Casey, patting her daughter on the shoulder. "Don't you cry, darlin'. You know how your pa is, mad one minute and nobody would know it the next. Go on an' t'row Eddie his hat, sweetheart. An' as for you, Jawn Casey," she added as Mamie left the room, wiping her eyes, "I'm ashamed fer ye! You'll be breakin' the girl's heart—that's what'll be next, Jawn Casey. Where you goin'?"

"Out!" said Mr. Casey. "Out!" and he picked up his cap. "Out, an' not t' buy peach ice-cream, nor yet straw-b'ry ice-cream, nor not even a bottle of olives with stuffin' in thim, An' I'll be back whin I git home."

The next few weeks were irritating ones, but it seemed as if nothing was going to be the next thing, particularly not a wedding. Mamie was eager to elope with Eddie, feeling sure that they could find a priest in New Jersey who would marry them. Eddie, however, would not agree.

"No, we won't go in for that stuff, peaches," he told her. "We'll find a way. I ain't sore at your old man; he's got the kick coming. We've got to look at it his way, too, honey. Twenty-seven years in the ice business, and then have me come along and shoot it to pieces. We'll just wait a while, kid, and something will turn up."

"What?" asked Mamie. "What?"

"You leave it to Eddie," said young Mr. Murphy gaily. "Eddie is the boy who finds the way. That right?"

"But Pa is so mad!"

"I'll find the way to make it all right," Eddie insisted. "I'm the greatest little finder in the world. Why, peaches, didn't I find you? Out of all the 'steen million girls in the world, didn't I find you, peaches? Didn't I peaches? Kiss me!"

It was well on toward the end of August before Mr. Casey began to be himself again. By the twenty-fifth he had so far quieted down that he spoke to Mamie without unpleasant remarks about Eddie Murphy, and on the twenty-sixth Mrs. Casey heard him singing "My Wild Irish Rose" as he bedded down the horses in the stable, and he never sang unless he was in good humor. That evening when he entered the kitchen he slapped Mrs. Casey on the back so heartily that she exclaimed "Ouch!"

"What's got into ye, Jawn, t' be nearly knockin' th' arm off of me?" she asked him. "Ye ack like th' happiest man in Conne'ticut."

"An' am I not, then?" he demanded. "I'll tell th' world I am, Annie. Mebby you've seen I've been a busy lad these days? I've put through a deal—two of thim."

"Well, it's done ye good, I'll say that for ye," said Mrs. Casey.

"Sure an' it has," admitted Mr. Casey freely. "I've had a grand bit of luck, Annie, with th' ice business goin' t' th' divil an' all. Do ye know that Eyetalian lad that run th' fruit store, Mike Amato? I've sold him th' ice business, Annie."

"Well, praise be t' th' saints!" exclaimed Mrs. Casey. "Ye're well rid of it, Jawn. An' what are ye goin' into now for a change?"

"A grand business," said Mr. Casey enthusiastically. "Coal, Annie. I've purchased old Jerry Hunter's coal business off of him, lock, stock, an' barrel, ottymobel trucks an' all. Where is that fine young lad Eddie keepin' hisself these days?"

"Well, th' last I saw of him, three minutes agone," said Mrs. Casey, "he was leanin' on th' front gate, chinnin' Mamie t' beat th' band. If you have a mind t' have a word with him, I'll go t' th door an' call him, Jawn, for if ever there was a lad I took a likin' to——"

She was interrupted by Mamie and Eddie himself, for they came into the kitchen hand in hand, happiness beaming from them like the sparkle of an electric sign.

"Pa!" Mamie cried. "It's all right! Eddie fixed it. You won't be sore at him now. He's quit the refrigerator machines, Pa."

"Yes, sir," said Eddie, his bright eyes sparkling at Mr. Casey. "I did that thing. I've got a new line now. A peach of a line. I've tried it out this week, and it sells like hot cakes. I'll put one in every house or I'm no good."

"I bet ye will, Murphy," said Mr. Casey. "You're the lad can do it."

"You know it!" laughed Eddie. "If it's anything I can talk about, and this has some selling talk, believe me! Because, just consider coal for one minute—bulky, dirty, making a lot of useless ashes that have to be carried out. I'll bet you that in my district there will not be a ton of coal sold next year and——"

Mr. Casey took a deep breath.

"An' may I be so humble as t' inquire what ye are sellin' these days that will roon th' coal merchants, Mister Murphy?"

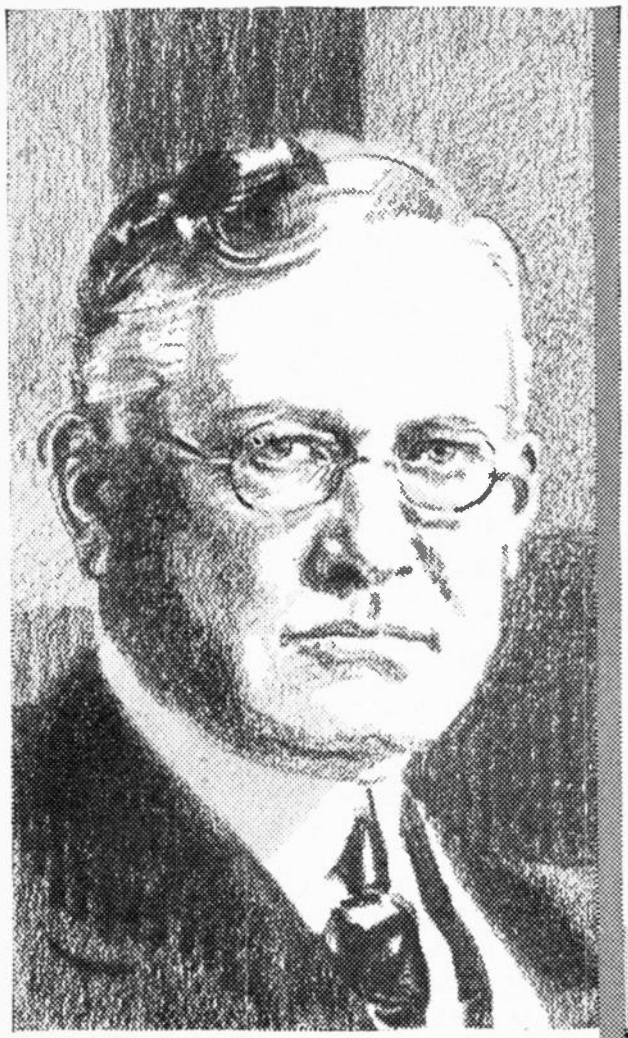
Mrs. Casey sat down hard on one of the stout kitchen chairs.

"The Equatorial Self-feed Oil Burner," said Eddie Murphy.

"Oh, ho!" said Mr. Casey in the tone of a warrior uttering his battle-cry. "Oh, ho!"

"Jawn!" cried Mrs. Casey.

(Continued on page 76)



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What Becomes of All the Old Radio Sets?

(*Continued from page* 28)

sprinkles the plant in the flower pot, causing the flower to bloom, the perfume of which attracts a bee which stings father so that he awakes and replaces the baby's bottle. Honest, folks, some sets offered in trade are just like that!

So the dealers find that approximately ten percent of the sets traded in are absolutely worthless as far as resale value or reclaiming of good parts is concerned. Sixty percent of the sets can be overhauled and put into salable condition by the expenditure of time, money and brains. Only thirty percent are Jim Smith to John Jones jobs—cases where a dust rag, a nut wrench, new tubes and a little intelligent tinkering make a set really worth while to a man who can't quite connect with the price of a more modern set.

What is the result? Where do the old radios go, anyway? What can you expect to receive in trade for the old set?

As one very honest dealer answered when asked about how much he paid for trade-ins, "The least amount possible!"

Now honest dealers are in one of four classes as regards sales and service.

Group One—Does not take old sets in trade, and does not give service on the new sets he sells. Naturally, his prices are, beyond doubt, the lowest on the radio market. His customer really pays the balance by either giving away or smashing up his old set, and in the service charges he pays when he calls in the fix-it man from around the corner. The dealer of this class is usually a big seller—a department store or a down-town concern whose volume of new prospects is such that he can ignore good will resulting from service.

Group Two—Does not accept old sets but does give good service. Service, especially good service, costs money. This man's prices are higher, but are worth it. Still, he has no old-set problem, and his prices are attractive.

Group Three—Does accept old sets, but does not give service on old sets he resells, or on new sets. Prices about the same as for group two, because, while he doesn't have to pay for service, he does have to discount what he pays in trade for the old sets.

Group Four—Accepts old sets, and gives service. This is an all-around organization, giving the customer a welcome, going and coming. Prices are a little higher—satisfaction usually leaves a good taste behind.

These honest dealers who accept sets for credit either junk the worthless sets outright, or sell them in job-lots with the sets that have to be rebuilt to a firm that makes a specialty of this work. Sometimes the service men reclaim a few parts to keep the fairly good sets going. Very often a service department keeps busy by putting a few selected sets into shape for resale at retail. This is in addition to the thirty percent of the sets sold with little more than a polishing and fitting with new accessories.

Sets bought in job-lots are inspected, the worthless sets broken up, the better ones rebuilt and put on the market in new clothes. Large organizations sell a mixture of old sets which have been rebuilt alongside of new but out-of-date sets of the same type or make which have been bought as surplus stock. Often rebuilt sets are advertised for special sales. Sometimes these sales are on a basis of allowing a small fixed price for your old set, regardless of its value.

There is no question about it, the old-set problem is as much with us as the used-car problem, but not nearly as well standardized and handled, largely because the home-built and other orphans are so difficult to classify. Your set will be accepted—even worthless sets are gladly accepted, merely because the dealer realizes it is well to get them out of the market. The price paid for sets is frankly figured to pay the dealer a profit in the long run. And hundreds of people who can't afford new sets are going to enjoy hours of radio entertainment using sets discarded, or traded in to the dealers.

Old radio sets—old friends of ours, they are—find new homes. As we listen to our new set, someone else is listening to our old, probably. Thus are time and distance defied—radio magic! But the question of where do old radios go is answered by the economic law of supply and demand. A usable set usually finds a market, and the price is governed by the amount and class of competition.

Walker Multi-Unit Finds Many Uses

A NEW radio device that is arousing much enthusiasm is the Walker Multi-Unit, manufactured by George W. Walker Mfg. Co., 13301 Durkee Ave., Cleveland, O. Its unusual merit makes this unit highly worthy of mention.

Manifestly, considerable effort has been applied in designing the Multi-Unit. Its flexibility is original—it combines all the single purpose of various radio devices in one, and without sacrifice in efficiency on any one particular use.

Either a.c. or d.c. tubes may be used, making the unit applicable to any style of receiver. Plug-in coils are furnished. The grid leak and fixed condenser are mounted on top of the panel so that they may be removed readily or shorted.

For convenience, in short-wave and sharp tuning, a bakelite vernier tuning dial is incorporated. The unit is small and compact. The panel measures 5x7 inches. The case, of brown Spanish leather effect, is 3 inches deep.

The unit is completely assembled and wired, the parts used being as follows: s.l.f. tuning condenser, midget condenser, r.f. choke coil, grid leak and fixed condenser, rheostat, bakelite vernier tuning dial, tube socket, and plug-in coil socket. All are mounted on a walnut-grained bakelite panel. As accessories, furnished with the unit, are a short-wave plug-in coil, broadcast band plug-in coil, four-lead adapter plug, screen grid tube clip, antenna fixed condenser, connector links and extra connection wire.

One need have no fear of static and electrical interference. The Walker Multi-Unit connects directly into a socket of the receiver by means of the adapter plug, regardless of whether the set is a.c. or d.c. design.

This application of the Walker Multi-Unit appeals not only to the service man, dealer and engineer, but to the novice as well, because of the simplicity of its use for so many purposes, such as a test for defective parts in a receiver; an aid to the tuning of an elusive station your receiver should be capable of reaching; an all-around trouble shooter, especially the setting-up of a signal your receiver should tune provided it is in an operating condition; a means of determining whether the condensers of your receiver are in resonance; a check on the quality of tubes in your receiver, etc. Some of the simple uses for this device are to measure the frequency of received signals; set a receiver, or transmitter, to a given frequency; trap out unwanted signals or interference; measure frequency in laboratory experiments; measure the frequency of transmitted signals.

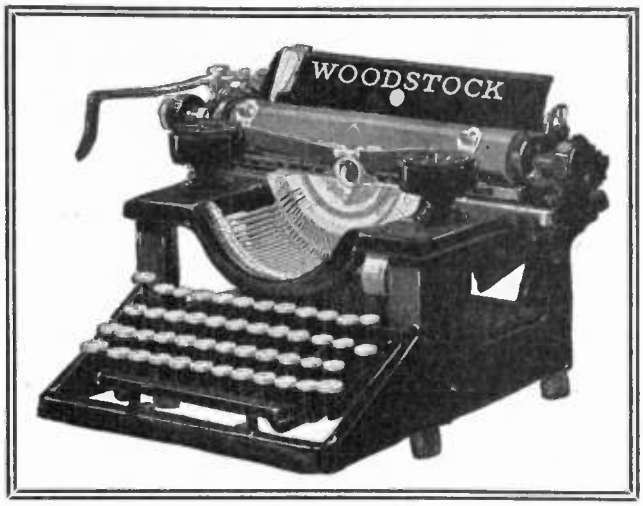
The lowly crystal is again worthy of recognition. The Walker Multi-Unit, with a crystal used in place of the grid-leak and fixed condenser, results in a device which may be plugged into the detector socket of your receiver.

An extra stage of tuned radio frequency, such as the Walker Multi-Unit, will sharpen the signal picked up and passed to the receiver. The extra tube will provide greater volume and permit the tuning of stations never before heard.

The Walker Multi-Unit makes an admirable portable receiver when equipped with a 199 type tube, dry batteries and phones. Its value to the tourist or vacationist is appreciated.

The circuit used in this unit is said to be one of the most efficient for short-wave experiments. The single s.w. coil will cover a band of about 15 to 95 meters. This includes all of the popular short-wave stations of the world.

The most satisfactory television tests have been conducted on the short waves. Preparations are being made by some of the most powerful stations, to transmit television signals on a regular schedule. The Walker Multi-Unit, plugged into the detector socket of your receiver, when equipped with scanning disc and etc., will permit the radio fan to experiment with television.



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ease of operation, dependability, high grade character work—and you'll realize the Woodstock is without a peer.

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Tune in on Station WCFL

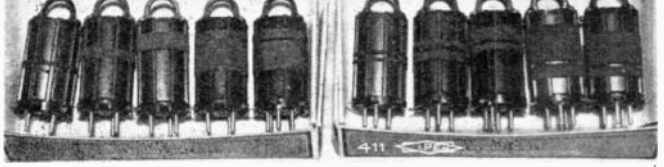
	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
7:00 a. m. to 9:00 a. m.	Early Risers' Club—Music and Setting Up Exercises.	Early Risers' Club—Music and Setting Up Exercises.	Early Risers' Club—Music and Setting Up Exercises.	Early Risers' Club—Music and Setting Up Exercises.
9:30 a. m. to 10:00 a. m.		Feltman & Curme Program.		
12:00 Noon to 1:00 p. m.	Organ Recital, Roy Farr. Weather Report. Bulletin Board. Farm Talk.	Organ Recital, Roy Farr. Weather Report. Bulletin Board. Farm Talk.	Organ Recital, Roy Farr. Weather Report. Bulletin Board. Farm Talk.	Organ Recital, Roy Farr. Weather Report. Bulletin Board. Farm Talk.
3:00 p. m. to 5:00 p. m.	Major League Baseball Games, Play by Play.	Major League Baseball Games, Play by Play.	Major League Baseball Games, Play by Play.	Major League Baseball Games, Play by Play.
5:00 p. m. to 5:30 p. m.	Junior Federation Club, Chicago Schools Participating.	Junior Federation Club, Chicago Schools Participating.	Junior Federation Club, Chicago Schools Participating.	Junior Federation Club, Chicago Schools Participating.
5:30 p. m. to 6:00 p. m.	Kozak Orchestra.	Studio Program.	Harry Winnick, Vice-Pres. Retail Clerks' Assn.	Painters' Union, Local 194.
6:00 p. m. to 7:30 p. m.	WCFL Vaudeville Period, Roxy and His Gang—NBC.	WCFL Vaudeville Period, Kozak Orchestra. Bakery and Confectionery Workers' Talk.	WCFL Vaudeville Period, Kozak Orchestra. Biographies in Bronze.	WCFL Vaudeville Period. Studio Program. Kozak Orchestra.
7:30 p. m. to 9:00 p. m.	Union Label League, Harry E. Scheck, Pres. Bulletin Board, Labor Flashes. Market Reports. Kozak Orchestra. Musical Comedy Selections.	Concert Ensemble. Bulletin Board, Labor Flashes. Market Reports. Frank Lundquist and His Navy Pier Jackies, Direction Norm. Sherr. Dixie Minstrels.	Studio Program. Chicago Boys' Club. Bulletin Board, Labor Flashes. Market Reports. Frank Lundquist and His Navy Pier Jackies, Direction Norm. Sherr. Popular Program.	Charles Wills, Member Ex. Board C. F. of L. Bulletin Board, Labor Flashes. Market Reports. Music of the Nations. Frank Lundquist and Navy Pier Jackies.
9:00 p. m. to 10:00 p. m.	WCFL Concert Ensemble, Earl Emory Edwards. Variety Program.	Variety Program, Harold O'Halloran, Soloist.	German Street Band.	Musical Potpourri.

The Pilot Super-Wasp

(*Continued from Page* 31)

The screen-grid tube amplifies and the tuning stage tunes. These are the answers to the two questions most frequently asked during the preliminary experimental work on the set.

There are two tuning dials instead of one, but somehow or other this feature does not seem to cause any trouble. The set "handles" just like a Browning-Drake or any of its numerous variations, and that set certainly is familiar to many thousands of people.



Two Sets of plug-in coils are available with the Pilot Super-Wasp short-wave kit.

In New York, in a location known to be utterly rotten for short-wave reception, the Super-Wasp pulled in station 5SW, in Chelmsford, England, with fair loud speaker volume, and on ear phones gave excellent signals on other broadcasting stations like PCJ, in Holland, and NRH, a little amateur outfit in Costa Rica, Central America. We won't even mention American stations like W8XK and the Schenectady group, or the hundreds upon hundreds of amateur and commercial telegraph stations. The range is unlimited; the operator merely has to shift coils and catch the stations at the right hours. Once he spots them on the dials he can bring them in regularly.

The Super-Wasp covers the short-wave channels quite completely. The wavelength ranges of the five sets of coils, which are fitted with handles of different color, for ready identification, run consecutively from 14 meters to 500 meters.

The tops of the shield cans are easily removable, so the coils may be plugged in and removed without trouble.

THE NECESSARY PARTS

The following Pilot parts are used in the construction of the Super-Wasp:

One metal front panel, 7½x18x$\frac{1}{8}$ inches, drilled and engraved.

One metal sub-panel 8x17x$\frac{1}{8}$ inches drilled with all mounting and wiring holes.

Four metal sub-panel brackets, No. 37.

Two .00016 mf. variable condensers, No. 1608.

One .00025 mf. variable condenser, with bakelite knob, No. 1613.

Two illuminated vernier dials, No. 1282.

One rheostat, 6 ohms, No. 906.

One tapped resistor, No. 961.

Two special Super-Wasp shield cans, No. 600, with all necessary mounting screws.

Two audio amplifying transformers, No. 931.

Two five-prong sockets, No. 212, (for plug-in coils).

Two four-prong shock-proof sockets, No. 206 (for 222 and detector tubes).

Two four-prong sockets, No. 213 (for audio tubes).

Two pairs grid-leak clips.

One 3-megohm grid leak, No. 758.

One 100,000-ohm grid leak, No. 750.

One fixed condenser, No. 50B, .0001 mf.

Five fixed condensers, No. 59, .01 mf.

One r. f. choke coil, No. 130.

Thirteen Bakelite top binding posts.

Ten sets of insulating bushings for binding posts.

One package of hardware, including all necessary nuts, bolts, and washers for mounting of parts, soldering lugs, and special double-ended lugs for mounting of fixed condensers.

Two sets of plug-in coils, made especially for the Super-Wasp, Nos. 601-A and 601-D.

You'll Enjoy These Features

	FRIDAY	SATURDAY	SUNDAY
7:00 a. m. to 9:00 a. m.	Early Risers' Club—Music and Setting Up Exercises.	Early Risers' Club—Music and Setting Up Exercises.	
9:30 a. m. to 10:00 a. m.	Feltman & Curme Program.	10:00 to 11:00 a. m., Marimba Orchestra. NBC.	
10:00 a. m. to 10:45 a. m.			Copeland Smith League, Dr. C. Copeland Smith.
12:00 noon to 1:00 p. m.	Organ Recital, Roy Farr. Weather Report. Bulletin Board. Farm Talk.	Organ Recital, Roy Farr. Weather Report. Bulletin Board. Farm Talk.	
2:00 p. m. to 2:45 p. m.			Organ Recital, Roy Farr. Vocal Recital by Vella Cook.
2:45 p. m. to 5:00 p. m.			Major League Baseball Games, Play by Play.
3:00 p. m. to 5:00 p. m.	Major League Baseball Games, Play by Play.	Major League Baseball Games, Play by Play.	
5:00 p. m. to 5:30 p. m.	Junior Federation Club, Public Schools Participating.	Junior Federation Club, Public Schools Participating.	
5:00 p. m. to 6:00 p. m.			German Radio Hour.
5:30 p. m. to 6:00 p. m.	Kozak Orchestra.	J. P. Dunn for Brotherhood of R. R. Clerks.	
6:00 p. m. to 6:30 p. m.	WCFL Vaudeville Period.	WCFL Vaudeville Period.	
6:00 p. m. to 8:00 p. m.			Dr. Copeland Smith. Kozak Orchestra. Vocal Recital by Pauline Stephens.
6:30 p. m. to 9:00 p. m.	Studio Program. Variety Program. Bulletin Board, Labor Flashes. Market Reports. Frank Lundquist and His Navy Pier Jackies, Under Direction of Norm. Sherr.	Kozak Orchestra. Popular Program. Farm Yard Fiddlers. Bulletin Board, Labor Flashes. Market Reports. Frank Lundquist and His Navy Pier Jackies.	
8:00 p. m. to 9:00 p. m.			Frank Lundquist and His Navy Pier Jackies, Under Direction of Norm. Sherr. Organ Recital, Roy Farr.
9:00 p. m. to 10:00 p. m.	WCFL Concert Ensemble, Burt Squire, Baritone.	Art Linick's Dunkers' Club. Music Publishers' Hour.	Studio Program.

Haynes Radio Log Free! Fill in and mail one of the Business Reply Postal Cards on page 3 and a copy of the latest revision of Haynes Radio Log will be sent to you. No postage stamp is required.

Another Radio Artist Scores

HERE is the story of another WCFL radio entertainer who has achieved success. Although still quite young, Eleanor Masquelet has reaped a handsome profit from the publicity gained through singing over Station WCFL. Just recently Miss Masquelet finished a five-week contract with the Balaban & Katz theaters in Chicago, and is kept quite busy with incidental engagements. That's mighty fine for a young lady who is not yet eighteen.

Miss Masquelet is a "Blues" singer and first attracted attention as a juvenile entertainer, starting at the age of eight. She was first heard over Station WCFL about a year ago and has since been heard quite regularly over the radio. Some months ago she entered an opportunity contest sponsored by Balaban & Katz. She won easily in the preliminary elimination contest and carried off the honors just as handily in the finals, winning a gold loving cup and a five-week theater contract. Then came offers of tours which Miss Masquelet decided to defer for the time being so that she might fill local engagements.

Miss Masquelet lives with her parents at 5510 South Halsted street and is a graduate of the Mercy High school at Eightieth and Prairie streets. Her picture is featured in the page of WCFL entertainers elsewhere in this issue.

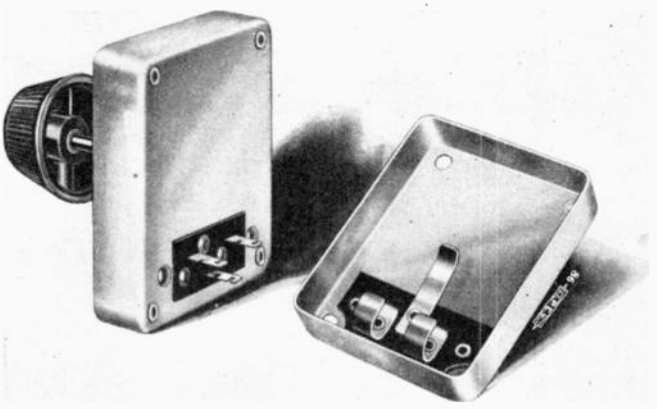
New Products of Special Merit

TWO new products of special merit are announced by Electrad, Inc. One is a five-watt variable high resistance and the other a covered wire-wound fixed resistor.

At the left in the illustration here is pictured the new five-watt variable high resistance, ready for installation. It is neat and compact and is mounted on the panel with but a single hole. The illustration on the right shows the metal cover removed, displaying the bakelite insulation and the sturdy bronze contact springs. This new resistance will safely dissipate five watts at any position of the contact, with one-tenth or more of the resistance element in the circuit.

This new volume control can be made in any desired range, adequately meeting all usual requirements.

The new covered wire-wound resistor has several distinctive features. In its construction a high quality refractory tube is



used, providing greater mechanical strength and excellent electrical insulation. Nickel cromium alloy wire is used, non-oxidizing below 900 degrees C. and non-corrosive. Elastic black insulating varnish enamel is used, put on at 400 degrees F., lessening the chance of injury to resistance wire and contacts.

Excellent Short Wave—Receivers with which consistent DX reception is possible are completely described in a 32-page booklet recently issued by The Hammarlund Manufacturing Company, 424 West 33rd Street, New York City. It is known as the Short Wave manual, price 10c per copy.

It is chock full of invaluable short wave data, e.g., use of the screen grid tube on short waves; a complete list of stations throughout the world, their wavelengths and time on the air; a world time chart for simplifying the tuning in of foreign stations; a chart for converting kilocycles into meters.

Short Waves Bring World *to* Your Door

(*Continued from Page* 17)

The Southern Cross, which last fall winged her way from San Francisco to Australia, was the first plane to keep in constant touch with the world with a short wave transmitter operating on a wave length of 34 meters.

Sir Hubert Wilkins in his plane, which flew across the Atlantic wastes, followed suit. Commander Byrd, now at a base near the South Pole, is not only in constant communication with the world from the base, but from his planes when they go aloft exploring.

True it is that code was and is used on these occasions, due to the greater carrying capacity and because code transmitters are so much smaller than phone sets, but with the extensive experiments now being carried on it will not be long before voice will be used directly, in the same manner as land broadcasters to whom we now turn our attention.

Because of the tremendous carrying of short waves, their ability to plunge through such great distances, they are now being used with remarkable success by broadcasting stations throughout the world.

What does that mean? It means that with a simple receiver such as diagrammed on this page, we can listen in to music and voice from all parts of the world. Think of it—to be able to listen in to stations in Chili, Holland and England with a two-tube receiver. And during the day at that!

Much of this broadcasting is done for the benefit of those dauntless explorers in the barren wastes or in the jungles. It is a gift of God to them to be able to listen to the lively strains of a London or Broadway dance orchestra, to the voices of those at home, to the chant of the choir.

And you can revel in the delight of this reception.

The receiver, which is known as the Hammarlund Adapter-Receiver, uses that remarkable screen grid tube—the tube that has an almost incredible step-up factor in a highly efficient stage of radio frequency amplification ahead of a super-sensitive regenerative detector, resulting a short wave receiver that is both stable and excellent on distance.

The most positive, yet simplest way, to tune the antenna when the screen grid tube is used is via a variable resistance in series with the antenna. Selectivity is maintained by coupling this tube to the detector tube with a tuned impedance which is acknowledged to be the most effective way of coupling in this type of set.

In the detector circuit, the parallel-feedback method of regeneration is used. This permits the smooth oscillatory control so necessary on short waves. A midget condenser C1 having a capacity of .0001 mfd. is used to control this feedback.

To tune the grid circuit of the detector circuit, as well as the plate of the screen grid tube, a .00014 mfd. variable condenser C2 is used. This value of condenser permits tuning from 15 to 215 meters with the special Hammarlund short wave plug-in coils.

On short waves there is nothing so important to successful operation as the use of low-resistance coils with a low-distributed capacity.

Since dielectric losses increase very rapidly with the frequency, the absolute minimum must be obtained. This is done by space winding the turns (even spacing to secure uniform current distribution) over a continuous film of special dielectric with No. 16 silk over cotton wire.

Coupling the plate of the screen grid tube and the grid of the detector tube is a 20 to 100 mfd. condenser of the screw control type. That is, the capacity is varied by means of a screw, which runs through a phosphor bronze spring plate and which controls the distance between this plate and a piece of brass mounted on a Bakelite slab, a piece of special mica acting as the dielectric medium. Its adjustment is not critical.

Shielding is not employed because of the mechanical difficulty in changing from one coil to another. The layout has been so arranged, however, as to minimize the capacitance between the grid and the plate leads. That is why the layout should be followed very carefully.

The receiver has been designed for battery operation. It is not desirable to use alternating current because of the noises introduced and also because the tuning becomes erratic.

The set, nevertheless, can be used with alternating receivers, batteries being used for the adapter. To do this, it is only necessary to disconnect the plate lead from the eliminator, B battery plus supplanting it. The minus post of this B battery is connected to the minus of the eliminator. The A supply is, of course, also separate, the plus and minus being connected in the standard way.

Either the 112A or the 201A tube may be used in the detector circuit. The 112A is more sensitive, having a lower plate impedance. It is also a more stable oscillator.

Although the 200A tube is more sensitive, it is too noisv. A 199 tube may be used but the regeneration is poor at the lower wavelengths.

While the tuning of this receiver requires exactness, it is not difficult. The Hammarlund drum dial (knob control) with its 5 to 1 reduction ratio permits this necessary precision adjustment.

Any type of audio amplification may be added. It is onlv necessary to connect the plate and the B plus leads of the amplifier to the same respective posts in the detector tube output circuit of the adapter.

Best results are obtainable with an antenna 20 to 60 feet long and as high as possible.

For ultra simplicity in tuning, it is well to know just what stations are on the air, their time on the air, etc. This is treated in great detail in the Hammarlund Short Wave Manual (10c).

Further details will be sent upon request. For your convenience, two Business Reply Postal Cards are printed on page 3. These cards are self-addressed and require no stamps.

LIST OF PARTS

One Hammarlund .00014 mfd. variable condenser, type ML-7.
One Hammarlund .0001 midget condenser, type MC-23.
One Hammarlund EC-80 equalizer condenser.
Three Sprague .1 mfd. fixed condensers, type F.
One set of Hammarlund short wave coils, type SWC-3 and one SWT-120 tuning coil.
One Electrad type P. Tonatrol.
One Yaxley No. 820 C, 20 ohm mid tapped fixed resistor.
One Yaxley No. 804, 4 ohm fixed resistor.
One Durham metallized grid leak, 2 to 9 megohms.
One Yaxley No. 10 midget battery switch.
One Hammarlund SDW knob control drum dial with light.
Three Hammarlund SDWK walnut knobs.
One Hammarlund SWAP adapter plug and cable.
Two Eby No. 12 sockets.
One Westinghouse Micarta 7x14" panel.
One baseboard, 9"x13"x¾".
One package containing necessary hardware.

Leave It to Eddie

(*Continued from page* 70)

"Mamie! Git yer young man out of th' kitchen before murder is done! Your pa has just boughten a coal yard!"

"Oh, ho!" cried Mr. Casey the third time, reaching for a chair, but Mamie leaped forward and grasped his chair-wielding arm.

"But, Father—wait!" she exclaimed. "Don't hit him! He's not going to sell them here. His district is in New Jersey."

Mr. Casey slowly lowered the chair to the floor.

"An' what th' divil is New Jersey t' Jawn Casey?" he asked philosophically.

Pick-up Cords

ELECTRIC phonograph pick-ups should have the cord tied to the old phonograph tone arm or otherwise anchored so that an accidental pull will not throw the pick-up across the face of the record, thus injuring both the record and the pick-up.

Confidential information on any radio set on the market is available to readers of WCFL Radio Magazine. Just write your query on one of the Business Reply Postal Cards on page 3. No stamp required; no obligation incurred.

It's Here! the Tuned Underground Aerial for Better Reception

HERE'S great news! For the same cost as an ordinary overhead aerial you can now enjoy greatly improved reception and be through once and for all with the old-fashioned, inconvenient, noise-gathering roof aerial. There has been such a great demand for an improved underground aerial that for over a year we have kept engineers busy designing, testing and perfecting a satisfactory device. The result is the new amazing SUB-TONE. It is designed to decrease static and noise, get finer selectivity and give true radio enjoyment, by virtue of *Tuning* the underground aerial to the radio circuit.

It's So Simple a Child Could Install It!

Takes but a few minutes. Just dig a small hole and place the aerial in it. SUB-TONE is also equipped with a scientific ground plate, so that you can take care of antenna and ground in one simple operation. The lead in wires are brought to the set—the aerial wire connecting first to a binding post on the Tuner, a small, compact device that can be placed in the radio cabinet or any convenient place near it. Your aerial is out of sight and protected from lightning, soot, wind and interference. You avoid many aerial troubles with the use of SUB-TONE.

Less Static— Greater Selectivity

If you should plant flowers in a briar patch you'd be bound to have thorns. If your aerial is up in the midst of high winds, power lines, and other electrical noises, how can the result be anything but unnatural, interrupted reception? SUB-TONE helps you to get clearer reception in two ways—first, by simply putting the aerial in the ground where it is naturally protected from many disturbances and second, by *tuning* the aerial to the broadcast being received.

Tests on almost every kind of receiver show that SUB-TONE helps to down static, increase selectivity and give more *real* radio enjoyment.

With an untuned aerial, frequently the sensitivity of the set is not great enough to give the broadcast signal a predominating strength over the existing noise level. As a result static predominates and the set is unable to get the desired broadcasts.

With SUB-TONE, the aerial is tuned to the broadcast being received. This allows the broadcast signal to have greater strength than the static and noise. Greater selectivity is allowed and reception is clearer and more enjoyable.

SUB-TONE Works on A.C. or D.C. Sets or Sets Operated With Batteries or Battery Eliminators.

The purpose of SUB-TONE, the marvelous new TUNED Underground Aerial, is to bring in the radio broadcasts you want to hear, clear and without interruption, and with the greatest possible convenience.

Try SUB-TONE On Your Own Set FREE!

You don't need to take our word for the merits of SUB-TONE—we want you to try it and prove to yourself what tests and reports from users have already proved to us. Put in a SUB-TONE entirely at our risk. Just hear the difference and judge for yourself! If you aren't delighted with the improvement the trial doesn't cost you a cent. Send for all the startling information on SUB-TONE. You've a surprise waiting for you. Write today!

Better Radio Products
141 W. Austin Ave. *Dept. 977-H.T.* **Chicago, Ill.**

BETTER RADIO PRODUCTS
141 W. Austin Ave.,
Dept. 977-H.T., Chicago, Ill.

Rush details and proof on SUB-TONE, the new Tuned Underground Aerial, and how I can test it Free.

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Address .....

City..... State.....

Gold Seal's Exclusive Development

—*the new GSY227*

Invented by Gold Seal's own engineers; produced in Gold Seal's own factories; and positively guaranteed.

Full, silent service for its entire life.

It heats in 5 seconds—faster than any other tube—and it heats as quickly at the end of 1000 hours as when it was new.

A real sensation in radio

Now in Production

Dealers being supplied

If your dealer does not yet have the new GSY 227 have him order it for you specially. Do not accept any tube and hope to get Gold Seal Golden tones—clear, strong, uniform.

Write for complete catalog and price list.

BULLETIN

Gold Seal Tubes are now the equipment of leading receiving-set manufacturers. They know.

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