

Production-Engineering-Distribution • Radio-Television-Sound Projection

RADIO Industries

With which is incorporated Radio Manufacturers' Monthly

JANUARY • 1930

Remote Control

The Business Picture

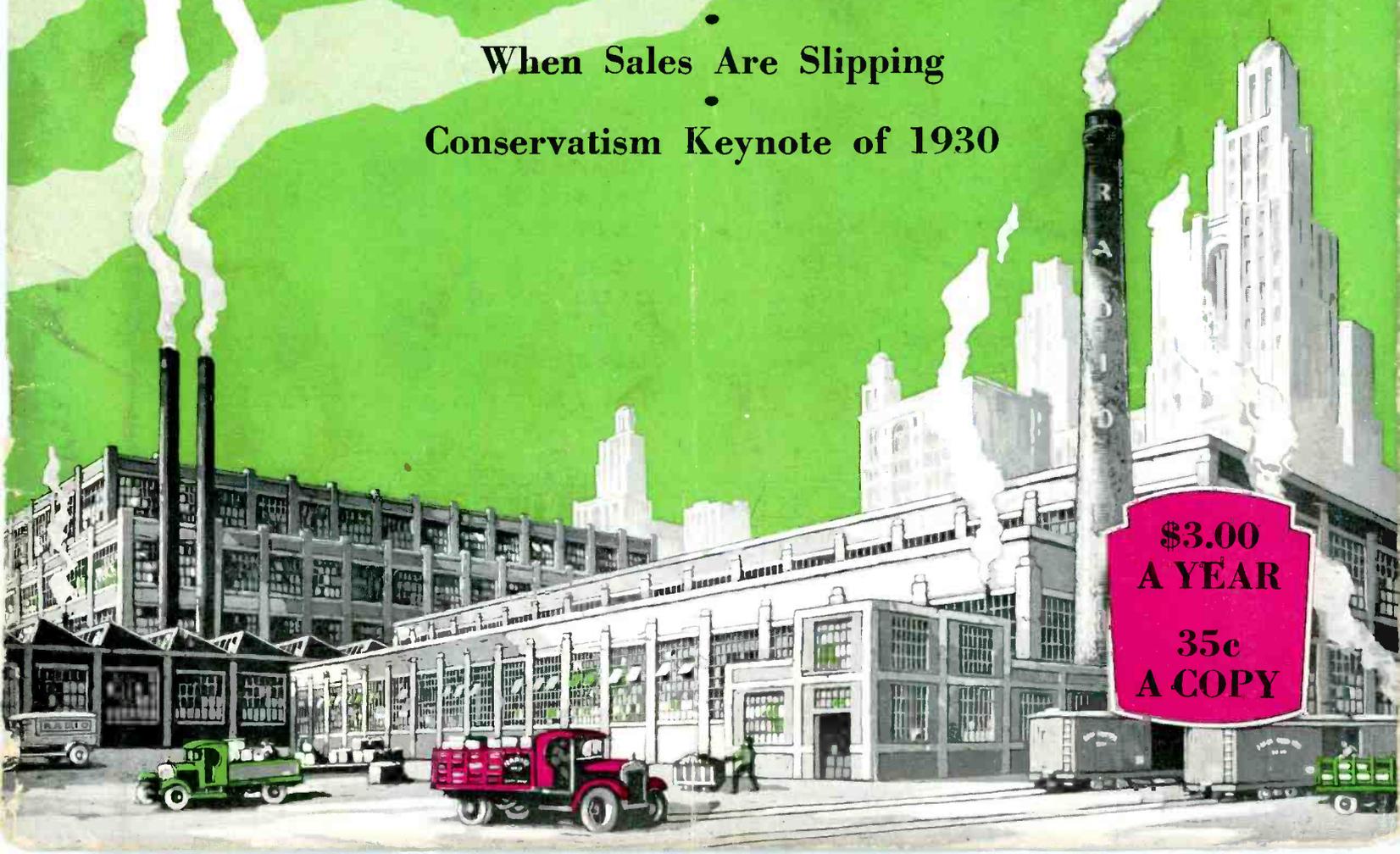
As We See Television

When Sales Are Slipping

Conservatism Keynote of 1930

**\$3.00
A YEAR**

**35c
A COPY**





Dudlo Manufacturing Co.
DIVISION GENERAL CABLE CORP.
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 DATE 1/15/30.
 SPEC. 20040
 CUSTOMER Any Customer.
 NO. OF COILS 100
 INSPECTORS CLOCK NO. 3400.

IN CASE OF ERROR RETURN

Form 96

This packing slip found in every Dudlo shipping case carries the clock number of the final inspector . . . it places the definite responsibility for the accuracy and perfection of the contents of each case.

Definite Responsibility

Dudlo inspection is a definite protection to every user of Dudlo products. Final inspection and packing are *one operation* . . . for the inspectors themselves pack the cases as the coils are passed. No other hands touch them after your packing slip is signed, and the inspector is directly responsible for every coil passed.

Only the most experienced and competent employees are promoted to the inspection department, and their positions depend on their accuracy and dependability.

Dudlo coils *must meet your specifications*

DUDLO

DUDLO MANUFACTURING COMPANY, FORT WAYNE, INDIANA
Division of General Cable Corporation

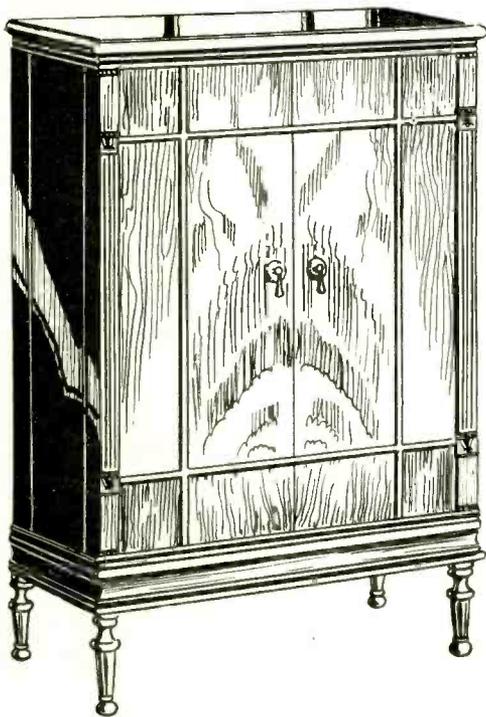
HDE DIMENSION 100% USABLE

THE manufacturer of this radio has no "peak production" problem. He has solved it by using HDE DIMENSION. It enables him, without an additional expenditure for machinery and space, to get the lumber parts necessary to meet the demands of increased production.

You can do the same. Manufactured from HDE cured lumber, accurately kiln dried and machined to your own specifications, HDE DIMENSION comes to you ready for final finishing and assembly.

It also enables you to effect several substantial economies. It eliminates waste, cuts labor and overhead, reduces freight costs and does away with storage.

The mark of HDE, your guarantee of lumber excellence, is on every stick.



Hillyer Deutsch Edwards, Inc.
 Oakdale *Hardwoods — Pine* Louisiana

Branch Offices: CHICAGO, 223 Railway Exchange Bldg.
 DETROIT: 7-252 General Motors Bldg.

YOU CAN HIRE A MASTER EXECUTIVE FOR \$1920 YEARLY!

You have a job in selling your product. Beyond that your product must be kept sold.

You can address letters to the various firms on your prospect list. That is a necessary part of your selling program. Most lists available are incomplete. Especially is this true of up-to-date lists of the many executives in each plant, any or all of whom may have the say-so when the question of buying your product comes up. Nevertheless your direct-mail campaign does help materially in lessening sales resistance.

As a further adjunct to your selling job, direct representatives or sales engineers are sent out to make personal contacts with your prospective customers. These men, if they know the facts and figures concerning your product and its application to the industry, can accomplish considerable in making sales for you. A staff of sales representatives scattered throughout the country then is also a necessary part of your selling effort.

Another necessary part of your selling job is Business Paper advertising. Such advertising, continuously month after month, keeps your name before your prospective customers and those whom you count as customers today and would like to retain. This sort of advertising paves the way for the reception of your sales letters. Making your name and product well-known, your advertising gets your salesman a satisfactory reception.

Think of *Radio Industries* as an additional executive on your staff. Reaching out into every plant in the U. S. and Canada each month and read, as it is by every executive with an ounce of buying power, it should be given foremost consideration in your selling plans. The influence of its editorial columns assures equal influence for your advertising message. *Radio Industries* will allot you a page space for your message every month for the year for \$160 each issue—\$1920 is the total cost. Why not put *Radio Industries* on your pay-roll to help you with your 1930 selling job. Well, why not?

{ Rate card showing rates for lesser spaces, extra color,
special positions and the like will be sent on request. }

RADIO Industries

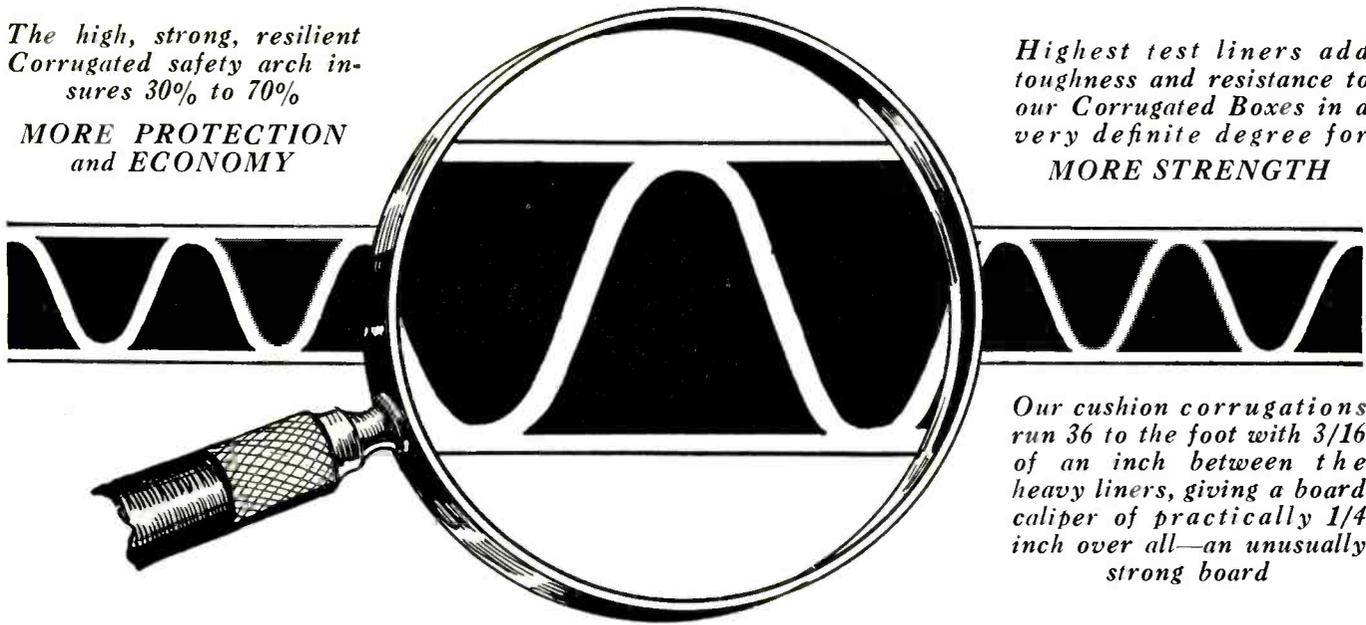
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*The high, strong, resilient
Corrugated safety arch in-
sures 30% to 70%*

**MORE PROTECTION
and ECONOMY**

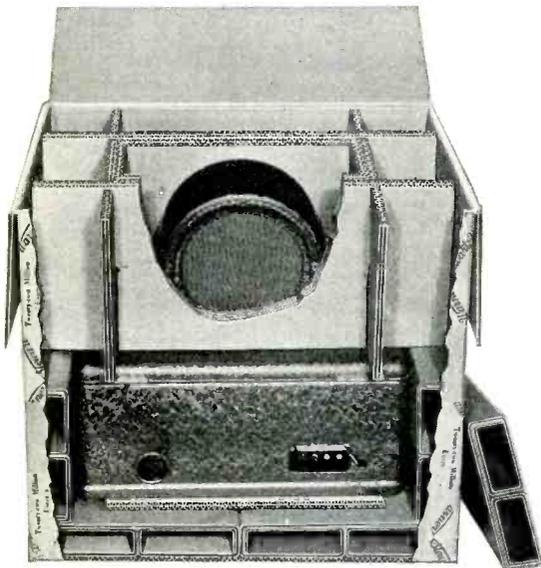
*Highest test liners add
toughness and resistance to
our Corrugated Boxes in a
very definite degree for
MORE STRENGTH*



*Our cushion corrugations
run 36 to the foot with 3/16
of an inch between the
heavy liners, giving a board
caliper of practically 1/4
inch over all—an unusually
strong board*

Better Boxes Pay Dividends in Reduced Shipping Costs

It is a well known fact that cheap fibreboard shipping boxes are more expensive in the long run than quality boxes built primarily for hard service. Slap-dash boxes, sold at an attractive low price, are sources of trouble and this fact shippers in the **Radio field, and suppliers,** know to be generally true. Shippers who buy quality boxes from reputable makers always experience less trouble than those who consistently buy at "rock-bottom prices" and it is logical that the best wares, whatever the merchandise may be—are never the cheapest in construction or price, and the wear is in proportion to the quality.



*How a delicate radio can be packed and shipped
in a corrugated fibreboard box. Note double
wall reinforcements for protection*

In our processing of **corrugated and solid fibre shipping containers** we aim at quality—always at quality. Shippers, by using quality boxes, benefit by making definite savings and where we have access to their plants we often find we can make still greater savings by suggestions offered from our great store of experience.

We will be glad to figure with you on your requirements and help solve your packing and shipping problems, and don't forget—we furnish quality boxes only and prescribe from our great variety of regular and special types as required to fill your needs. If you write, refer to Department 18 for quick service.

CONTAINER CORPORATION OF AMERICA

AND

MID-WEST BOX COMPANY

111 W. Washington St.

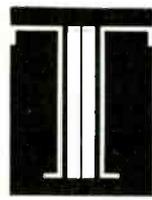
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Six Mills—Twelve Factories

Capacity 1200 tons per day

Say You Saw It in Radio Industries



hundreds of radios daily demonstrate value of MICARTA insulation

PERFORMANCE of a superior character distinguishes the thousands of radio sets manufactured daily in which Micarta insulation is used. Sensitivity, selectivity and tonal qualities depend upon unimpaired insulation.

The finest instruments usually have antenna and oscillator coils wound on Micarta tubing. Tip-jacks, trimmer condensers, connector plates, terminal strips, sub and tube-panels, and other parts are readily made from Micarta sheets.

Micarta has high dielectric and mechanical strength, and will not warp, splinter or absorb moisture.

The Micarta Fabricators Inc. are offering you the advantages of their broad experience in the fabrication of Micarta into finished parts. The preparation of dies, the punching of plate stock, the punching and threading of tubing, the intricacies of process lettering and engraving require knowledge acquired only after years of practice.

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233 Spring Street New York, N. Y.	500 South Peoria Street Chicago, Ill.



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Say You Saw It in Radio Industries



The DURHAM
METALLIZED
PRINCIPLE
must BE RIGHT!

A million and a half now used every month in American Radio

Millions of Durham Metallized Resistors are now used annually by America's foremost manufacturers of radio receivers and allied products.

Frankly, it has taken many years for some of these manufacturers to accept the value of the Durham metallized principle and the quality of Durham construction in the face of ordinary types of resistances at slightly lower prices.

In every instance where Durham resistances are now specified as standard equipment this preference has resulted en-

tirely from practical tests over long periods of time. The established leadership of Durham metallized Resistors and Powerohms is the result of Durham accuracy of stated ratings, Durham uniformity in large volume and Durham reliability in actual service—the Durham metallized principle **MUST** be right!

These units are now in standard production in all ratings, all types of tips for all radio work.

We shall be glad to send engineering data at once and samples for testing upon request. Please state ratings in which you are interested.

Manufactured by

INTERNATIONAL RESISTANCE COMPANY

2006 Chestnut Street

Philadelphia, Penna.

DURHAM

RESISTORS & POWEROHMS

5 Million Sets in 1930

According to conservative estimates, at least five million complete radio sets will be manufactured in 1930. In the fabrication of these sets millions of metal and molded parts will be used besides lumber, wire, paper, wax, lacquers, etc.

You Make

Whatever your products might be, if they go into the manufacture of radio apparatus in any way, you have a tremendous market in 1930. Perhaps you make a transformer or a speaker or radio tubes. If your product is right you need not worry about demand.

You Can Sell

Looking at the present day picture, it seems that fewer manufacturers will produce the sets made this year. In spite of that, however, the Industry itself is sound and 1930 will prove to be the best year radio has ever known. Credits will be bettered and the opportunity for reasonable profits for every one, and expanded business for many, seems evident.

Tell Your Story

The Business Paper that you yourself read as a manufacturer is also read by every other manufacturer in the Industry. **Radio Industries** is not edited exclusively for any one type of executive. It is edited for and read in every plant by every type of executive. Some plants subscribe for as many as twenty copies. You will find copies in every Engineering Department, and in several of the larger plants as many as five. It is our theory, and we believe we are right, that any one of a dozen executives has some degree of buying influence. Why not tell your sales story directly to each and every one of these executives. You can do it completely and directly in **Radio Industries ONLY!**



The cumulative value of your advertising investment in a fast growing, necessary publication will reveal itself constantly for many years to come

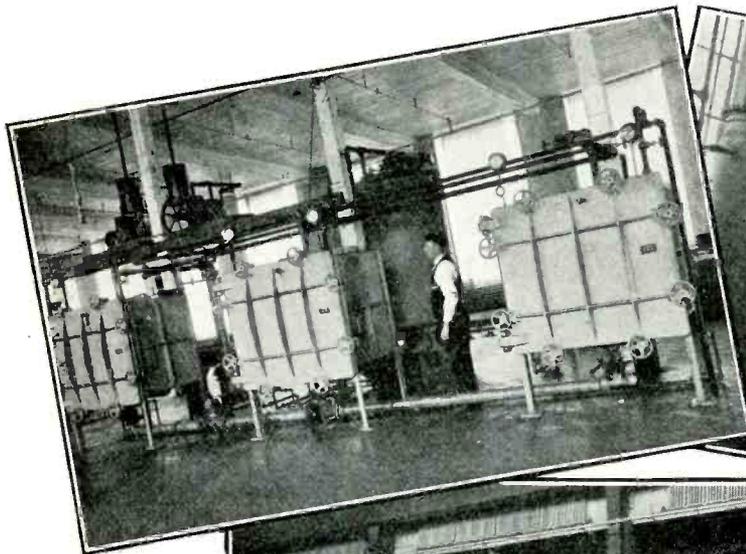
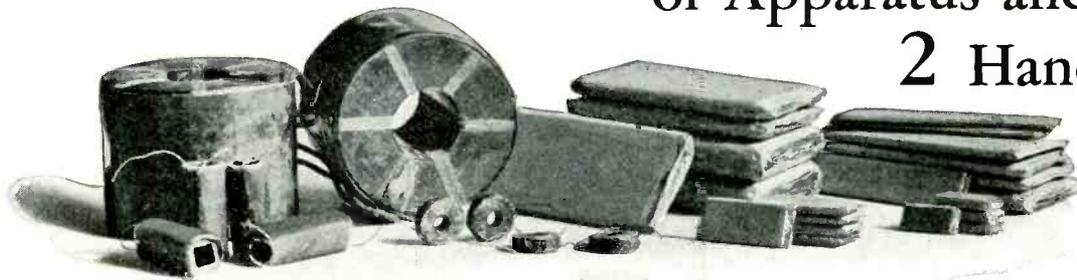
RADIO Industries

(Radio Manufacturers' Monthly)

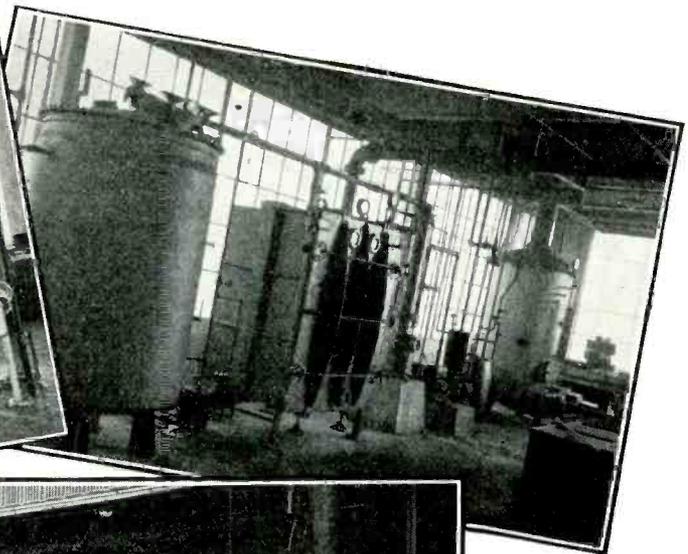
520 North Michigan Avenue
CHICAGO

.. Rate card and complete information will be sent ..
those interested without obligation

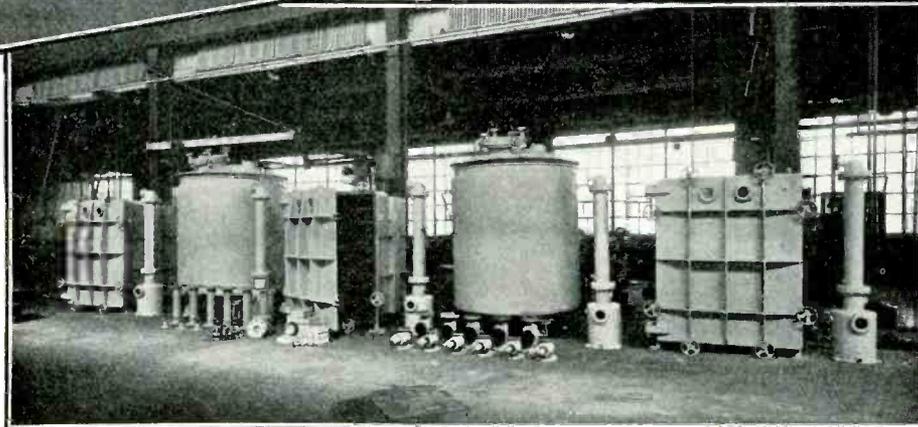
Now You Can Dry and Impregnate Coils and Condensers in 1 Piece of Apparatus and Save 2 Handlings



Installation of STOKES New Combination Vacuum Dryer-Impregnators in plant of large radio manufacturer.



Another installation of STOKES Dryer-Impregnators in radio plant.



Three complete units of STOKES Dryer-Impregnators ready for shipment to leading radio factory.

Your 1930 plans . . . for bigger and better production . . . should include the installation of **STOKES Combination Dryer-Impregnators**

Let them do for you what they are already doing in a number of leading plants—as illustrated above.

They do a better and cleaner job—as well

as save time and space. Thorough drying and impregnating are guaranteed. A vacuum within a very few millimeters of the barometer is regularly maintained.

Get detailed information to fit your production requirements

FJS STOKES MACHINE COMPANY

5824 Tabor Road

Olney P. O.

Philadelphia

Say You Saw It in Radio Industries

Published by
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 Chester A. Darling
 President
 Thomas Liddell
 Vice-President
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 Secretary-Treasurer

RADIO Industries

**PRODUCTION
 ENGINEERING
 DISTRIBUTION**
 •
**RADIO
 TELEVISION
 SOUND PROJECTION**

With which is incorporated Radio Manufacturers' Monthly

VOLUME IV.

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RADIO INDUSTRIES

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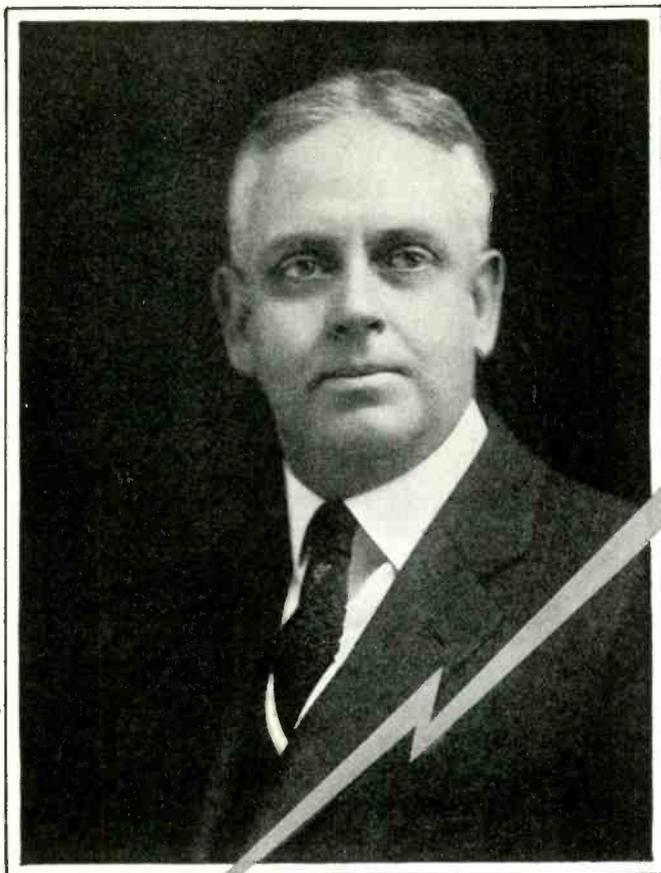
MONTHLY CHATS

● Sometime ago one of our editors mailed out a questionnaire to set manufacturers for the purpose of obtaining accurate information and opinions as to the extent of cooperation they believed due the jobber and dealer in keeping with good business methods. References to some of these questionnaires were made in "A Survey of Radio Merchandising" which appeared in *Radio Industries* for December. In discussing the matter of protecting the dealer and jobber against obsolescence and liquidation sales, a questionnaire from Thomas A. Edison, Inc. was misinterpreted and we hasten to apologize for the error. Thomas A. Edison, Inc. feels that sufficiently high list prices must be maintained to enable a manufacturer to accord the merchandiser the proper cooperation. This reasoning is thoroughly sound. We all realize that. During the recent price-cutting episode, Thomas A. Edison, Inc. notified their dealers and jobbers that current list prices would be maintained. Their action, along with that of a number of other manufacturers, was praised in this column last month.

● Word has just reached me that Arthur T. Haugh, former president of the RMA and well-known in the Radio Industry, has just been elected vice-president in charge of Merchandising of Valley Appliances, Inc., Rochester, N. Y. *Welcome back "Art"*.

● Senator Borah's exclamations relating to the lack of enforcement of the Prohibition Act does not seem to be holding the entire stage at Washington these days. Oswald F. Schuette, executive secretary of the Radio Protective Association, has been waging a vigorous battle against, what he terms, the "radio trust" on behalf of various independent manufacturers. During the hearings, before the Senate Interstate Commerce Committee, last month, Col. Manton Davis, vice-president and general attorney of RCA referred to the Association as a group of "patent racketeers." The Industry is watching the fight, from the sidelines, with interest.





INCA — Name derived from the Inca Indians, the original copper workers of early American history — emblematic of the best in the copper wire industry.

In appreciation ~

Geo. A. Jacobs, Pres. of Inca, Says:

The response of the trade to the initial output of INCA products has been most pleasing. The substantial character of this response is further indicated by the immediate building of a factory addition trebling our plant capacity. We recognize in the universal satisfaction which is greeting INCA products a genuine tribute to the craftsmanship and engineering which make for exacting production of enameled, insulated wire and windings. We would be unmindful of the occasion if we did not express sincere appreciation of this good will and pledge the continuance of our complete facilities, in greater measure than ever before, in producing a dependable source of copper wire supply for the success of the electrical, automotive and radio industries.

Geo. A. Jacobs

INCA

INCA MANUFACTURING CORPORATION

Copper Wire Products

∴

Fort Wayne, Indiana

EASTERN OFFICE

Newark, New Jersey — Industrial Office Building

WESTERN REPRESENTATIVE

A. S. Lindstrom, 274 Brannan St. — San Francisco, Calif.

Say You Saw It in Radio Industries

EDITORIALS

Although the radio industry has enjoyed its greatest year thus far during 1929, the fact remains that there has

WHY OVERPRODUCTION?

much merchandise has been disposed of at no profit to the manufacturer.

Of course the radio industry has a tremendous production capacity. During the past two years, many manufacturers have tripled their capacity, particularly in the case of radio sets, and the temptation is ever to operate a production plant at full blast so as to reduce the proportionate overhead.

Nevertheless, there is no money in overproduction. The merchandise that must be disposed of at no profit, goes a long way towards pulling down the profits on the merchandise sold at correct prices. Let us hope that during 1930, the industry, through its trade associations and Government agencies, as well as through independent publishing sources, will have a better conception of the available market and will produce within limitations.

We have often urged side lines for manufacturers with greater production capacity than they can employ for radio alone. We can but repeat the suggestion at this time.

Among all our plans for bigger and better radio business, few of us pay much attention to broadcast programs.

GREATER PROGRAM INTEREST

theatre of the air. If the show put out by that theatre lacks appeal, our selling of seats is not going to go so well.

During 1930, we look forward to greater program interest as the mainspring of the radio industry. William S. Hedges, Pres. of the National Broadcasters' Association, tells us that his association has succeeded in an effort to insure future broadcasts of major baseball games which is quite an achievement for the Radio Industry. If broadcasters can possibly arrange for an interchange of programs between Europe and the United States, with say English, German and Dutch programs as regular features, together with many novel pick-ups by means of portable short-wave transmitters enabling the microphones and air reporters to go to the most unexpected places, then we can expect a fresh broadcast interest and a corresponding demand for good radio sets.

To our way of thinking, broadcasting, particularly network broadcasting, has become quite stereotype. There is too much sameness. While the time-table operation is to be condoned, the fact remains that it becomes irksome to learn the program features almost by heart.

We need seasoning—sparkling novelty—something different—thrills. We want fresh broadcast interest. If we get that, we can sell more radio sets, even to the hard-boiled families that have withstood the appeals of radio, thus far.

During the War, we heard much about consolidation of positions. After an attack, each side made sure that

CONSOLIDATING OUR POSITIONS

industry, following the sudden onslaught of the Wall Street crash, is consolidating its positions on all sides. Which is a wise move. Now is the time to tackle overhead—that insidious enemy that bores from within. The plant can be rearranged to better advantage. Costly sales offices can be eliminated or at least brought down to sensible limits. Production equipment can be overhauled and improved upon. The inventory of parts and materials can be checked over with a view to working it off the books as soon as possible. More favorable material contracts can be arranged for.

Consolidate your positions! Make the most of whatever lull you may have in your activities, preparatory to the next big advance of the entire radio industry.

Not so many months ago, it was a much mooted question as to whether certain radio companies were engaged

THE STOCK PROMOTION DAYS ARE OVER

companies found it profitable to indulge in the gentle pastime of issuing stock. Indeed, in many instances the radio business proved more or less a secondary consideration, with the president, chairman of the board, the board, and the executives or the organization mainly interested in how the stock fared on the Curb.

But "dem" days is gone forever. From now on—at least until the public has a chance to forget—a radio company must make its money out of earnings. Whatever its capital may be, it will have to get along as best it can. And personally, we think it a good thing. If the officials of any radio company will concentrate on the basic problem of making profits, it will be a happier day for themselves, their stockholders, their sales representatives and the public. As Henry Ford has so aptly put it, no man can handle his job and speculate in Wall Street at the same time.

The radio industry today needs workers, not speculators. It offers rich rewards to workers. And so, back to work.

PRODUCTION
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The High Cost of "Politics" in Business

Faulty Management Is Costing Industry Millions of Dollars Annually

By JAMES TRUE

Associate Editor, Sales Management

WHEN there is so much discussion of the necessity for more economical business methods and so many activities devoted to the elimination of waste, it is surprising so little is said about a widely prevalent condition responsible for a prevalent loss that is probably greater than any other.

The subject was suggested to me on a recent trip by a chance acquaintance, a salesman handling a widely used office appliance.

He asked:

"Why don't you write an article on the high and useless cost of dirty politics in business organizations? During my ten years of selling I've worked for four concerns, and three of them were rotten with it. My third company was all right! we were well managed on a fair and square policy, and I was happy in my work.

"About two years ago we consolidated with a larger concern making a higher-priced machine. The best salesmen of both concerns were retained, and we were assured we had a wonderful future. It did look good; but after a few months our president and sales manager were squeezed out, and since then it has been an underhanded fight between the men of the two companies.

"You'd hardly believe some of the stuff I could tell you. Every few days one of the other men snipes one of my good accounts and the manager stands for it. I'm still specializing on our machine; but at first I sold all of the higher-priced machines I could. Then they cut my commission on them, and finally refused to pay me anything for selling them. But when one of the other men sells one of our machines in my territory they give him the full commission.

"Right now I know where I could sell twenty high-priced machines; but I would rather see a competitor get the business. You may think I'm not loyal, but it's impossible to be loyal to a disloyal concern. I should be making twice the money they're paying me. We work on a small salary and a fair commission. The proposition is satisfactory, and it would be as good as I would want under the right kind of management. I've been sticking on, hoping for a better break; but it's so slow in coming

that I'm ready to quit. If you hear of a job with a right concern in our industry, please let me know."

The result of the consolidation of the two companies mentioned has been disappointing, and the combination has not sold as many machines as the two companies sold during the two years before the merger, I have been told. The amount of money that this factional campaign is costing the company is impossible to estimate, of course, but it must run into millions. For there is little doubt that the failure of the consolidation to fulfill its expectations was explained by the experience of my chance acquaintance, since a casual inquiry indicates that the condition exists through the numerous branches of the organization.

Usually such conditions have their genesis in the activities of a single individual prompted by cupidity or an

Here is a frank discussion of a subject that is usually talked about only in private conversation—the playing of "politics" between people who are ostensibly working for the interests of the same company. Few concerns are fortunate enough to be without some form of it. The annual loss to industry from this secret force is incalculable, this writer shows.

unreasonable ambition. Frequently, too, the costly strife begins when some petty official begins to pass on the ideas of others as his own. The other day I heard the details of such a case and they are interesting because the results can be measured in dollars.

A salesman with a large manufacturing concern realized it was not necessary to carry the three large trunks the company furnished its salesmen. He figured up a year's business and found that about 25 per cent of his samples accounted for 95 per cent of his business. He eliminated all unnecessary items and was successful in reducing his sample line to one trunk.

The saving promised to be well worth while. The sales force of more than one hundred men spent on an average of three dollars a day for excess baggage and trunk delivery, and the force traveled slightly longer than 200 days a year. The salesman tried out the proposition for six months, and found his business had gone far ahead of the previous corresponding season. He then wrote a detailed plan from his experience, and addressed it to the manager of his local branch.

He received no acknowledgment, and on a subsequent trip to the office discovered that the manager was preparing to pass the plan off as his own. To this the salesman objected and the manager told him frankly that the plan would go to headquarters as his own or not at all, and that if he said anything about it he would be discharged. The salesman refused to give the plan to the manager, and, after enduring several months of persecution, quit and went into another line.

Five years later, after a change in the local management, an assistant brought the plan to the attention of a high official of the company. Soon a campaign of education was started among the sales force, and within three or four months the plan was put into effect with unusual success.

\$300,000 Unnecessary Loss

With this case, which loses nothing because it took place some years ago, a conservative estimate of the savings amounts to a minimum of \$300 a day, or more than \$60,000 a year. This amount was lost for five years longer than was necessary, and therefore the loss was more than \$300,000 for that period.

While this may not be a dangerous amount for one large corporation to spend unnecessarily, further consideration shows that the loss to industry was very much greater. The successful operation of the plan attracted a good deal of attention and was favorably discussed by a number of business magazines. Other concerns in various lines, with selling expense burdened by the cost of excess baggage rates, promptly simplified the samples of their salesmen. There was a marked reduction of samples in clothing, shoes, hats, shirts and other lines. The competitors of the original company were quick to adopt the plan. Therefore, while the first loss was something more than \$300,000, it is altogether probable that the unnecessary expense to industry may have amounted to several million dollars, and constituted an amazing price to pay for the scheming and egotistical ambition of one man.

In many cases a change in ownership brings about factional strife, both costly and disastrous. Typical of this class is a certain large manufacturing concern which has been declining steadily for some years. Its founder, president for more than thirty years before his death, was one of the first employers in the country to introduce a profit-sharing system. About 1890 he began to set aside a part of the annual profits for diversion among the workers and required all of his salesmen to buy stock in the company.

During the next twenty years many salesmen acquired small fortunes due to the increase in the value of their stock holdings. The morale of the entire organization was splendid, and every year showed a substantial gain in the volume and profits of the company.

Two Factions at War

After the passing of the founder, the new management,

which had inherited the controlling interest, let out most of the higher-salaried officials and salesmen, discontinued the profit sharing, and refused to allow salesmen to purchase stock. Soon the organization was permeated with suspicion, fear and cheap political scheming. One faction, made up of the old employes, prided itself on its loyalty to the policies of the "Old Man." The other faction, largely newcomers, was arrayed in opposition to everything the old organization stood for. This condition existed in varying form throughout the organization from the official staff to the sales force, and what it has accomplished in the way of disintegration is indicated by a few facts regarding the value of the company's stock.

For several years previous to the passing of the founder it had been impossible to buy common stock for less than \$380 a share. Three years after the new management took charge the stock brought less than \$70 a share and it looks as if it will be impossible for the company to regain its lost position.

Naturally, the present management blames the state of affairs on competition and other influences over which it has no control, and it is true that the company's competitors were prompt to take advantage of every sign of weakness; but undoubtedly the primary cause of the disintegration was the faulty management, which encouraged political conniving and the blasting of morale.

A similar condition is now developing within the organization of a well-known company in the East, which held first place in its industry for about twenty-five years. At one time, it was said, this company had made more on its initial capital than any other such concern in the world. The statement is probably true; but for several years the organization has been slipping, and indications are now that it has fallen to second and is approaching third place. The cause can be traced to a careless management, too blind to see the results of the dishonest and ambitious scheming of a member of the organization.

For a long time this man has been assiduously cultivating the chief official who owns the controlling interest in the business, and has apparently gained his entire confidence. He has also organized a clique of those under him and has trained them in his methods. As an example of his methods, some weeks ago, with plausible lying, he brought about the resignation of one of the most valuable members of the organization. Shortly after he suggested he do a part of the work done by the man who had left, at a nice raise in salary, and his proposition was accepted.

Three Others Forced Out

During the last two years three others, who have substantially contributed to the success of this company have resigned for similar reasons. One of them told me he had remained with the company for many months, under almost unbearable circumstances, in the expectation that the political atmosphere would clear up.

"At times," he said, "the work of every member of the organization was seriously hampered by the activities of our political friend. He seemed to think he could not advance himself without dragging others down. Finally, it was a question of his word or mine, and my veracity was questioned, although a simple inquiry would have proved him a liar. So I left to accept a position at a

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As We See Television

A Bird's-Eye View of Developments in the Field of Radiovision and An Interpretation in Terms of Radio Merchandising

By CHESTER A. DARLING

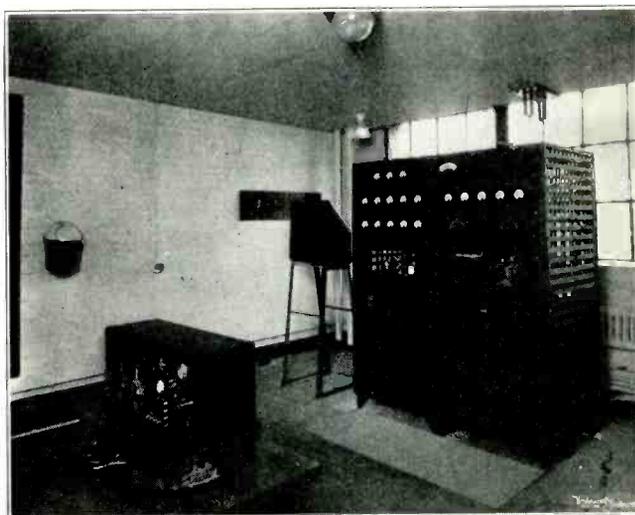
Editor

WILL radiovision, or television via radio, make its debut in 1930? Some authorities claim that the public must wait at least two years more before enjoying radiovision in their homes. Other authorities claim that the average home may have radiovision before many more months have elapsed. What are we to believe?

There is ample ground for a wide divergence of opinion as regards the commercial debut of radiovision. Briefly, there are two main camps in the radiovision field. One camp or group sincerely believes that radiovision must be developed in everyday use, with the general public, and particularly radio amateurs and experimenters, taking active part. The second camp, provided with ample research and engineering facilities, believes and indeed insists that radiovision should be developed in the laboratory, behind closed doors, and introduced to the public only after it has attained a fair state of perfection.

If we go by the predictions of the first camp or group, radiovision must make its bow to the public during the next few months. So many promises have been made, so many demonstrations have been staged, so many hopes have been raised, that prolonged delay would be fatal. If, on the other hand, we favor the second camp, it must be obvious that radiovision is still in the developmental stage and that several more years of laboratory work are required before the commercial debut of radiovision.

By radiovision, of course, we have in mind the flashing of animated or living pictures through space in a manner quite similar to the flashing of sounds through space in the usual radio broadcasting practice. Radiovision is *sight* broadcasting, or a counterpart of *sound* broadcasting. Obviously, the ideal broadcasting of the



Transmitting room of the television or sight broadcasting station W2XCR owned and operated by the Jenkins Television Corporation at Jersey City, N.J. In the center appears the transmitter, with a power output up to 5 kilowatts. Immediately to the left of the transmitter is the television monitor, whereby the operator can note the character of the visual signals being transmitted. In the left foreground is the receiver for the SOS watch while the transmitter is on the air.



Television in the home! Actually, this view comes from the home-like demonstration studio of the Jenkins Television station W3XCR in Jersey City, N. J. The visitors are enjoying a television program, with the televiser in the center and the short-wave receiver and amplifier on the radiator cover to the left.

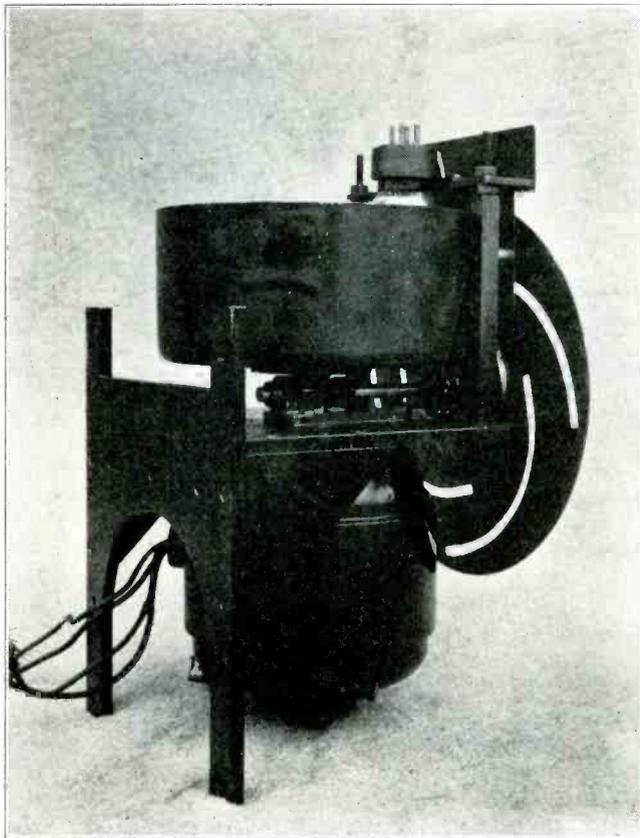
But in this discussion the writer does not intend taking sides; rather, he purposes merely to report the results of a survey of present radiovision progress, to the end that the radio industry may better be informed and prepare accordingly.

future must be synchronized sight and sound broadcasting. But to think in terms of regular sight and sound broadcasting combined, with the two functions combined in a single home radio receiver, is quite premature, inasmuch as there must be a wide discrepancy between the relative perfection of both arts for many years to come. Hence *sight* broadcasting must be handled entirely separately from *sound* broadcasting, although allowing that there may be synchronized sight and sound programs placed on the air, calling for the standard broadcast receiver quite as well as the radiovision receiver.

Just how much is the discrepancy between the relative attainments of sight and sound broadcasting? Well, the problem of obtaining detail in sight broadcasting is far more serious than in the case of sound broadcasting. The technique is decidedly awkward, inasmuch as the living image must be broken down into elements that can be flashed over the radio channel and reassembled at the receiving end. At present, the usual radiovision systems break the image up into horizontal lines, by means of a scanning system, while the replica is woven by a corresponding scanning system, maintained in perfect step or synchronism. Some prefer 24 lines for their analysis;

others call for 48, which happens to be the standard of the R.M.A. Television Standards Committee; still others call for 60 lines. The greater the number of lines, everything else being equal the finer the detail, just as in the case of the half-tone engraving for printing purposes, the greater the number of dots per square inch, the finer the detail.

Until quite recently, the radio industry has hurriedly assumed that the scanning lines corresponded to the relative detail in the lines of the half-tone engraving. In other words, a 48-line radiovision picture could have no more detail than a 48-line half-tone, or one comprising 48 rows of dots per square inch. Radio men, who have not been privileged to see recent radiovision results, have marked off part of the usual newspaper half-tone, representing 65 lines per inch, and have shook their heads negatively because of the pitiful amount of detail appearing within the circumscribed area of 48 x 48 dots.



The mechanics of the Jenkins Televisor which weaves television signals into animated pictures on the home screen. This simplified arrangement comprises the scanning drum at the top, containing the vertically mounted neon glow lamp; a selector shutter in front; and the synchronous motor which maintains a driving speed in step with the transmitter. This compact assembly fits into a handsome cabinet with recessed opening or shadow box containing the magnifying lens for enlarging the television images.

Right here and now, let us stop using the half-tone screen as a basis for comparison. What has been overlooked in the past is that the radiovision picture is broken down into *strips only*, and not into dot areas. Consequently, each strip can have all the necessary gradations and details. If better detail has not been obtained in the past, it has been due to the use of poor amplifiers and even poor short-wave receivers. For instance, most short-wave

receivers, which must be employed since radiovision pictures are transmitted on the short waves, have a cut-off at about 3000 cycles. Since such receivers are intended ordinarily for radio telephone signals or radio telegraph signals, operating on 10-kilocycle channels, they are fairly sharp in tuning, and consequently are certain to trim off a goodly part of the 100-kilocycle channel employed for good radiovision results. With a cut-off above 3000 cycles, half-tone values are impossible. Not much more than a crude silhouette, or black-and-white image, can be obtained. Hence we have been judging the limitations of the 48-line picture with all the cards stacked against that system. It has been working on signals transmitted without all the necessary detail, and with a receiver chopping off much of the remaining detail, followed by an audio amplifier incapable of amplifying such of the essential higher frequencies as might still be present. Little wonder that the results have been poor, and that the 48-line scanning system has been termed as a crude laboratory experiment by the industry at large.

Recently, the Jenkins Television Corporation has demonstrated what can be done with the 48-line scanning system. This organization has stopped at nothing in obtaining the best possible results within the limitations of the existing technique. It has developed a special short-wave receiver, without regenerative detector, since regeneration tends to sharpen the tuning excessively, thereby chopping off essential side bands. The short-wave receiver incorporates an amplifier which provides a fairly flat curve up to 10,000 cycles and over, as well as the 45 type power tube which is essential for a bright image on the screen. The home scanning mechanism has been highly refined, with an ingenious combination of scanning drum and selector shutter disc in place of the cumbersome disc of gigantic proportions, usually considered part and parcel of television. With such apparatus, the demonstrations have been remarkable. Excellent silhouettes are reproduced. Good half-tone pictures are reproduced. Standard motion picture films with several figures, have been transmitted and reproduced on the home televisor with sufficient detail to follow the action and story. Thus it would seem that the 48-line system is capable of far greater detail and therefore commercial value than has heretofore been assumed.

There is no way, of course, to help overcome the limitations in detail of the present radiovision technique, and that is by having synchronized sound. In other words, if talking pictures are employed, obviously the lookers-in can better follow the action and not be over-critical of the detail of the pictures. With this in mind, several radiovision workers have promised synchronized sight and sound programs at an early date. The Jenkins organization, for instance, is making use of its radiovision transmitter, W2XCR at Jersey City, N. J., for the picture channel, and the DeForest experimental radio telephone transmitter, W2XCD at Passaic, N. J., for the synchronized sound channel. In a recent demonstration, combined radiovision and sound have been presented to a startled audience, in the form of radio talkies of C. Francis Jenkins, Dr. Lee DeForest, D. E. Replogle and others. It so happens that the sound channel is just below the 200 meter limit of usual broadcasting, and that the usual broadcast receiver can tune in that channel. Conse-

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When Sales Are Slipping—I

First of a Series of Articles Relating Distributive Developments in Various Industries Which Have a Logical Application to the Field of Radio

By ARTHUR ALLEN

PRODUCTION went on for centuries before men came to look upon it as a procedure subject to certain scientific principles and to a measure of intelligent guidance.

If this could happen in the case of production, the first and once the sole important function of the manufacturer, is it surprising that producers as a class have only recently begun to view what is now a most vital phase of manufacturing—distribution—with the realization that here is another ramification which may also be subject to sensible regulation?

Be that as it may, distribution is at last being accorded a place at the table whenever manufacturers get together to talk it over.

That radio has followed the course it has to where it is today is not surprising. The industry, in what is, practically speaking, an existence of less than a decade has been typical rather than exceptional, either on the bright side or the dark side. The men who made the first automobiles spent no time at the beginning in hatching methods of distributing a horseless vehicle—of getting such a commodity of commerce into the hands of a thousand or a million or five million drivers. This was as natural as the succession of day and night. These men developed the horseless carriage. Once such a vehicle was to be had, another group of pioneers in the automobile industry—including some of those who had contributed to the automobile's development—battled to evolve the system which has put millions of automobiles into the consumers' garages but which is still by no means perfect though it today serves most other industries as an inspiration.

Radio, the infant among great industries, has been busy in the laboratory; not too busy because a desirable product is the first essential of successful selling. But now the time is at hand when radio industry must get out and hustle for people to use this amazing thing it has developed; it must hustle for its business, its opportunities, its chance to develop and to expand.

The radio industry prides itself upon its engineering achievements. In many regards the industry also deserves praise for its distributive achievements; a big job has been accomplished. However, viewing the producing and distributing achievements of the industry side by side, it becomes increasingly apparent that less costly, more economical methods of distributing the radio set as we have it are a greater present necessity than radical improvements in the set, important as these latter developments are.

The never ceasing development of the automobile and the automotive industry over a period of many years served greatly to stimulate American business through good times and bad. Likewise, it was the radio industry which began to make its influence felt in similar fashion after the more or less depressing days of 1920 and thereabouts. It was the economic whirligig which deflates

today as it elevated yesterday that saw the automotive industry, in return for the favors it had paid American business for years, pass through a drastic period of what may be called liquidation in those days after the bump in 1920. And now the field of radio seems destined to follow, at least in some measure, in the footsteps of this other great industry to which it has been so frequently compared.

Recent events, some of them so very recent that they take us back no more than a matter of weeks, are the best evidence we can offer in proof of this contention, and, we believe, we need no better or additional evidence to offer in its behalf.

THIS article, the first of a series by a contributor already known to our readers, is timely as well as some other things.

For another thing, it seems to contain sound reasoning, something which is right now at a premium.

The author, in this first article, has devoted most of the space allotted him to a discussion of several features of the radio business about which there has been so much wild eyed conversation during recent months. However, all of it is essential to establishing the premise he will carry on in succeeding issues and all of it is worth the careful consideration of our readers.

And before going on without setting up anything that remains of the premise we seek to establish and then launching into certain ideas we harbor about what the producers of radio products can do to help themselves during the days to come, there is a natural temptation to consider briefly the amazing conflict of opinion about what has happened, about what is happening and about what is likely to happen in months to come.

Everyone, from nationally known economists to self interested commentators with no particular qualifications other than the axes they had to grind, has been rushing into print for the past 90 days with every known and a thousand brand new varieties of optimism, pessimism and nonsense.

Actually, what happened along in the fall was the logical conclusion of the world's greatest crap game. Also, about this time and largely removed from any considerations of the stock market, the radio business in many quarters found itself trying to cope with an undeniable state of overproduction. Then came the grand cry from a host of wiseacres, either needlessly fearful or

afflicted with a desire to whistle in the dark or a hope that they could save their own skins by shunting what they mistakenly feared on somebody else, that the luxury lines would be the ones to suffer and that they inevitably must feel the pinch of despairing conditions. Then these self-invested diagnosticians in many instances went further and were pleased to point out that the outstanding luxury lines were undoubtedly automobiles—and jewelry—and radio.

Bunk!!!!

It is already known that in some extreme cases the occasional consumer who was a stock market casualty has actually maintained payments on automobiles—and diamonds—and radio sets—all the natural objects of budget plan purchasing—at the cost of what our self-appointed specialists and experts would have us believe are the necessities.

The point is:

When is a luxury a luxury and when isn't it?

If automobiles are a luxury, then so are railroads and shoes and by the very same token. There is a luxury development in all forms of manufacture not excluding the grocery trade and the meat business. The automobile years ago ceased to be a luxury for everyone except the doctor and the jobber salesman. And if we wish to turn the argument sharply back upon the harbingers of the "luxuries," then is it logical that the public, which after all governs its humble affairs with a surprising amount of common sense year in and year out, will turn its back upon radio—the most economical form of entertainment and one of the best—if it should feel this mythical pinch which the gloom bearers are trying to bring upon us?

IN these days, when so many business men think that every year which doesn't show a gain in volume over every preceding year is a hopeless failure, the author harbors some positive notions about what constitutes a good year which are markedly different from any such philosophy.

A failure to gain, he says, is not necessarily a loss and we think he proves his contention that this is true and that 1930 can be a good year for the radio industry, whether or not it succeeds in breaking all established records for volume of radio products sold.

Our readers will recall Arthur Allen as the pseudonym of a contributor who was represented in most of last year's issues with timely, thought provoking articles on various important phases of the radio industry's distributive problem.

Millions of dollars invested in the world's highest grade talent is passing through the ether nightly, available to anyone who wishes it at a small initial investment in a radio set and an operative cost of perhaps one cent per hour on the average. Economists seriously credit the claim that the theater business is often near its best

when the public state of mind may be best described as "low." The human need for entertainment and digestion is as fundamental as the need for food or shelter and radio is already established beyond assault from any illogical claims of its being a luxury.

If all the money invested in good white paper for purposes of circulating the cocksure predictions of the pollyannas, the sob singers and the other varieties of plain and fancy prophets and prevaricators during the last three months were to be collected in one lump sum, it would probably be a sufficient amount to underwrite the finest panic we could possibly cook up for ourselves.

The fact is that there is a sane middle ground and the writer's only excuse for barging into this bypath is the emphasis he places on his lack of qualifications as a forecaster or business prophet and his advance refutation of any possible notion that he thinks he should be called an economist or should be writing market bulletins for some brokerage house.

The blunt truth, in our opinion, is that no one knows what will happen. There are, however, certain obvious signposts in what has happened.

Apparently the anticipated 40 per cent of its total annual volume which the radio business was to enjoy during the past quarter of 1929 didn't come off. However, early reports indicate that 1929 was after all probably the biggest year in point of volume that the field of radio has yet witnessed. To what extent the holiday season absorbed the acknowledged overproduction of last autumn is not yet accurately known. Indications are that a reasonable proportion of dealers—those who deserved to—made money during 1929, at least figuring it on a basis of the entire year—and *this is important*—for the dealer is going to count like everything in days to come.

Based on obviously limited observation, we believe that dealers' inventories are in good shape, all things considered. Collections too, as we have already indicated, seem to have held up well so far as can be determined.

How important the dealer is in the radio distributive picture will probably never again be more surely or clearly indicated than it has been for some weeks past. We cite the energetic newspaper advertising and promotional effort with which dealers wound up 1929. National Advertising of sets seemed secondary to strong local effort even while some manufacturers went into receivers' hands and while others, though entirely solvent, are indicating their intention of retiring more or less gracefully from the field.

As for 1930, no one knows but there seems no sensible reason for anticipating only the worst. It seems logical to believe, as has previously been hinted, that the radio industry is on the verge of the same survival-of-the-fittest process which the automobile industry encountered shortly before this new colossus of American industry set up serious competition for the spotlight of national interest.

Some claim to foresee more business than ever in 1930. Leaving any consideration of the so-called "business outlook" entirely out of consideration, we can't see why such a prediction can or should sensibly be attempted at this time. Perhaps that is because of an acknowledged impatience with another recent credo of some business men that any year which doesn't exceed in volume—per-

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Remote Control

The Ultimate In Radio Set Operation and Convenience Will Embody Some Remote Control System

By LEWIS M. CLEMENT

Chief Engineer, Kolster Radio Laboratories

IT was just a few years ago that the radio receiver with many dials was the popular product of the day. Remember how it was necessary to perform several operations for the reception of a program, where the turning of three or four dials was required for tuning a station, and the careful adjustments of a few knobs were essential to obtain volume and clearness of reproduction?

Now the design has advanced to such a stage that this can be done several rooms away from the set and these operations can be confined to the simple manipulations of pushing a button for starting the set, pressing others for selecting stations, and turning a knob for the control of volume.

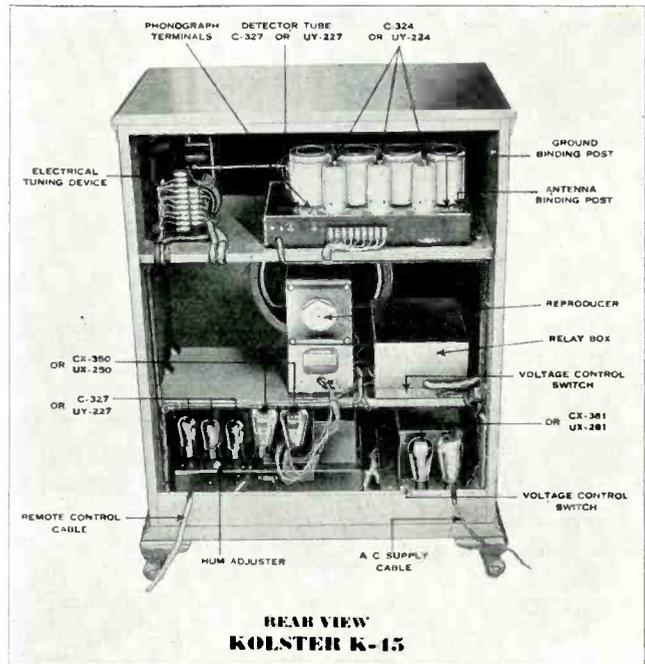
Every year the art of radio progresses. This season sees the advent of a receiver which is remotely controlled, in a new design giving improved quality of reproduction, better and finer selection of broadcasting stations, and

the home. Power can be automatically applied to the receiver, stations selected, and volume regulated as the function of the remote control.

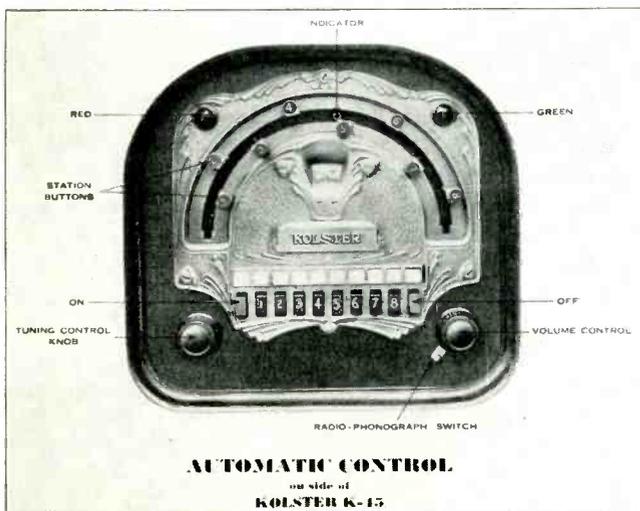
Remote control of a radio set, brought out by the engineers of the Kolster Radio Corporation, is everything that the name implies. Consider what the ideal condi-



**REMOTE CONTROL UNIT
KOLSTER K-15**



**REAR VIEW
KOLSTER K-15**



**AUTOMATIC CONTROL
on side of
KOLSTER K-15**

with the added feature of complete control at a distant point.

Remote control of a radio receiver means that the owner can completely operate the set from any place in

tion is, regarding the operation of a receiver from a distant point.

The radio cabinet is installed in a convenient and desirable place in the home where it can be placed in an attractive position, blending with the home surroundings. The cabinet does not seem to be a radio set as it requires no external devices projecting from the front, and its beauty is enhanced in comparison with the radio receivers showing the controls. The "on" and "off" power positions, volume control, tuning and indicating dials are not in sight, yet they can be operated either at the set or at a distant point.

If it is desired to operate the receiver from any part of the living room, the foyer, dining room, or other convenient locations in the home, it can be accomplished by the use of a small and compact remote control unit, scarcely larger than a man's hand. This contains all the miscellaneous equipment for actual remote control.

It is first necessary to apply power to the receiving set, and this is accomplished by pressing a small button

on the control box marked "Start." Power is thus automatically applied, all the tubes are lighted and the receiver is ready for operation. To show that the set is ready for reception, a small red jewel is illuminated on the control box and another one is indicated at the set.

A choice of stations is next desirable, and the selection of eight different buttons for control is available between the minimum and maximum wavelength ranges. Selection is obtained by pressing a button marked with the call letters of the station desired, and almost immediately the receiver is responsive to that wavelength. In other words, during this short interval the radio receiver has been automatically and exactly tuned to the selected station, and the receiver is now responsive to volume control, either at the set or from the remote control unit, by turning a small knob just as it is done on other sets.

Operation is not limited to the remote point, for all controls, are also available at the receiving set where complete manipulation of the receiver is conveniently arranged.

In the side of the cabinet, out of sight in a recess, a control panel is easily accessible, on which are mounted the necessary lever buttons, knobs, and indicating lamps for the proper and complete operation at the local point.

In order to operate the radio set from the local position, a similar procedure is followed as at the remote point. The two operations can be performed independently, that is, manipulation of the set at the remote point is not dependent upon any adjustments being left in the proper position at the local point.

Pushing a momentary "start" button at the local places power on the receiver, illuminates a red indicating light on the panel, and lights a corresponding red jewel at the remote control box.

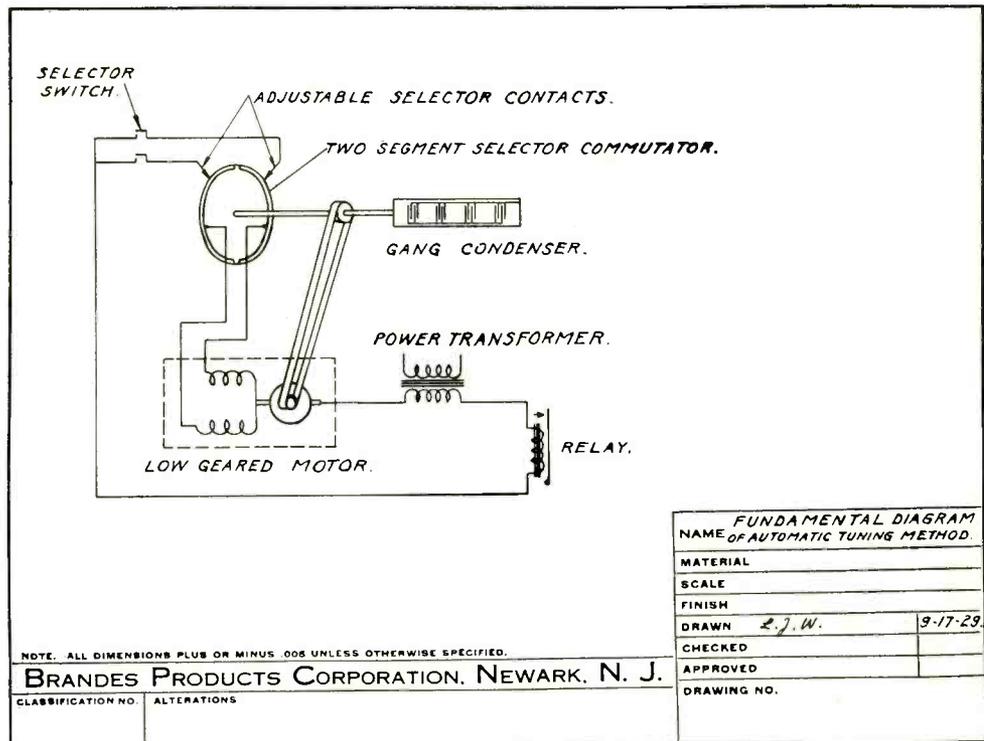
Selections of stations are similarly controlled by pressing a button marked with the call letters of the desired station, and waiting a few seconds for condensers to revolve and tune in the station. In addition to the automatic selection obtainable by the use of the eight buttons, a manual control is provided on the panel which can be stopped at any point. That is, by turning a knob, complete and select tuning is obtained throughout the entire kilocycle range. A marked scale is provided, etched with numbers and kilocycle readings.

The use of a "stop" button automatically disconnects the power from the receiver, and the red indicating lamps go out.

Simplified operation of a radio receiving set has been the aim of the industry during the past few years, the

outcome of which has been the possibility of controlling a radio set from a remote point.

In operating a radio receiver from a distance, one has the advantage of pre-selection of a station. That is, if a certain broadcasting station is desired, all that is necessary to obtain it is to press a button. To indicate that the apparatus is performing properly and to show when the automatic selector has completed tuning the station, a green jewel is illuminated when a selector



button is depressed. The button is to be pressed down until the green light goes out, which shows that the receiver is in tune with the desired station.

The selection of stations is obtained by the proper setting of brush contact buttons on the control panel in the receiver.

If, for example, a certain broadcasting station is desired, the receiver is tuned to that station by turning the manual control knob on the panel. Then, all that is necessary is to set one of the brush contact buttons on an insulating segment located on a moving drum. Thus, the setting of the stations is a simple adjustment.

The construction of the automatic tuning unit is comprised principally of a low-g geared reversible motor, one double-pole locking relay, one double-pole double-throw locking relay, one double-pole momentary relay and a solenoid motor clutch.

The driving motor, when a selector button is depressed, is automatically and mechanically connected to the gang condenser and to a commutator drum with two insulated segments. The variable selector adjustors making contact on the revolving commutator complete the selector circuit through this device which controls the period end direction of the motor operation. The variable selector contact positions, which are in series with the selector buttons, are adjusted on the commutator so as to reach the insulator sector and thus open the motor driving circuit

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is that business itself is healthy and has not been involved in over-expansion with the stock market—which means that an attack of acute indigestion in securities, while it may cause business a severe headache, should not seriously cripple the patient. There is no collapse of commodity prices. There is no inventory problem. There is no breakdown of the banking system. There is no shortage of credit. There are no great business failures, nor are there likely to be. Our great corporations were never in better shape financially, or from the standpoint of manufacturing efficiency and skill of management. We would call the attention of our readers to a table which appears on a succeeding page showing the remarkable financial strength of the automobile industry which may be considered typical of the condition of industry generally today. Earnings during several years of prosperity have enabled bank borrowings to be reduced to a minimum or paid off entirely. Bonded indebtedness has been steadily retired through sinking fund operations and calling of entire issues for redemption. Cash and marketable securities have been built up. As a result, corporations, instead of being loaded with high priced goods and up to the hilt in debt, are lenders of funds in the money market. Nothing could illustrate more forcibly the great difference between the situation at the present time and that of 1920-21.

The conferences which President Hoover has held in Washington with leaders in major fields of economic activity have done much to restore confidence by demonstrating the vast programs of industrial rebuilding and expansion that lie ahead. As the proceedings of these conferences were published daily in the newspapers there is no need for extended comment, except to call special attention to the significance of such programs as that announced by the railroads to spend \$800,000,000 to \$1,000,000,000 on rolling stock and right-of-way during the next year, by the public utility systems to spend \$1,800,000,000 on new plants and distributing facilities, by States and municipalities to speed road building and other public improvements, and by industry generally to maintain wages and to take advantage of slack periods to carry forward needed betterments and enlargements.



HOME-MADE RADIO SETS OUT

One of the features of the radio season of 1929 was the disappearance of home-made sets from the market, according to Powel Crosley, Jr., president of the Crosley Radio Corporation.

"In the days of crystal sets and headphones, amateur set builders could try out a new development before manufacturers could test it, tool up and get into production," he said. "But today, with the perfection of receivers incorporating such improvements as screen grid tubes and circuits, triple range control and phonograph pick-up, there is little to interest the amateur set builder except short wave outfits."

* *

The actual printing cost of each copy of *Radio Industries* on the basis of 6,200 copies is 20c. Adding the mailing charge each subscription costs the publishers pretty close to \$3.00 for the year. The subscription price to you is \$3.00 or two years for \$5.00.

NEW AMRAD 1930 MODEL

A new radio receiver, to be known as the "Minuet," has been added to its 1930 Bel Canto series, it is announced by the Amrad Corporation of Medford Hillside, Mass. The new set will retail for \$158.00.



The new "Minuet" is a console of fine walnut and lace wood. It uses eight tubes, including three screen grid tubes and two 245 tubes in push pull; the Mershon Condenser, an extra-heavy chassis, and a nine inch electric speaker mounted on a baffle board.



PROFITABLE YEAR AHEAD A STATEMENT

By MAJOR HERBERT H. FROST
Chairman, Merchandising Committee, Radio Manufacturers Association

The retail radio trade need have no fears concerning either volume or profits for 1930. No matter what may evolve from the present manufacturing situation, the public will continue to buy radio receiving sets and the retail trade will continue to sell them.

1929 can be looked upon not only as an unusual year in many respects, but it was unusually good. The first nine months established new record-breaking radio totals which will make 1929, when the entire year's operations are totalled, one of the best if not the best year, radio has ever had.

The radio trade can look forward with every confidence that the momentum gained in 1929 and the public interest which has been stimulated in radio will continue at high levels in 1930.

While 1930 may not exceed the record-breaking volume of 1929, there is every reason to believe that there will be fewer manufacturers and fewer dealers and this will guarantee that those who remain and do a sound and sane merchandising job will profit to a greater extent than has been possible in the past.

Standardization—Yes and Maybe

The Set Manufacturer Will Do Well to Leave His Power Supply Problem to a Specialist

By H. G. BOYLE, *Service Manager*
A-C Dayton Company

THERE is an old nursery rhyme of unmerited popularity which evidences a considerable curiosity on the part of someone as to the responsibility for the untimely demise of a certain Cock Robin. Within the past two years this song has been sung with variations by practically every radio service man in the country. Generally the old and honorable Cock Robin has been replaced by some form of power pack.

Certainly the number of power packs, power units and power transformers which have gone, and are going bad daily is not in line with the figures of various engineers. We know the caustic comments and popular public opinion that would ensue if any or all of the automobile manufacturers found it necessary to replace ten or fifteen per cent of the engines they put in their cars. Yet when that very percentage of radio power units go out it merely brings a shrug of the shoulders of the designers and some vague suggestion that the situation can be taken care of by the service department.

We cannot with any certainty say that any particular part is at fault when there is so much Swedish steel, copper, fish paper, linen, wax and bakelite to be considered, yet the question arises in the mind of every service man as to who or what is responsible.

Many instances may be brought to mind without mentioning names where the fate of a company hung in the balance scales for a long period merely because of a lowly transformer. More prominent cases were; an unusually compact job that lasted about an hour, or two if the owner was lucky, a push-pull 250 outfit that was recalled and the purchase price refunded, a half ton of junk sealed in a barrel of pitch that hummed like a plane, and so on down the line.

The general public, as a rule, become dazed when they are informed that the set they bought in good faith has blown a power transformer to the wind and it will be necessary to dig down in the family stocking for \$25 or \$30 before they will again be able to enjoy the evening bedtime story or the afternoon ball game. Naturally such an occurrence has not increased their estimation of the set or of the company who manufactured it and as a general rule they will with all haste trade it in on some other type.

One particular case which we witnessed personally was rather pathetic but the man was in the right as far as his information extended. A dealer had sold a six tube set of popular make and after a week or two of service it so happened that the power transformer went to its final reward. The owner, having heard of charging batteries for a radio set proceeded to loosen the retaining screws and cut through the fifteen or twenty wires of the connecting cable in order that he might also have his "battery" recharged. The dealer's face held a really remarkable expression when he caught sight of the erst-

while customer lugging the metal box under his arm and trailing a maze of ragged wire ends.

The customer's disappointment was keen when he found that he had done about \$30 worth of damage besides the delay that would naturally result in explaining the matter to the jobber and the factory.

While it may appear that the above discussion and reminiscence has nothing to do with standardization in any shape or form, yet we believe that it has. There has been a decided movement on the part of radio manufacturers to standardize on circuits, number of tubes, cabinet designs, engineering procedure, sales methods and results, yet in examining the receivers now on the market we fail to find even a faint resemblance between the power packs supplied for operation with these various sets. There are at least five brands of receiving sets which use identical circuits and chassis which approximate each other in characteristics and appearance, yet these power packs vary from a black lunch box to a golden freight car.

WHO is better able to speak of the construction, performance and faults of a radio set than the Service Manager? In this article Mr. Boyle makes some frank statements concerning the power supply problem and suggests that the set manufacturer stick to set building and leave the power supply and other components to the specialist.

In most cases the differences in circuits of the power packs are practically infinitesimal. In examining the incorporated parts very little difference is found in their characteristics yet they vary tremendously in size and shape. We have examined a choke coil rated at 30 henries at a 40 mill draw which was approximately one-half the size of a 10 henry choke operating at 100 mills. There is also a certain popular B eliminator which contains nothing except an indifferent rectifier and a filter system that would only affect a doubtful purging of muddy water, yet the results obtainable were passable and the price made it a popular seller.

In another instance a well known manufacturer with a rather inventive mind endeavored to popularize his particular system of audio amplification with theatre managers and owners and succeeded only in convincing them that he knew nothing at all about power systems, as a service man was required in constant attendance in order to assure their operating at all.

Out of this maze of incidents and accidents one fact is evident; that the present system of powerizing a receiver is unsatisfactory. This fact is further augmented

by the general failure of manufacturers to recognize the possibility of power pack failure and consequent delay and inconvenience in endeavoring to obtain the right replacements for service work.

If we will examine the general situation of five or six years ago we find that manufacturers as a rule paid attention only to the radio receiving set. The manufacturer of storage and dry cell batteries for power supply was naturally left to the battery manufacturers who had sufficient experience to enable them to build satisfactory power supply units. Yet immediately upon the arrival of the all electric set these same chassis manufacturers easily convinced themselves that they were authorities on the matter of power supply and the present chaos is the result.

Although the suggestion may not meet with approval we believe that radio manufacturers should maintain their standard as radio manufacturers and leave the matter of power supply to those organizations capable of building these units in such a manner that their continued satisfactory operation is insured. While the process could not be taken care of in a week, or a month, or a year, we believe that it could be done and that it is to the advantage of every manufacturer to carefully consider any plans presented for the standardization of this very vital auxiliary of a receiver. We believe that there are at the most only five manufacturers who are really capable of engineering and constructing a reliable power supply transformer and B unit. This group should concentrate their efforts to the field to which they are best suited, and the manufacture of the receiving set proper left to companies with equal experience in the manufacture of radio and audio frequency amplifiers.



Time Limit on Interviews in this Office			
	HRS.	MIN.	SEC.
Friendly Call	0	2	0
Friendly Call's when busy	0	1	0
Life Insurance Agents	0	0	2
Book Agents	0	0	4
Friends with a great Scheme	0	0	5
Friends with a "Sure Winner"	0	0	1
Friends who want us to go fishing	8	10	2
Friends who ask us to have a drink	?		
Friends who ask us to lunch	0	60	30
Those who want an extension of Credit	0	0	2
Friends wanting to borrow \$5.00	0	0	3
Friends wanting to borrow \$10.00	0	0	2
Friends wanting to borrow \$100.	We are not in		
Anybody with a good thing	0	0	0
Anybody selling Mining Stock	Call the Dog		
Those wanting to pay old Bills	60	60	60
Friends with the latest story	0	0	60
Customers	All Day		

With possibly a few exceptions by appointment

Start the New Year right. Clip this out and post in a conspicuous place. Efficiency experts recommend its use.

ADVERTISING AND SMALL PRODUCTION

Many a manufacturer, new to advertising, has been scared from it because he was told that if he didn't want big volume, high production and cave man selling, he had better not advertise. He was told that all advertising was so geared up with mass production methods that any other philosophy of management was one which would not include advertising as part of the management program.

Nothing is further from the truth. There was a time a few years ago when mass production was the ideal held out to every manufacturer as the goal he must strive for. Yet a great many manufacturers of a purposely restricted product made by craftsmen have discovered that advertising searches out for them exactly the type of consumer they can do business with. The Rookwood Pottery Company in Cincinnati, the Hawkes Glass Works in Corning, N. Y., the Johnston & Murphy Shoe Company, of Newark, are three concerns whose advertising has gone hand in hand with slow and conservative expansion.

Advertising, with copy prepared carefully to appeal to a specific, definite type of people, restricted in number, who are the logical buyers for the product, will help any maker of craft merchandise to get in touch with the sort of consumer who keeps him in business. There is some form of advertising which will assist almost any manufacturer, be he large, small or middle size.

A man expanding slowly is like a baseball player who has reached first base. The closer he sticks to the base the smaller the risk of being put out at first, but the smaller also are his chances of reaching second. On the other hand, the further off the base he plays the greater are his chances of reaching second. The most successful base runner is the one who usually takes his position in the middle ground between security and excessive danger. The small manufacturer who never takes any risk never gets caught off base, or in business in an over-extended condition, but he minimizes his chances of getting around to the home plate.

The only unfortunate thing is that many rising young business men with their feet on the ground, with a definite business philosophy which promises to take them in a straight line to the modest success they have in mind, are frightened away from all advertising because someone has told them that it is only for the man who wants to expand rapidly and who is willing to take a big chance at the start to do so. The right kind of advertising with the right kind of advertising adviser fits very nicely into the philosophy of the slow and steady builder.—Printers Ink.



U. S. CIVIL SERVICE EXAMINATIONS

The United States Civil Service Commission announces the following open competitive examinations:

SENIOR RADIO ELECTRICIAN, \$2,000 TO \$2,500 A YEAR

RADIO ELECTRICIAN, \$1,800 TO \$2,100 A YEAR

JUNIOR RADIO OPERATOR (AIRWAYS), \$1,620 TO \$1,920 A YEAR

Applications for senior radio electrician, radio electrician, and junior radio operator (airways) must be on file with the Civil Service Commission at Washington, D. C., not later than January 29.

The examinations are to fill vacancies in the Airways Division of the Lighthouse Service, Department of Commerce, and in positions requiring similar qualifications.



There is only one way of being certain of receiving *Radio Industries* regularly each month. Better send along your subscription.

Chicago Looks Up as Radio Program Center

NBC Headquarters and Studios in New Merchandise Mart To Be Ready Soon

By ALBERT R. WILLIAMSON

WITH the dawn of 1930 Chicago is looking up as an originating point for national radio programs.

Since it is the quality and variety of programs that largely determines the volume of sales for radio manufacturers, any news that indicates a larger volume of better, more interesting programs, with better production, can always be looked to with interest. This is true with the announcement of complete plans for the erection and equipment of the world's most pretentious broadcasting quarters atop the largest building in the world, the Merchandise Mart in Chicago, by M. H. Aylesworth, president of the National Broadcasting Company.

Construction work is going ahead to provide the Chicago division of the NBC with facilities for the acme of program presentation and transmission. The new offices and studios are expected to be ready for occupancy not later than March 1. The most modern equipment for broadcasting will be installed in studios, offices and laboratories, and engineers have devised plans for meeting radio problems as far in the future as it is now able to envision them.

No expense is being spared, it is pointed out, in building the most modern and complete broadcasting central in the world. More than 62,000 square feet of floor space will be put to immediate use in housing the various activities.

The fact that the Chicago NBC headquarters are to be more pretentious than those now in use in New York, Washington or San Francisco is regarded as a significant recognition of the importance of Chicago's position in the broadcasting field.

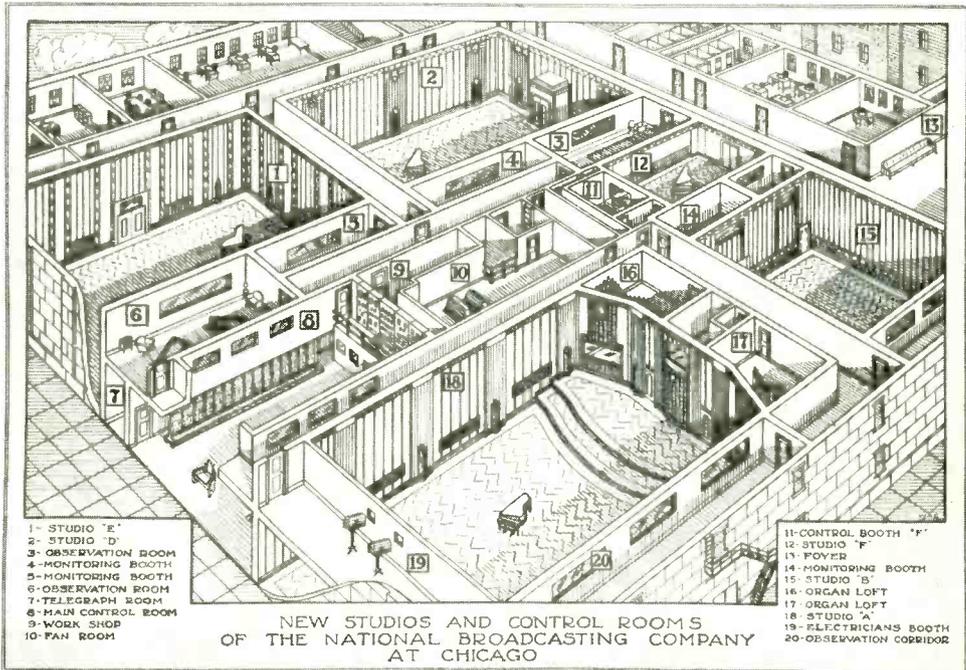
The new quarters have been designed and are being built under the direction of O. B. Hanson, manager of operations and engineering for the NBC, while the Chicago architectural firm of Graham, Anderson, Probst & White, designers of the Merchandise Mart, represent the NBC in design and construction.

The new quarters will open with six studios, fully equipped with the very latest developments in radio apparatus. Wire lines and other facilities will be installed

permitting expansion to an unlimited number of studios.

Studio "A" will be the largest radio theatre in the world. It will be seventy-five feet long, fifty-one feet wide and with a twenty-six feet ceiling, giving a total floor space of 3,820 square feet, or a total content of 99,450 cubic feet. It would provide standing room for more than a thousand persons, it is estimated.

The studio will have a large number of innovations in equipment that will go for more perfect broadcasting.



Instead of the usual velvet or monks' cloth drapes utilized in the regulation of acoustical effects, it will be walled with adjustable narrow panels. These strips will be movable in such manner as to present refractive, neutral or absorbing surfaces to sounds produced in the room. This feature is a scheme devised by Mr. Hanson and is the outcome of his years of experience in studio acoustical work. It is believed to be the first installation of this sort ever attempted.

A great pipe organ and organ loft, specially adapted for radio presentations of varied character, will be installed. A raised stage, for use in productions permitting the presence of an immediate audience, and also useful in balancing and placing large orchestras, will occupy one end of the studio.

The other studios vary in floor size and ceiling height to meet various acoustical conditions and adaptations to various size musical aggregations. The smallest studio will be twenty-one by thirty feet with a ten foot ceiling.

The total floor space devoted to the six broadcasting rooms will be 10,228 square feet and total content will be 265,928 cubic feet.

Each studio will have its own monitoring and observation room adjacent and a sound-proof glass partition will separate them. The monitor room will be raised above the studio level in order to give the studio engineer and production director better view of the performance. Further, each studio will have a sound-proof glass enclosed balcony to enable invited guests to both see the performance in the studios and hear it through loud-speakers. All studio units will be thoroughly sound-proofed through the medium of floating walls as floors.

The general height of the Merchandise Mart will be eighteen stories, and the special tower occupied by the



This drawing gives an idea of the size and splendor of the various Studios

National Broadcasting Company quarters will be known as the nineteenth and twentieth floors. All of the studios except "F" will be on the nineteenth floor but will be two stories in height.

On the nineteenth floor will be the offices of the division engineer, plant and operating engineers, control boards, music library, musicians' rest rooms and lockers, reception rooms, announcers' rooms and lockers, artists' reception rooms, first aid room, quarters for the library staff and the engineering laboratory. On the twentieth floor will be the office of the Vice President in charge of the Chicago division, general offices, agricultural department, program, press relations, traffic, sales, conference rooms and studio observation rooms.

The studios will be without windows (and partially hermetically sealed for sound proof) the ventilation being regulated through modern equipment maintaining a constant flow of pure air at a regulated temperature and with a uniform degree of humidity, keeping the temperature automatically regulated within a variation of two degrees Fahrenheit.

In the center of the control room will be two main control boards, each thirty feet long. One will be used for amplifiers, relays and control of studio equipment. The other will carry the apparatus which controls connections with wires carrying programs to and from points outside the studios and will also permit expansion. A master control desk in this room will be the nerve center at which the engineer in charge may observe the routing

of all programs and can supervise the cutting of programs on and off networks and from studio to studio.

Delicately adjusted times system clocks will show the correct time to the fraction of a second—an item of major importance in regulation of program over far flung networks. All equipment, including power supply will be installed in duplicate, to insure uninterrupted transmission of programs.

In providing new quarters for the Chicago division, the National Broadcasting Company has looked far into the future. In addition to the present space, options have been obtained for room in the front tower of the building and for addition construction on the roof totaling nearly 100,000 feet additional. These arrangements provide for expansion into quarters equalling the total room available in a good-sized ten story building.

American Engineering and Industrial Standards

Tentative American Standard	ASA C 16c-1 1929
Specifications for Vacuum-Tube Bases	
<p>1. DIMENSIONS</p> <p>The important dimensions of the standard four-pin vacuum-tube base shall be as shown in the following drawings.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>(a) Small Type</p> </div> <div style="text-align: center;"> <p>(b) Large Type</p> </div> </div> <p style="text-align: center;">2. CONNECTIONS</p> <p>In a triode it shall be standard to connect the tube elements to the four-pin base as shown in the following drawing.</p> <div style="text-align: center;"> </div>	
Sponsors: Institute of Radio Engineers American Institute of Electrical Engineers	

Approved by American Standards Association, 29 West 39th Street, New York, N. Y.

LEAGUE TO HAVE WIRELESS STATION

The League of Nations has decided to build a wireless station. The Tenth Assembly instructed the Secretary-General to provide, as soon as possible, means for independent communications with countries throughout the world, especially necessary in times of emergency. The Swiss authorities have already erected a medium-wave station on the outskirts of Geneva, and a short-wave station is to be built at the League's expense. In normal times both these stations will be managed by the Radio-Swiss Company because of financial considerations, with guarantees accorded to the League that its station will be furnished and operated as the League desires and that preference will be given to the needs of official traffic.

Conservatism 1930 Keynote

Matching Production Schedules with Actual Sales and Eliminating Radical Design Changes Will Aid Industry

By K. A. HATHAWAY

Associate Editor

THE radio manufacturing program for 1930 should be and very likely will be more conservative than that laid out and attempted during the last twelve months. Actually, the 1929 program was looked upon with skepticism by many of those actively engaged in radio manufacture and grave doubts were expressed during the early part of the year concerning the outcome if it were carried to completion.

There is the feeling that there should be a lack of strikingly new designs at the outset of the present year in order that the industry may again right itself from the effects of the slump that was partially occasioned by the recent crash of the stock market. Then too, there is nothing that can be said to be outstanding as a development for the last year that would give rise to radical changes in the design of radio receivers over those of the later months of the season just past.

It seems quite logical that radio models should not be introduced oftener than development will occasion. There is nothing to be gained in the production of large volumes of sets only to find later that a surplus stock has been created causing large numbers, of what are called obsolete sets, being dumped upon the market. If such tactics are continued there is reason to believe that sooner or later the majority of the radio buyers will believe it unnecessary to make purchases during the period of standard prices and consider it more economical to wait a few weeks in order that they can secure the radio of their choice at a substantially lower cost.

A glance over the activities of 1929 show that there was a certain element of development that caused a change from the design of sets supplied during 1928—the introduction of the shield grid tube. It is well known among the engineering profession, however, that many of the circuits employing the shield grid tubes would work equally well with tubes of the standard variety so that in the end nothing is gained except the sales argument that “we have a shield grid set, the latest development.” However, looking further, there is no such development that can create a furor in the sales organizations at the outset of the present year to demand that the engineers change the design of the sets to accommodate the new development.

We might point out the remote control feature that has given rise to a great deal of discussion during the past two years or more. Several sets of the past year incorporated remote control devices. Their acceptance was limited. The fact that those devices that were introduced failed to conform to the full requirements of a remote control device probably had more to do with the lack of popularity than any other one thing. However, the work that has been accomplished is worthy of praise and indicates that sooner or later remote control devices of an approved nature will appear. When that time comes, there will be occasion for the introduction of new models.

Condenser speakers have been made the subject of much discussion and conjecture in the last year, and because of the lack of a properly designed output circuit there is no indication that they will be the cause of changing the design of radio receivers at the beginning of the year. If in the course of the next few months a circuit that will efficiently supply the needs of the condenser speaker is developed then there will be occasion for the further changing radio models in the interest of quality reproduction.

AT the present time the Radio Manufacturers' Association is conducting a survey to determine, quite definitely, the actual sales possibilities for radio apparatus throughout the country. This survey, when completed, will acquaint the industry with the buying habits and wealth of people in specific sections of the country. Moreover, the number of electrically wired homes in each district will be shown. This will give the manufacturer fairly definite information as to the potential market for both electrically operated and battery operated sets. This survey will largely remove the guesswork from radio manufacturing and is one of the most important jobs ever undertaken by the RMA.

The introduction of the home talking movies appears to be in the cards and, quite likely, during the earlier part of 1930 there will be models of such a combination unit on the market. It is not to be expected, however, that the demand for a combination radio and home talking movie device will be universal, but if the present plans carry, it will be added to the list of radio apparatus already available for those who are interested and for clubs, etc.

There is a decided tendency toward the use of radio in automobiles, and if the experience of 1929 is any criterion, 1930 will see great strides in the production of that apparatus.

Summarizing, there is nothing new in the way of development of accessory apparatus that should cause the introduction of a vast array of new models of radio receiving sets. The presentation of new models at this time would have a serious, detrimental effect upon the radio industry as a whole in view of the fact that there is at present an estimated overproduction of 900,000 radio receivers. The production schedule for 1930 should be decidedly lower than that set for 1929.

New Type of Television Developed by Westinghouse

Cathode Ray Claimed Superior to Scanning Disc Method

TELEVISION which can be viewed by a roomful of spectators rather than by one or two was announced recently by Dr. Vladimir Zworykin, research engineer of the Westinghouse Electric and Manufacturing Company, to members of the Institute of Radio Engineers. The use of a cathode ray tube as a receiver gives this new type of television many advantages over the well known scanning disc method of visual broadcasting.

The inventor is already in position to discuss the practical possibility of flashing the images on a motion picture screen so that large audiences can receive television broadcasts of important events immediately after a film of these is printed. These visual broadcasts would be synchronized with sound.

The cathode ray television receiver has no moving parts, making it more easily usable by the rank and file of the radio audience. It is quiet in operation and synchronization of transmitter and receiver is accomplished easily, even when using a single radio channel.

Another advantage is that, using a fluorescent screen, the persistence of the eye's vision is aided and it is possible to reduce the number of pictures shown each second without noticeable flickering. This in turn allows a greater number of scanning lines and results in the picture being produced in greater detail without increasing the width of the radio channel.

The apparatus described by Dr. Zworykin is now being used in experimental form in the Westinghouse research laboratories in East Pittsburgh. A number of similar receivers are being constructed in order to give the set a thorough field test through station KDKA, Pittsburgh, which already is operating a daily television broadcast schedule with the scanning disc type of transmission.



This bottle-like object is a cathode ray tube which forms the receiver of the new type of television invented by Dr. Zworykin, who is holding it. The broadcast pictures appear on the round end of the tube and from there are projected on a mirror in view of the spectators.

The pictures formed by the cathode ray receiver are four by five inches in size. They can be made larger or brighter by increasing the voltage used in the receiver.

The transmitter of this new television apparatus consists of a motion picture projector rebuilt so that the film to be broadcast passes downward at a constant speed. This film is scanned horizontally by a tiny beam of light which after passing through the film is focussed as a stationary spot on a photo-electric cell. The scanning motion of the beam is produced by a vibrating mirror which deflects the light from one side of the film to the other.

Dr. Zworykin was forced to develop an entirely new type of cathode ray tube for his receiving apparatus which he calls a "kinescope." In this tube a pencil of electrons is bombarding a screen of fluorescent material. The pencil follows the movement of the scanning light beam in the transmitter while its intensity is regulated by the strength of the impulses received from the transmitter. The movement of the scanning beam, consequently of the cathode ray pencil are so rapid that the eye receives a perfect impression of a continuous miniature motion picture.

A reflecting mirror mounted on the receiver permits the picture to be observed by a number of spectators.

This condensed description of the methods used by Dr. Zworykin to effect television transmission can give only an idea of the possibilities of the new system. To the radio public it means, when perfected, a means of television which will be simple to operate because it has no scanning disc or other moving mechanical part. The receiver will operate in silence, offering no interference to sound broadcasts.

To the radio engineer the invention is important for the same reasons and because it will not be wasteful of radio wave bands. This because the transmitter and receiver can be synchronized using but one channel.

The name of Dr. Zworykin is not new to the radio public. Earlier this year he was brought into the limelight in connection with his facsimile transmitting device for telegraphing photographs, letters, drawings and documents.



NEW SUPER COMBINATION

A super-powerful combination of the most modern radio and phonograph for schools, institutions and unusually large residences just has been introduced by the Radio-Victor Corporation of America. It employs the finest Superheterodyne receiver combined with the latest type electrical phonograph and a multiple loud-speaker unit embodying three 8-inch electrodynamic speakers mounted on a baffle at angles of 15 degrees, producing enormous yet controlled volume, non-directional projection and undistorted quality.

Statistics Essential to Industry

Production Must Be as Well Regulated as Dealers' Purchases Based on Inventory Conditions

By EDGAR H. FELIX

Radio Consultant, N.E.M.A.

ECONOMISTS, discussing the effect of reduced security prices upon general business, have been almost unanimous in classing radio receivers as luxury goods, one of the few major lines to be adversely affected by the business situation. But the widespread distribution of radio products in every class of American family supports the belief, held by the radio industry, that only general unemployment is likely to affect seriously the demand for its products. Therefore, the effective measures tending to relieve apprehension on this score should bring about resumption of normal buying.

The quarterly surveys made by the Department of Commerce through the cooperation of the Radio Division of the Association have been extremely helpful in making possible accurate analysis of the radio situation. The latest survey comprised figures from 15.6 per cent of the retail trade, a percentage sufficiently large, according to the standards established by experienced economists and statisticians, to give an accurate reflection of nationwide conditions. The most recent survey covers the period from July to September, inclusive, and therefore makes possible analysis of the situation free of any influence of stock market conditions.

From these figures we learn that the average gross sales per dealer during the quarter was \$3,445, as compared with \$3,031 for the same quarter last year, an increase of 13.6 per cent. The number of retail outlets rose from 31,573 to 39,929, a gain of 26.5 per cent. Retail sales rose from \$95,834,387 for July, August and September, 1928, to \$137,759,064 for the same quarter of 1929, a gain of 43.7 per cent. With such substantial gains in late summer retail sales, during a quarter which ordinarily accounts for but 21 per cent of retail sales, dealers were naturally optimistic. This attitude is reflected by the fact that, on October 1, 336,339 sets were reported on order by dealers.

The average number of a. c. sets in the hands of each dealer on October 1, 1928, was 8.6, or a total of 277,752 for the entire retail trade. That stock jumped to 14.2 per dealer, or a total of 568,865 sets on October 1, 1929, neglecting the few thousand battery sets included. It is obvious, therefore, that even prior to stock market breaks, the dealer was already carrying a substantial inventory load. If all the sets on order are added to this stock, the retail stocks of a. c. sets by the middle of October may have reached a total of 905,204 sets.

It must be remembered, however, that the fourth quarter of the year, then beginning, is the biggest from the retail standpoint. In usual years, approximately 40 per cent of the year's total business is done in that quarter. To equal last year's retail sales figures requires that only 42 per cent of the business anticipated on the basis of the sales of the first nine months of the year be actually achieved by radio dealers. During the fourth quarter of 1928 radio dealers disposed of 1,055,299 a. c.

receivers. The number of a. c. receivers in stock and on order on October 1, 1929, amounted to about 90 per cent of this figure. Naturally, dealers observing their stock on hand rising from an average of 8.6 sets to 14.2 sets on October 1, this year over last, curtailed their buying and, when the market break took place, virtually ceased buying.

The result has been increased manufacturers' stocks. Well managed companies, particularly those with small organizations, were quick to respond to conditions and promptly reduced production. Others hoped to stimulate sales by price reductions. The major producers, during the last year, have substantially increased their production facilities, anticipating tremendously increased retail sales. The production facilities of the industry are ample to make twice as many sets as were actually sold last year. It is apparent that there was warning, as early as October 1, that supply is far in excess of demand and that dealer stocks, despite increased sales, were growing at an alarming rate.

Manufacturers are unable to adjust their production figures to the retail situation without a knowledge of the production situation in the entire industry. Furthermore, to be useful, such production figures must be gathered frequently and promptly so that they may be of value in guiding manufacturers as to their production policies.

Naturally, there is hesitation among the leaders of the industry to confide their production schedules to anyone, lest they become public property. But this danger is negligible as compared with the advantages of securing a monthly compilation of sets produced or placed in trade by manufacturers. Twenty-four of the forty-five branches of the electrical industry represented in the National Electrical Manufacturers' Association submit their production figures to the Association, in order that the *total* production for each branch of the industry may be available for the guidance of the industry. To be of value in the radio industry, production compilations must include all of the major quantity producers and a sufficient number of the smaller companies to be fully representative.

If one of the results of the present reduced operations of radio manufacturers is to teach a lesson of the advantages of permitting a compilation of monthly production figures, a thing which has been urged by this association for years, it will, in the long run, prove one of the most profitable seasons in the industry's history.

As to the prospects of the immediate future, the retail situation, while unusual, is not alarming. First, the receivers in stock are up to date merchandise; second, dealers promptly curtailed purchasing before their best sales season got under way. Consequently, the liquidation process is likely to be orderly. It is already stimulated by price reductions. The liquidation necessary to restore dealer buying is a reasonable achievement for

this season of the year. Stocks of a. c. sets on January 1, 1929, were reported as 266,617. If we subtract that from the number on hand and the number on order on October 1, 1929, i. e., 905,204, it leaves a figure of 638,587 sets to be disposed of in the three best months of the year. Furthermore, there were cancellations of orders reported as standing on October 1, 1929, which further reduces the number to be disposed of to reach the inventory figures of January 1, 1929. Considering that, last year, 1,055,299 a. c. receivers were sold during October, November and December, while demand was running 43.7 per cent above last year a few weeks before the stock market break, liquidation of overstock by the retail trade, the first essential to liquidation of manufacturers' stocks, is a very promising prospect.

However, we are not upon a stable basis until production is as well regulated as the dealer is adjusting purchases to inventory conditions. Unless measures are taken by the industry to compile gross production figures at regular intervals, the possibility of over-production is always present. If resumption of dealer buying and liquidation of manufacturers' stocks restores production to full capacity, the groundwork is laid for another period of over-production.



"SUPER MIDGET" MODEL NEW ZENITH PRESENTATION

Filling a long felt demand for a small compact radio receiver of attractive design which would prove suitable for use between twin beds, alongside of a fireside chair



or to fill a nook or corner of the ordinary small kitchenette apartment, the Zenith Radio Corporation of Chicago, introduces the "Super Midget" known as "the little radio with the big tone."

This little model is especially desirable for those who like to lie in bed and be lulled to sleep with music. It can be placed between twin beds or alongside of a double bed, serving also as a night stand for a lamp, clock or telephone. Alongside of a fireside chair, it is conveniently low enough to serve as a smoking stand and when used in this manner, the dial controls are readily accessible to the one seated in the chair. It can be placed in an automobile and easily transported to the summer cottage or hunting lodge, weighing only 75 pounds.

Kitchenette apartments, where space is more or less limited, are ideally suitable for this type of receiver. It can be picked up and carried from place to place, requiring only a small piece of wire for the antenna and ground.

The "Super Midget" model contains the same "60 line" nine tube screen grid chassis with double push-pull audio amplification and super-sized Syntonic-dynamic type speaker as is found in the larger Zenith models in the line. No sacrifice of the established Zenith tone quality has been made whatsoever by incorporating the standard chassis and speaker in a small cabinet. Turned up at full volume or subdued to a whisper, the Zenith "Super Midget" reproduces each tone with the exact realism of the original broadcast rendition.

The cabinet, measuring 28½ inches high, 19¼ inches wide and 15½ inches deep, is of simple dignified early American design and with matched butt walnut front, top and sides and striped walnut instrument panel. The half door, when open, reveals the attractive escutcheon plate calibrated in both meters and kilocycles. The Zenith automatic tuning device is not incorporated in this model which lists at \$145 less tubes.



ISELL HAS INTERESTING CAREER

A record of what radio experts might call the "stages of amplification" by which Arthur A. Isbell rose to his recent appointment as Manager of the Commercial Department of R.C.A. Communications, Inc., is a sort of romantic history of the advance of communications. Mr. Isbell began in 1890 as a messenger boy. Next he was a railroad telegraph operator and later the first commercial radio operator on the first vessel in the U. S. Merchant Marine to carry radio in the Pacific. He built the first wireless station in Honolulu to establish communication with the mainland of the United States and erected radio stations in New Zealand and Alaska; was Expert Radio Aide under Admiral Griffin in the War and since then has been developing the R.C.A. Communications system throughout the islands of the Caribbean and the countries on its shores.

* *

Delegate *Radio Industries* to do some of your thinking. Read every issue for ideas which might be helpful in solving some of your business problems. \$3.00 will cover your subscription for a year.

* *

Albert Aamodt, western factory representative for the Crosley Radio Corporation, makes most of his calls on the trade via passenger plane which is probably explainable through the fact that his territory reaches west from Kansas City to the Coast and between Mexico and Canada.

* *

The Esenbe Company of Pittsburgh have been admitted to membership in the Radio Wholesalers Association according to H. G. Erstrom, Secretary of the latter organization.

Aircraft Radio

Apparatus Extensively Used on Planes Now Wholly Inadequate and Only 50% Efficient

By K. A. HATHAWAY

Associate Editor

IN another two years some of the radio manufacturers will have entered a field of endeavor aside from that of producing radio receivers for the use of the listening public. The demand is going to be occasioned because of the strides taken by a sister industry, aviation. A great deal of development will be made in the interim for the aircraft operators, governmental agencies, and others are fully in accord with the feeling that radio will not only add to the safety of flying, but at the same time will aid in the development of aviation as well.

The entire radio industry will not interest itself in the production of aircraft radio, neither will many of them endeavor to supply complete apparatus, but there will no doubt be a demand for parts of the equipment to be furnished by those now engaged exclusively in the production of broadcast receivers. There is much to be done in the way of development of aircraft radio, however, in that the operators as well as the research laboratories must be convinced that a change in the design of equipment is necessary.

The apparatus in use almost exclusively at the present time is inadequate. Its efficiency might very easily be listed at less than 50 per cent and most certainly so if the effective use of the apparatus be taken into consideration.

The greatest drawback to the development is the continued use of a wind driven generator by which it is im-

It is our contention that the radio transmitter installed upon an airplane should not be confined to the transmission of code signals, but should be so equipped that the 'phone could be used. Properly designed, the apparatus for such work should not be excessive in weight. Further than that, the apparatus should be so arranged that communication over a comparatively long period could be maintained although the ship might be on the ground.

In order to accomplish the result, it is proposed that a master oscillator be employed for the emergency transmitter which, in case the motor to which the Eclipse high voltage engine driven generator is attached is inoperative, is keyed. The master oscillator unit obtains its electrical supply for the plate circuits from a small, compact, light dynamotor which is driven by a 12-volt storage battery, a device ordinarily carried for the supply on the navigation and instrument board lights.

While the ship is in flight the engine driven generator supplies sufficient power to operate an amplifier and modulator unit which in turn is fed to the master oscillator so that voice can be transmitted. The operation of the voice transmitter would be possible if, while the ship were on the ground, the engine carrying the generator were operative and, according to tests, the consumption of gasoline would be lower than that necessary to operate a wind driven generator in that the voltage delivered by the Eclipse generator remains constant within ten per cent for propeller speeds from 2,000 to 4,200 revolutions.



The plane shown in the picture is a Stinson Detrouter with a J-6 motor which includes a radio cabin, pyralin covered center section for better visibility and a reversible panel in the radio cabin on which a wind driven generator is mounted. When this is swung outward the generator is in use. When swung inward the generator is brought into the cabin, eliminating drag.

At the same time, the aircraft manufacturers themselves are not exempt from development. Until recently they have considered radio as just something else designed to worry the designers of airplanes. But when a ship is forced down in the desert by storms and, due to the lack of communication facilities, there is no means of notifying the home station of their safety, then the necessity for radio becomes manifest and the airplane manufacturers look more favorably upon the matter of radio for their ships.

(Please turn to page 538)

Should Radio Tube Sockets Be Redesigned?

Change in Design of Tube Base Would Likely Prove of Value in Set Design

THE design of radio receiving circuits has gone steadily forward with the aim toward efficiency and simplicity without jeopardizing and, in fact, augmenting the tonal reproduction obtainable from the apparatus. Yet there has been no simultaneous effort on the part of either the tube or the set manufacturers to correct one deficiency in the physical design of the vacuum tube base, a slight change in which would not only greatly aid the tube but would also be the means of reducing the amount of profanity occasioned by the inaccessibility of radio tube sockets.

No single part of the radio can be indicated that does not show the result of development except the base of the vacuum tube and because someone in the beginning days of the art put prongs in the bottom of the base the practice has continued throughout the entire ten years of radio broadcasting. No one seems capable of giving any specific and logical reason why a change for the better cannot be made, except that "such a radical change would be impractical in view of all the sets now in use."

In order to refute that argument, however, we have only to refer you to the period during which the 199 type of tubes were undergoing the change from the UV to the UX type of base. The industry was not thrown into any great consternation at that time nor was it affected when the change was made from UV to the UX type of base for the five-volt tubes used with storage battery.

HERE'S something for the Industry to think about. No immediate, drastic change is contemplated or suggested. The Vacuum Tube Committee of the R. M. A. should, however, take the matter up for discussion at an early meeting.

It is admitted that the change now recommended is more radical than the latter, but no more so than that involving the 199 type tubes.

It is proposed that we get away from the prongs placed in the base of the tube and mold them into the side of the base structure. By so doing we eliminate an appreciable amount of capacity that has an appreciable effect upon the functioning of the tube itself. At the same time such an arrangement would make it possible to set the tube into a receptacle and turn it until slots in the upper rim of the socket allowed the contact pins to settle down to make connection with the contact points.

The arrangement of the new base would be simple. The base itself would be nothing but a cylinder of molded material open at both ends with the four or five prongs molded into the walls about a quarter of an inch above the lower end of the cylinder. The cylinder need not be long and in fact it could be cut off so that it would not

extend more than a quarter of an inch below the sealed portion of the envelope or in other words the contact pins could be on a line with the lower part of the glass.

By having the lower end of the cylinder open the connections to the elements could be made readily and, if it was so desired, a flat piece of molded or laminated material could be provided with springs to hold it in place to cover the open end of the base.

The socket would not be difficult either to make or to insert the tube. It would consist of another cylinder molded to a mounting base with four or five contact springs molded into the walls to accommodate the different types of tubes. The contact springs need not necessarily be molded into the walls of the socket if it is found easier to rivet them into position. Slots placed in the top of the socket cylinder would fit the positions taken by the contact pins on the tube base. It would, therefore, be possible to set the tube into socket and turn until the prongs hit the proper slots to allow it to slip into position rather than using the "hunt and peck" system as we have to do today.

An economist could calculate the approximate time wasted each year in attempting to insert the tubes of the present day design into their sockets. The design is antiquated by the development of radio itself in that it does not tend toward simplicity and ease of handling in accordance with the remainder of the set

AMONG THE LEADERS

Crosley screen grid radio sets were conspicuous at the radio show held in Lisbon, Portugal, early last month.

* *

Eighteen editors of the various McGraw-Hill publications were guests recently in an inspection trip of Plant "A" of the American Bosch Magneto Corporation at Springfield, Massachusetts.

* *

Harry A. Beach, formerly vice-president in charge of sales for Earl Radio Company, has been appointed manager of the radio department of The Stromberg-Carlson Telephone Manufacturing Company, Rochester, N. Y.

* *

Salem, Massachusetts, will be advertised over the air, through station WNAC during January and February. The expense is provided for through a trust fund established fifty years ago.

* *

E. E. Shumaker, president of RCA-Victor Company, Inc., recently announced the appointment of E. K. MacEwan as secretary of the new company; Francis S. Kane and Walter H. Hunt became assistant secretaries; Paul G. McCollum was appointed assistant comptroller and Robert P. Alexander, Eugene F. Haines and Cornelius G. Terwilliger assistant treasurers.

* *

Although the plant of the Sprague Specialties Company is now located at North Adams, Massachusetts, the executive offices and laboratories remain at Quincy.

* *

Colonel C. A. Lindbergh has given his approval to the new two-way radio safety system for air liners recently perfected by the Pan American Airways.

* *

Milton Alden, President of the Alden Manufacturing Company, announces the publication of his new catalogue of molded parts, a copy of which has reached the editors.

* *

We learn that the Atwater Kent radio set played a very important part in the recent radio exposition held in Tokio, Japan.

* *

The Audio Research Foundation was recently organized, as an Illinois corporation, by a number of prominent manufacturers of amplification and radio equipment including Cy Colby, president of the Samson Electric Company, who sponsored the idea.

* *

Two railroad systems recently installing radio receiving apparatus are the Milwaukee and the Chicago & Alton.

* *

The Sunset Electric Company, Seattle distributors for Atwater Kent, carry on their sales work to Alaskans by direct-mail and report excellent results during the past two months.

* *

Fred H. Strayer, sales manager for Sylvania Products Company, is an accomplished musician and wrote the original melody of the Sylvania Song used in the company's weekly broadcasts.

* *

The December 9th Edison Radio broadcast in the Thomas A. Edison, Inc. series of "Favorite Music," was dedicated to Mr. C. S. Woolworth, Chairman of the Board of the F. W. Woolworth Company.

* *

The RCA Radiotron Data Book of 106 pages has just been issued.

Baron Yasushi Togo, member of the parliament of Japan and managing director of the Japan Wireless Telegraph Company, is in the United States on business.

* *

Infringement of patents involved in radio communications apparatus was charged in suits filed against the Universal Wireless Communication Company, Inc., by the Radio Corporation of America last month.

* *

Paragraph 3 of the Zenith Dealer Franchise reads, "The Manufacturer agrees to use all legitimate means to have Zenith selling prices maintained by all Zenith dealers."

* *

A. E. Deaderick, advertising manager of the Crosley Radio Corporation, expresses himself as very much in favor of trade paper advertising as a means of building dealer good-will.

* *

Speaking before the Fifteenth Anniversary Banquet of the National Radio Institute in Washington, recently, Edgar A. Felix, well-known radio authority, stated that within five years there would be more vacuum tubes used in industrial pursuits than in radio broadcasting.

* *

Barber & Colman, Ltd., Manchester, England, are now manufacturing Shakeproof Lockwashers having been licensed by the Chicago Company.

* *

John C. Forman, until his death with the Electric Journal of Pittsburgh and an esteemed friend of *Radio Industries*, passed away at his home in Pittsburgh last month.

* *

Ray M. Hudson, Assistant Director of the Bureau of Standards, in charge of Commercial Standardization at Washington, has resigned to become Secretary of the Massachusetts Division of the New England Council, with headquarters at Boston.

* *

Stromberg-Carlson have had several of their receivers and speaker model No. 25 approved as standard by the Underwriters' Laboratories in line with the requirement of certain city ordinances throughout the country relating to household electrical appliances.

* *

An encyclopedia of radio information has just been published by the Cable Radio Tube Corporation and it is expected that millions of copies will be distributed because of the wide interest it will create.

* *

Radio Industries will announce its new eastern editor and manager in its February issue.

* *

Clifford V. Chisholm, Boston manager of the Edison Distributing Corporation, was married last month to Miss Lavaughn Coombs at Belfast, Maine.

* *

The rebroadcasting of British, Dutch and German programs over the NBC networks during the Christmas holidays, marks a radio engineering climax.

* *

A most interesting and well printed house organ is the Scovill Standard issued monthly by the Scovill Manufacturing Company and which carries this slogan, "A Monthly Magazine Exemplifying 127 Years of New England Manufacturing Ideals."

MEN WHO HAVE MADE RADIO

PETER L. JENSEN

President

JENSEN RADIO MANUFACTURING COMPANY

AT the age of 43, Peter L. Jensen, President of the Jensen Radio Manufacturing Company, is probably one of the oldest pioneers in radio in this country today measured by the years he has been professionally connected with the industry. Born in Denmark in 1886 he secured a job at the age of sixteen at the laboratory of the famous Danish inventor Valdemar Poulsen in Copenhagen. When Poulsen invented his well-known arc system for the generation of continuous waves in 1904 Peter Jensen was assigned to assist in erecting the first arc radio stations. He became operator of the first arc station built and his association with Poulsen continued until 1909.

During 1906 he made his first major contribution to radio. The radio art had shortly before passed from the coherer to the crystal detector stage and appreciating the rectifying qualities of the crystal detector and employing a microphone for modulation, he succeeded without suggestions or assistance from anyone to transmit the human voice by radio over a considerable distance. After he disclosed his experiments to Poulsen the news quickly spread all over the world and the actual beginning of radio telephony started which has now grown into a world-wide system of broadcasting. Other apparatus is now used for the generation of the Hertzian waves and many refinements have been made but the fundamental system is the same today as then. During the period from 1906 to 1909 Peter Jensen broadcasted often from the old Lyngby Station and his phonograph concerts were appreciated and applauded by the few amateur listeners then existing and by ship operators that happened to be in the vicinity. The Concerts were heard over a distance of 200 miles. This probably marked the actual beginning of the broadcasting art.

In 1909 Peter Jensen was sent to the United States by Poulsen for the purpose of installing the first Poulsen Arc Stations in this country. The first arc stations were built in California and the Federal Telegraph Company was formed for the purpose of using the Poulsen arc system commercially. This Company subsequently became one of the largest factors in the radio communication field.

At about this time Peter L. Jensen became associated with another young engineer—Edwin S. Pridham. In their youthful enthusiasm they dreamed about doing great things. Together they succeeded in establishing a small laboratory in the city of Napa, California and here they developed the moving coil loudspeaker. They called this loudspeaker electro-dynamic in its action to distinguish it from the magnetic attraction principle which was used in all telephone receivers up to that time and thus was born and baptized the now universally-known "Dynamic Speaker." At the beginning of 1915 the electro-dynamic telephone receiver was developed into a powerful loudspeaker and in order to give this remarkable loudspeaker an appropriate name they coined the word

"Magnavox" which they derived from Latin, meaning great voice. During the Exposition in San Francisco in 1915 many remarkable demonstrations were given with this powerful loudspeaker throwing the voice as far as seven miles on quiet evenings.

The first successful public address system ever used was installed by Peter L. Jensen and E. S. Pridham on



PETER L. JENSEN

Christmas Eve, the same year in San Francisco, California. The Mayor of the City this night spoke to over fifty thousand people assembled in front of the new City Hall, using microphones and loudspeakers. Up to this time a person had never used artificial means to amplify his voice for the purpose of being heard by a larger crowd than could possibly hear his unaided voice.

In 1917 Jensen and Pridham in connection with others formed the Magnavox Company. The subsequent success of this company is well-known and forms part of radio history itself. From the time of formation of the Magnavox Company and until he resigned in 1925, Peter L. Jensen was Chief Engineer and a member of the Board of Directors of that concern. During this period he and Edwin S. Pridham made many contributions to the art of sound reproduction. Aside from designing the most widely used loudspeaker at the time general broadcasting became popular, their chief contribution was the electrically reproducing phonograph using a

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NEWS OF THE INDUSTRY

Our readers are interested in live news of the industry

NEW DISTRIBUTOR FOR TEXTOLITE

Electrical Insulation Corporation has announced through its general manager, E. W. Patterson, that it has been appointed Western distributor and fabricator of Laminated Textolite, a General Electric product. The company maintains offices in Chicago, with main fabricating plant at Crystal Lake, Ill.

Electrical Insulation Corporation is headed by E. F. Bessey, president. E. W. Patterson, vice-president and general manager of the company, has been identified with electrical enterprises in the Middle West for many years having represented several manufacturers in that territory.

NEW S-W MODEL

Stewart-Warner Corporation of Chicago announce a new period model equipped with its well known "Screen-Grid 8-tube" receiver.

The company has added a Tudor Period console to its line of cabinets. It is priced to retail at \$131.50, less tubes. The new model is now being placed on display at the showrooms of all dealers.

SIX CROSLY BEAUTIES IN TALKING PICTURE

These six charming members of the office force of the Crosley Radio Corporation appeared in a Pathe talking picture which was shown throughout the country recently. The picture was built around "Mike," well-known to radio listeners as the barking dog of Henry Fillmore's band. When "Mike" went on the air, the girls tuned in with a Crosley screen grid receiver.



The film was recorded in November at the studios of WLW, the Crosley broadcasting station in Cincinnati. When the picture was shown in Cincinnati during the week of Dec. 16, "Mike" sat in the audience by special permission of the theatre management, and heard himself bark.

BASLER ADVANCED

A. Atwater Kent, president of the Atwater Kent Manufacturing Company, announced on December 27th the appointment of F. E. Basler as general sales manager of the company succeeding V. W. Collamore, who had resigned.

Mr. Basler was previously assistant sales manager of the company in charge of sales administration affairs and has been active in the general sales affairs of the company.

He brings to his new position a wide experience in sales and financing, having served in sales executive capacities with nationally known companies in other fields.

The new appointment will not disturb the existing sales personnel other than to generally extend the sales supervisory duties of Mr. Basler.

APPOINTS VANDERHOOF

The Meyercord Company, Chicago, manufacturer of decalcomania signs and decorations, has appointed Vanderhoof & Company, of that city, as advertising counsel, effective January 1. Magazines and business publications will be used.

TELEVISION TYPEWRITER

The Sleeper Research Corporation, at 416 West 33rd Street, New York City has not only completed the development of a home Television Typewriter but is organizing a company to provide transmission over established broadcast stations, to operate Television Typewriter instruments attached to regular A.C. operated receiving sets.



M. B. SLEEPER
Sleeper Research Corp.

The Television Typewriter is a small device, not as large as an ordinary radio chassis, and carries a ground glass screen about five-in. square at the front.

Whatever is typed at the broadcasting station appears simultaneously on the glass screen.

When transmission starts, the letters appear one after the other in a line at the lower part of the screen. When the first line is completed, it moves upward and the second line appears. This continues until ten lines are showing on the screen. Then, as the top line disappears a new line shows at the bottom.

So perfect is the transmission that about one hundred and twenty words can be seen at a time on the screen. This is equal to a column of about twenty lines in this magazine. The characters are clear and sharp, and can be read without difficulty at a considerable distance.

The use of the Television Typewriter will inaugurate a totally new broadcast technique, for there are many things, particularly of interest to radio advertisers, which can be transmitted to better advantage on the Television Typewriter than through the loud speaker.

PIONEER DISTRIBUTOR

Ralph M. Peffer, of Harrisburg, Crosley-Amrad jobber, is the pioneer radio distributor of Central Pennsylvania. Broadcasting was in its infancy when he first opened the doors of his little shop in Lemoyne, Pa.

The Peffer Company was one of the first firms to handle Crosley radios. Invoice number 46 from the Crosley Radio Corporation is still filed in the records of the firm. This invoice covered several of the first few receiving sets manufactured by the Cincinnati concern.

Shortly after acquiring the Crosley franchise, the business was moved to Harrisburg at 2 South Fourth street, the room containing but 168 feet of floor space. It was at this address that Mr. Peffer entered the radio jobbing field in which he has continued ever since. He, himself, handled the entire business, being salesman, repairman, bookkeeper and manager.



In September, 1924, the firm moved to 334-336 Chestnut street, its present address, where 10,000 feet of floor space is devoted to the sales and service of Crosley and Amrad radio receiving sets. A branch store at 1825 Union avenue, Altoona, was opened in July, this year.

From these two stores are served the 300 or more Crosley-Amrad dealers in twenty-seven counties, embracing a territory extending from Altoona in the west, to Williamsport in the north, Lebanon in the east, and south to the Maryland line.

From the one man store, the firm has developed into an organization consisting of four salesmen, two service men, two shipping clerks, two counter men, three office employes, and a general manager. Sales have grown from \$16,000 the first year to well over the half million mark during the past year. This sales volume is made up entirely of radio and radio accessories, as no other lines are carried by the firm, the policy of "Radio Only" having been maintained from the start.

HEDGES SPEAKS

At a luncheon of the R.M.A. held at the Bismarck Hotel, Chicago, December 19th, 1929, William Hedges, President of the National Association of Broadcasters, outlined the result of his meetings with the American and National Leagues in connection with the proposition of broadcasting baseball games.

The two major leagues met in New York to rule on whether broadcasting should be permitted and to discuss the advantages and disadvantages to the Leagues of permitting the various clubs to put games on the air.

According to Mr. Hedges, the attitude of the leaders of the Leagues was not especially favorable in view of the fact that they believed broadcasting cut down gate receipts. There was also a question in their minds of the radio announcer's attitude in respect to the umpires' decisions, and also of the capability of announcers in regard to the technicalities of various plays.

Mr. Hedges appeared personally before the two bodies and succeeded after presenting the broadcasters' side of the question, in effecting a ruling that the matter of broadcasting games be left to the option of the individual Clubs.

RAULAND ORGANIZED

A newcomer to the radio and electrical manufacturing field is announced with the recent issue of an Illinois Charter to The Rauland Corporation.

While the Company is new, the name "Rauland" has long been known in the radio industry. Mr. E. N. Rauland, President of the new concern, was the originator of "All-American" transformers which were one of the most popular items during the height of the Radio parts business. He was also one of the originators of the Radio Manufacturers Association and served on its first Board of Directors. He is considered by his associates and wide circle of friends in the industry as not only a talented engineer, but also as an unusually capable business executive as evidenced by the marked success of the companies he has directed.

In the radio field the new Company will manufacture audio transformers.

In collaboration with the well known firm of engineers, Jenkins & Adair, The Rauland Corporation has designed several power amplifiers especially adapted for public address and talking moving picture use. These amplifiers are said to be of unusually high quality, no price appeal being made, the entire emphasis being placed on efficiency and dependability in operation.

The Rauland Corporation has been admitted to membership in the R.M.A. and its officers will undoubtedly take active part in the various activities of that organization. The factory and offices are located at 3341 Belmont Avenue, Chicago.

RAISES DIVIDEND

On the strength of the Chairman's report that the earnings of the Company for the current year would be approximately \$10.00 per share, the Board of Directors of the Westinghouse Electric and Manufacturing Company on December 11 declared a quarterly dividend of \$1.25 per share on the Common and Preferred stock, being at the rate of 10% per annum. The dividend on the Preferred stock is payable January 15, and the dividend on the Common stock payable January 31, 1930, both to stockholders of record at the close of business on December 31, 1929.

BOSCH IN ITALY

American Bosch Magneto Corporation of Springfield, Mass., has just concluded an agreement with Fabrica Italiana Magneti Marelli, of Milan, Italy for an initial period of five years, to cover the manufacture and sale of radio sets and other radio products in Italy and other European countries. This agreement is of broad scope, inasmuch as it relates to the interchange of designs, inventions and manufacturing processes for production of such products, and also to advertising, selling and servicing.

It is expected that Magneti Marelli will, as a result of this agreement, quickly get into quantity production of radio sets and loud speakers similar to those of American design, which have been increasing greatly in popularity in Italy. Not only does American Bosch expect to sell considerable radio materials and parts to Magneti Marelli, but to receive valuable rights and large royalties starting early next year.

ESCO EXPAND

The Electric Specialty Company of Stamford, Connecticut, is increasing its manufacturing capacity approximately 40% by the erection of a two-story steel and brick addition to its plant in Stamford.

Their business has made a substantial and conservative growth every year since the organization of the Company in 1913. Sales for 1929 will exceed those of their best year, 1928, by about 40%.

Among the products manufactured by this company are motor generators, dynamotors, converters, and aeroplane generators for radio transmission and reception, and small synchronous motors. Their work is confined largely to the development of special applications. The officers of the Company are: J. M. Wright, President; M. L. Bickart, Treasurer; D. G. Shepherd, General Manager.

APPOINT WIGHTMAN-HODGINS

The Refractory & Engineering Corporation, the St. Joseph Lead Company and the Filtrators Company, Inc., all of Hodgins, Inc., advertising agency of that city, to direct their advertising accounts.

B U S I N E S S T O P I C S

75% of All Radio Sets and Equipment Used Throughout the World is Made in the U. S.

EBY MOVES PLANT

The H. H. Eby Mfg. Co., Inc., formerly located at 4710 Stenton Ave., Philadelphia, has moved into very much larger quarters right beside Shibe Park, the home of the World's Champion Philadelphia Athletics, at Twenty-Second Street and Lehigh Avenue.

This change was made necessary by a substantial increase in the Company's business during 1929, and plans for even greater expansion during 1930.

The Eby Company manufactures radio parts and is one of a group of parts manufacturers recently merged with the Utah Radio Company of Chicago.

The Eby Company, which is the only Eastern manufacturer in the group, will in future manufacture some of the products of the other merged companies for sale, distribution and warehousing in the Eastern States.

With the Atwater Kent Company and the Philadelphia Storage Battery Company already located in Philadelphia, and with the concentration of all manufacturing activities of the combined Victor Company and Radio Corporation in Camden, Philadelphia is rapidly becoming one of the most important radio centers in the United States.

DECIDES FOR De FOREST

A decision of far-reaching importance to the radio industry, particularly to the De Forest Radio Company, was handed down by the Federal Court at Wilmington when United States Judge Morris signed an order granting a permanent injunction against the Radio Corporation of America from enforcing the famous clause requiring set manufacturers operating under a R.C.A. license to use only R.C.A. tubes.

In the permanent order of injunction signed by the Court, the Court specifically states that the action of Radio Corporation in enforcing this clause prior to a temporary injunction, constituted a violation of the Clayton Act. Under the provisions of the Clayton Act the De Forest Company is therefore entitled to triple damages for any and all losses while this clause was in force.

DEALERS FINANCED

The Stromberg-Carlson Telephone Manufacturing Company has entered into an exclusive contract with the Commercial Credit Company for the retail time-sale financing of its radio products through its more than 2,500 dealers throughout the United States and in foreign countries according to announcement.

RECORD SALES CAMPAIGN

More than two thousand Philco sets were sold in forty days in an intensive sales campaign carried on throughout Philadelphia by the Philadelphia Electric Company under the direction of William J. Geiger, Manager of the Sales Appliance Division, who is pictured here.



Two hundred salesmen participated in the campaign and sold radio sets in addition to their regular line of electrical appliances. Cash prizes were awarded those having the best sales quotas.

HELPING THE DEALER IN MAKING WINDOWS ATTRACTIVE

In one of its recent Dealer Bulletins, the Sales Division of Atwater Kent, pictured the window display shown here and offered to supply all the material necessary to dealers for



\$6.75. This sort of cooperation with dealers assists greatly in moving radio merchandise. After all, dealers can not always be depended upon for acting the part of jack-of-all-trades and expert help here and there is what they need and, usually, appreciate.

FEATURES FLASHER SIGN

As an added help to its dealers the Triad Manufacturing Company, Inc., is supplying an attractive window flasher which serves as an artistic decoration to the dealer's display. A colored light flashes at frequent intervals, showing in bold relief a specimen of the Triad tube superimposed on the insurance guarantee which is sponsored by the organization as consumer protection. The sign is rapidly being placed in the various retail establishments throughout the country and from present indications is proving an important factor in increasing Triad sales.

NEW BATTERY CHASSIS

Pierce-Airo, Inc., manufacturers of the Pierce-Airo A. C. Chassis, announce the introduction of a screen grid battery chassis for which they report a considerable demand.

This battery chassis has three stages of radio frequency including one stage of screen grid amplification. It has an illuminated drum dial, compartment for "B" and "C" batteries, and is of rugged steel construction. The tubes required are one 222 screen grid and five 112-A power tubes.

NEW VOLUME CONTROLS

Because of the installation of unique winding equipment designed and constructed by its engineering staff, the Clarostat Mfg. Co., Inc., is now in position to offer wire-wound volume controls matched to any resistance curve. The bakelite strip employed in the volume control clarostat may be tapered in any portion, the spacing of the turns may be varied, and different sizes of wire may be incorporated in the same winding, in meeting special requirements.

Mechanically, the new wire-wound volume control clarostat comprises a bakelite casing with metal end plate, providing ample protection against tinkering, dust, dirt and moisture. A special form of contact provides remarkably smooth, velvety operation. Absolute contact at all times provides positively silent operation, even in the most critical radio circuits. Each device is tested for a rigid minimum noise tolerance before it can be shipped. There is no appreciable wear on the winding, even when using the finest gauge wire for high resistance values. The device is available in any resistance range up to 50,000 ohms, and to match any resistance curve. It is a one-hole mounting job, provided with three soldering tabs, for handy installation.

As a further contribution towards simplifying the broadcast radio set panel, a combination volume control and power switch is also offered. This device comprises the standard wire-wound volume control Clarostat, with an extension pin on the shaft to trip a toggle power switch, mounted at the rear of the assembly. In this way, one knob serves the double function of turning the radio set on and off, and adjusting the volume to any desired degree.

HOME TALKIES ANNOUNCED

The Sonora Products Corporation is completing the equipment of its factories in Saginaw, Michigan, and Buffalo, New York, for the production of its new model "talkie" set, embodying motion picture projector, synchronized phonograph and radio. Quantity production will get under way about January 1st, according to Eugene P. Herman, president of the company. Production is being started also on the new compact Sonora Power Radio for installation in automobiles.



NEW BATTERY CHARGER

A new Rectox rectifier for charging batteries by means of copper oxide rectification is announced by the Westinghouse Electric and Manufacturing Company, East



Pittsburgh, Pa. Employing the copper oxide principle this charger presents a simple, safe, and satisfactory means for charging storage batteries in all applications.

CONDITIONS GOOD

That business in general and the radio business in special is coming back to a normal state of mind, is the opinion of George W. Stackman, Pacific Coast Division Manager for the American Bosch Magneto Corporation, Manufacturers of the Bosch Magneto and the Bosch Radio.

Stackman, who recently left on a swing around the Western territory almost immediately upon returning from a four weeks' trip through the East, states that in spite of adverse weather conditions the Pacific Coast has suffered comparatively little from the recent stock market crash, and that while there was a temporary slowing up of buying, confidence is being restored and the outlook for business in general for the balance of the year and early next year is good.

When run to earth, Stackman says, the rumors of cancellations of orders, rejections of shipments, reduction in sales forces, increasing unemployment and other signs of disintegrated business are, with occasional exceptions, only rumors. He finds the Northwest and Intermountain territories in a healthy condition, and with the drought broken by the saving rains general through the West, an immediate reaction in the way of increased buying is being noted.

The products of his own company, Stackman further states, shows satisfactory sales, both East and West, and production at the Bosch factories in the automotive as well as the radio departments is going on with the full working staff.

A little suggestive treatment along constructive lines is the remedy indicated for American business at this time, thinks Mr. Stackman.

PRODUCTION INCREASE

Production is on the increase in the new plant of the Triad Manufacturing Company, makers of Triad tubes, at Pawtucket, R. I., according to George Coby, president of the company in a recent interview. More than 600 employees are now on the payroll of the company bending every effort to supply the demand for Triad tubes from its jobbers and dealers throughout the country.

RADIOVISION ANNOUNCED

Philo F. Farnsworth's radio and telephone television machine will be placed on the market within the next few weeks.

This announcement was issued recently by Albert B. Mann, managing director of the Kemper Radio Corporation of San Francisco and Los Angeles, after plans were completed for another demonstration of the youthful San Francisco inventor's machine which is to be made before scientists and press representatives shortly.

According to Mann's statement, the machine, which was first demonstrated last August in San Francisco, has reached a degree of efficiency whereby clear details of all objects broadcast can be practically received in private homes.

DE FOREST TO PASSAIC

According to the announcement of James W. Garside, President, the executive offices of the De Forest Radio Company have been moved from the Jersey City plant to the main plant at Passaic, N. J. Inasmuch as the bulk of De Forest Audions are now produced at the Passaic plant, it was decided sometime ago to concentrate the main stock and shipping facilities at that point, followed by the executive offices so as to provide closer co-operation and supervision. New and larger quarters than those outgrown in the Jersey City plant have now been provided for the executive offices at Passaic.

PAYS DIVIDEND

Earnings of the Grigsby-Grunow Company for the first half of its fiscal year, the six months ended November 30, were substantially larger than the dividend requirements of \$2 a share for the entire year, the company's directors were informed recently.

The regular quarterly dividend of 50 cents a share on the company's common stock was declared payable January 2 to stockholders of record December 16.

ATWATER KENT BUSY

A wire from the Atwater Kent Mfg. Co. contains the information that a shortage of Atwater Kent Screen-Grid sets during the past 30 days has been country-wide. All during December their production has been speeded up to man-power capacity in an earnest endeavor to catch up with a demand unprecedented in the annals of radio manufacturing and merchandising.

LETTERS FROM OUR READERS

BOUQUETS

. . . Just received the first issue of the new publication, *Radio Industries*, this morning, and it certainly does look well. We believe you now have the best looking paper in the radio business.—*Prominent Advertising Agency Executive* . . . I have been meaning to write and congratulate you upon the very marked improvement in your publication.—*F. C. Trimble, Sales Manager, The H. H. Eby Manufacturing Co. Inc.* . . . I wish to offer my most hearty congratulations on the recent improvements made in your magazine. The name is particularly significant.—*H. G. Boyle, Service Manager, A-C Dayton Company* . . . We have been much interested to see how successfully you have built up *Radio Industries* magazine, and wish to compliment you on the job you are doing.—*M. B. Sleeper, Sleeper Research Laboratories, Inc.* . . . I cannot tell you how pleased I was upon receiving a copy of your new magazine. It is certainly a vast improvement over anything you have yet produced. Although you have been making steady progress in the past, *Radio Industries* is a big step forward. It has every earmark of a tremendous publishing success, and I am sure it is going to make the grade.—*An Editor Friend.*

TO MR. HATHAWAY

Your article in the December issue of *Radio Industries* on the subject of aircraft radio has come to the writer's attention.

We are writing you, thinking that you may be interested in the power supply system which the Pan-American Airways are adopting on their planes for their radio transmitters and receivers.

They use a small dynamotor to operate from a 12-volt storage battery and to furnish high voltage for the radio transmitter. They then use a small wind driven generator, which delivers 5 amperes to the storage battery, keeping the battery charged at all times.

A constant speed propeller, manufactured by the Deslauriers Column Mould Co., is used to drive the battery charging generator. This generator is run at high speed, and at constant speed, due to the self-regulation of the propeller. Therefore, the generator is of very small size and light weight and is very efficient.

The dynamotor is, of course, installed in a protected location where there is no wind resistance and its small size enables it to be installed in any convenient location on the plane.

This system insures emergency communication with full power from the radio transmitter when the plane is on the ground and with the main engine out of commis-

sion. We believe that the parts are lighter in weight, even taking into consideration the wind resistance, than the generator driven directly from the main engine. Also, the radio apparatus is then entirely independent of the main engine, reducing the complication and isolating possible causes of trouble.

We manufacture the special dynamotors and wind driven generators which are used. We also manufacture very similar machines in considerable quantity for the Western Electric Co. and the Bell Telephone Laboratories. Our experience has indicated that the small wind driven generator and dynamotor are more satisfactory in the end than the engine driven generator.

We might also mention that we are contemplating the development of a wind driven generator with Deslauriers propeller, which will be capable of operating as a dynamotor when on the ground, thus providing complete emergency communication. As a storage battery would, of course, be used, it would be kept charged by the double current wind driven generator, which would act as a double current generator when in the air and as a dynamotor when on the ground, furnishing high voltage for the radio transmitter in each case.

We would like to have your comments in the line of your experience in connection with this general subject.

Yours truly,

ELECTRIC SPECIALTY COMPANY

By Wm. H. Hains,
Sales Engineer.
12-19-29.

PRAISES BOYLE

Again "hats off" to *Radio Industries*. The article "What Price—Service Man" by H. G. Boyle in your December issue is a knock out and I am sure that with more men in the radio industry who not only thought as does Mr. Boyle, but who had the courage to express their views as he has done, it would not take long for conditions to improve.

I honestly believe that more progress has been made by this association in the past few months in improving the conditions of the service man than has ever been made before and that the effort that is being made by our Association may be the answer to the quest of Mr. Boyle for a real organization in the radio service field.

One of the chief difficulties that confronts any organization is that of financing and I am frank in saying that this is one of the problems that we are battling at the present time. You will find enclosed, an application which may be of interest to Mr. Boyle and I would appreciate your forwarding it to him.

I would also appreciate your letting me

know Mr. Boyle's connection and the address at which he may be reached as I should like to write to him and personally express my appreciation of his article.

Wishing you the seasons greetings and the most successful new year, I am

Sincerely yours,

G. C. Kirchhof,
Executive Secretary

Radio Service Managers Association
12-12-29

BOOK INQUIRY

I would appreciate your advising me the price of R. P. Clarkson's "Hysterical Background of Radio."

Also would appreciate your advising me whether you could furnish and at what price Fleming's "Fifty Years of Electricity," published I think about 1921 in London.

Thanking you in advance for this information, I am

Sincerely yours,

CHARLESTON ELECTRICAL SUPPLY
COMPANY

John T. Morgan
Secretary and Sales Manager
12-23-29

EXECUTIVE OPPORTUNITY

I have a personal problem which at the suggestion of Mr. A. G. Mohaupt I wish to briefly lay before you.

I have here a shop with the finest of equipment for precision work, such as instrument making demands, and a trained force of workmen far above the average—\$150,000 equipment.

We need \$200,000 more work annually. Can it be found in Radio equipment? Would like to consider a hook-up with a real business executive who could handle business end, leaving shop to the undersigned.

I would appreciate any suggestions you may make.

Courteously yours,

W. S. Belding, E. E. M. E.
Belding & Mull, Inc.

12-20-29

References: First Nat. Bank of Philipsburg; Enterprise Association, Philipsburg.

THANKS, MR. FIRTH!

Enclosed find check for \$5.00 for 2 years' subscription to your valuable paper.

As one of the earliest radio men, having entered the field in 1901 I can congratulate you on the up-to-date Radio paper you publish. In fact I recognize it as the one, that gives more progressive information on the Radio Art than any in the field today and I wish you continued success.

Faithfully yours,

John Firth, Gen. Mgr.
FIRTH RADIO CORP.

12-2-29

TO MR. HATHAWAY

The writer has noted with a great deal of interest your article, entitled "Radio for the Automobile," in a recent issue of the "Radio Manufacturers' Monthly."

Our Company is one just recently formed for manufacturing what we believe to be a very novel type of aerial and we have taken the liberty of sending you, under separate cover, by parcel post, no charge, one of these aerials which we shall be very glad to have you try out.

This aerial has been designed primarily for installation with any radio set but can very conveniently be used for installation in the automobile. The reports we have had from large radio distributors as to the efficiency of this aerial and its ease of installation are very flattering and we shall be pleased to hear your opinion, especially, after you have tried it out.

Yours very truly,

SAMPSON INDUSTRIES

12-8-29

T. F. Fowler

OLD BATTERY SETS

We have a pretty fair market for low priced battery sets. By this, we do not mean newly manufactured merchandise, but good battery sets that have been carried over until they are near worthless.

Do you know of anyone who has any such stock of battery sets that can be had for a few dollars a piece?

Sincerely,

REID MOTOR SUPPLY CO.

12-9-29

J. Worman

1930 PROSPECTS EXCELLENT

Radio broadcasting, radio products and the radio business all will be better in 1930, according to a forecast issued by Mr. H. B. Richmond of Cambridge, President of the Radio Manufacturers Association, which includes nearly 300 large manufacturers of all radio products. Mr. Richmond's statement follows:

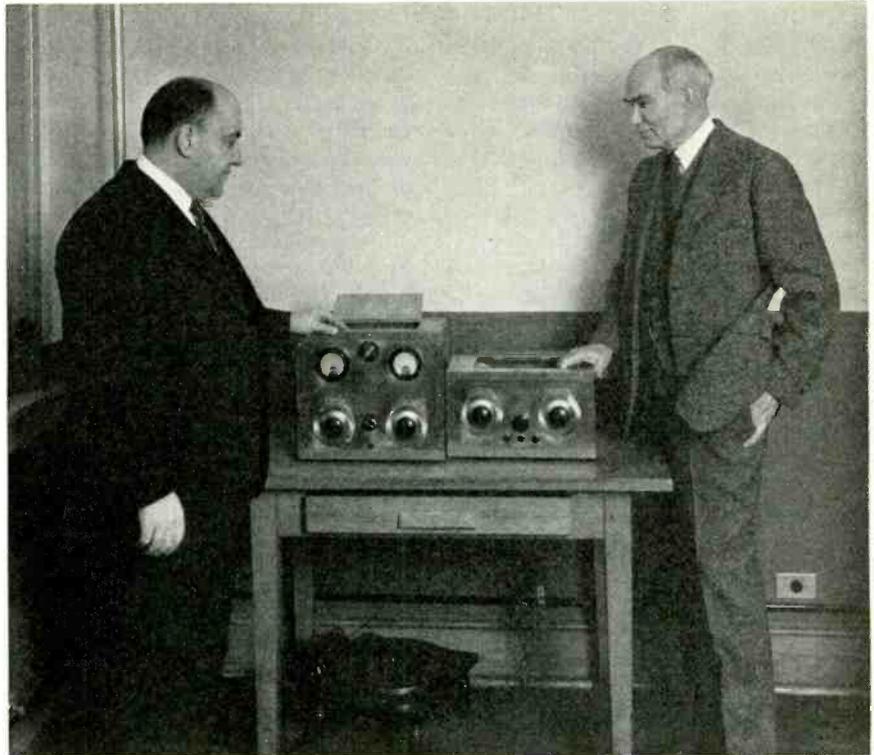
"Measured in terms of radio sets placed in homes, 1929 was decidedly a better year than was 1928. The radio industry experienced some difficulties due to a too ambitious manufacturing program, but this condition is being readjusted rapidly, so that we enter 1930 with a well co-ordinated plan of engineering development, manufacturing, and merchandising."

SOUND SYSTEM CATALOG

For the purpose of guiding anyone, whether technician or layman, in the proper planning, selection and installation of a power amplifying and sound distributing system, the Radio Receptor Company, Inc., has just issued its new catalog. Instead of plunging directly into a listing of the organization's products, the catalog opens with an analysis of audio amplification and sound distribution, how to plan an installation, and the engineering features essential to satisfactory results.

ENGINEERING SOCIETY NOMINEES DISCUSS SHORT WAVES

Dr. Lee De Forest (right) and Louis Gerard Pacent, pioneers in the radio field, who were nominated recently as President of the Institute of Radio Engineers and the Radio



Club of America respectively, are seen discussing a new development in super short wave receivers. Dr. De Forest and Mr. Pacent have been friends for 23 years.

CROWLEY MOVES

Henry L. Crowley & Company, manufacturers of Crolite, an insulating material widely employed in the radio and electrical field, announce the purchase of a new plant located at 1 Central Avenue, West Orange, N. J. The old plant in East Orange has been dismantled, and the new one is already in operation, according to Henry L. Crowley, President of the company. There is 32,000 square feet of space at the West Orange factory, which will accommodate the offices, laboratory, shipping department and production plant proper, all under one roof.

A new note has been struck in factory interior decoration in the Crowley plant. The main part of the building, where the female employees work, has been entirely finished in tile. The floor is of flat red, and the walls of glazed white tile. This, in addition to the numerous skylights, and entire upper sidewalls of glass, makes an exceedingly cheerful and hygienic place to work. All of the dust-producing activities incidental to the manufacture of Crolite, have been confined to another room in the building.

Aside from the additional beautification of the building, practically all new machinery is being installed for the mass production of the latest Crolite formula, an insulating material that makes possible the manufacture of noiseless, quick-heating, A.C. vacuum tubes of exceptionally long life.

PICTURES ON METAL

Discovery of a means of taking "pictures" direct on cold, hard, untreated metal without the usual photographer's medium of a sensitized plate was recently disclosed at Cornell university.

Seemingly impervious metal, it has been found, records on its surface unseen impressions from streams of electrons, and these marks can be brought into visibility by the right kind of "developer," exactly as photographic images are brought out on sensitized plates.

The discovery opens a new field of scientific experiment. Although at present there is no reason to believe that electrons, which the public knows as the invisible streams of power that flow from heated filaments in radio tubes, will replace light in photography, the finding of this hitherto unknown sensitivity of metal has aroused a world of speculation.

Dr. P. H. Carr, a graduate student from Gaffney, S. C., made the discovery, working under direction of Dr. F. K. Richtmyer, professor of physics.

HARRY BIBB LEAVES SONORA

Harry Bibb has resigned as sales manager, at Chicago, of the Midwest division of the Sonora Phonograph Company, Inc., to become general manager of the Koerber-Brenner Company, St. Louis, Victor distributor.

ASSOCIATION NEWS

NFRA and RWA All Set for Cleveland Meeting

The 4th Annual Convention of the National Federation of Radio Associations and the 2nd Annual Convention of the Radio Wholesalers Association will be held at the Statler Hotel, Cleveland, Ohio, February 10 and 11, 1930. At this time radio distributors and retailers and all of those engaged in the radio industry will be welcomed for a joint discussion of their mutual problems.

The Convention will be of particular interest to the radio retailers, in that many of the retailers most vital problems will be discussed by authorities on the subject. That this Convention will be a "down to facts" meeting is a foregone conclusion. Radio wholesalers of national prominence as well as radio retailers of similar prominence will be in attendance at this meeting. Policies will be outlined for the operation of retailers and wholesalers organizations for the coming year.

The program for the National Federation of Radio Associations Convention is temporarily outlined as follows:

Monday, Feb. 10th

- 9:30 A. M.—Official opening 4th Annual Convention—Michael Ert, President, National Federation of Radio Associations.
- 9:35—Introduction of Delegates from local associations.
- 9:40—Address of Welcome — Howard Shartle, President, Ohio Radio Trade Association.
- 10:00—President's Address—Michael Ert, President, National Federation of Radio Associations.
- 10:25—Appointment of Convention Committees:
 - Nominating Committee
 - Resolutions Committee
 - Coordination Committee
 - Sergeant at Arms.
- 10:30—Report of Executive Secretary.
- 10:45—Adjournment to Divisional Meetings.
- 12:15 to 2 P. M.—Luncheon—Address by H. B. Richmond, President, Radio Manufacturers Association. Address by Wm. S. Hedges, President, National Association of Broadcasters.
- 2:15 to 5:30—Divisional meetings.
 - Monday Evening
 - 7 P. M.—Banquet and Dinner Dance will be arranged for all in attendance.
 - Tuesday, Feb. 11th
 - 9 to 12 A. M.—Divisional Meetings.
 - 12 to 2 P. M.—Luncheon

- 2 P. M. to 4:30—Report of Retailers Activities—Henry M. Steussy, Chairman of Retailers Group. Report of Wholesalers Activities—Peter Sampson, President, Radio Wholesalers Association. Report of Convention Committees. Short speeches by nationally known men. Election of Directors.

Adjournment.

There will be a meeting of directors immediately following for the purpose of electing officers and outlining plans for the coming year.

Tuesday Evening

7 P. M. until ?—Annual Stag Party.

The program of the Retailers group is as follows:

Monday

- 11 A. M. to 12:15—Opening of Retailers sessions, including address of welcome, purpose of the Convention and what the attendants may expect the balance of the time they are in Cleveland.—H. M. Steussy.
- 2:15—Speaker of national prominence on Finance Plans. Discussion.
- 3:30—Uniform accounting and cost system actually illustrated by E. A. Reutner. Discussion.
- 5:30—Adjournment.

Tuesday

- 9:15 A. M.—The Trade-In Problem—Tried and proven methods of national selling organizations such as Maytag, Hoover and others—Dr. Geo. W. Allison. Discussion. Address on Retailers Insurance—A. G. Hancock of New York City. Address on Service Problems—Willis K. Wing, New York City. Discussion.
- 12:15—Adjournment.

The Board of Directors of the National Federation of Radio Associations will meet in Cleveland on Sunday, February 9, to outline plans for the coming Convention. The Board will review the activities of the past year, consider Committee reports, etc., so that everything will be in timely shape for the meeting.

The Board of Directors and officers of the Radio Wholesalers Association wish to extend an invitation to every radio wholesaler and manufacturer to attend their 2nd Annual Convention in Cleveland, Ohio, at

the Hotel Statler, February 10 and 11, 1930. Wholesalers who are devoting their exclusive time to Radio and Wholesalers who are devoting their exclusive time to Radio and wholesalers of national importance that are engaged in the handling of other lines of merchandise will be present at this Convention.

The results of the Committee activities during the past year will be given to the attending members so as to enable them to secure facts and figures as to actual operating conditions. Papers are being prepared especially by prominent wholesalers on subjects that have been thoroughly analyzed by means of questionnaires. It behooves every radio wholesaler to attend this meeting and secure first hand information concerning the radio industry which will enable him to more clearly outline his policies for 1930. Plans for the Associations activities during the coming year will be outlined and it is felt that the association's accomplishments will be more than duplicated during the coming year.

The executive offices have started a new service for members of the association only. An annual survey has been made concerning the value of stocks, number of units on hand, value of radio sales during the past year, number of units sold during the past year, percentage of gross profit, percentage of net profit, etc. The points covered in this annual survey will be reported each month, starting January 1 from members of the association all over the country and will be revealed to other members so that they may more accurately gauge their own activities. No names or identification marks will be attached to the questionnaire so that the information received cannot be traced to its source to the embarrassment of any individual member. The Board of Directors feel that this service will be of inestimable value to every radio wholesaler during the coming year.

Other plans and activities will be discussed at the Convention.

The Radio Wholesalers Association in arranging their program for the Convention has been guided entirely by the "down to facts" idea. It is as follows:

Monday, Feb. 10th.

- 11 A. M.—Official Opening of 2nd Annual Convention. Address by President Peter Sampson, Chicago, Ill.

*Report of Executive Secretary.*12:15—*Adjournment for Luncheon.*2 to 5:30 P. M.—*Report of Set Committee, Harry Alter, Gen. Chairman, Chicago, Ill.**Report of Trade Relations Section—Set Committee, Dave Burke, Detroit, Mich.**Report of Market Study Section—Set Committee, Jas. Aitken, Toledo, Ohio.**Report of Better Selling Section—Set Committee, Dave Goldman, New York, N. Y.**Report of Accessories Committee—H. E. Richardson, Gen. Chairman, Chicago, Ill.**Report of Trade Relations Section—Accessories Committee—A. A. Schneiderhahn, Des Moines, Ia.**Report of Market Study Section—Accessories Committee—A. C. Forbes, Chicago, Ill.**Report of Better Selling Section—Accessories Committee—N. B. Williams, Streator, Ill.**Round Table Discussion of Committee Reports.**Tuesday*9:15 to 12:15 A. M.—*Report of Tube Committee—J. N. Blackman, Gen. Chairman, New York City.**Report of Trade Relations Section—Tube Committee, Louis Buehn, Philadelphia, Pa.**Report of Market Study Section—Tube Committee—R. J. Mailhouse, New Haven, Conn.**Report of Better Selling Section—Tube Committee—Hollis Vaughan, Boston, Mass.**Report of Traffic Committee—F. E. Stern, Hartford.**Report of Other Committees.**Discussion of Future Plans.**Election of Directors.**Adjournment.*

The Tube, Set, Accessories, Traffic and Vigilance Committees will all meet in Cleveland at the Hotel Staller on Sunday, February 9, for a discussion of their activities. Reports will be presented and submitted to the Board of Directors who will hold a meeting immediately following. The Board of Directors will consider all of the Committee reports, most of which will have already been prepared beforehand and will be discussed at the Committee meetings preceding the Board meetings. Activities of the Association will be reviewed and future plans will be suggested for the Convention.

President Peter Sampson reports that great interest has been manifested in the activities of the Association during the past year, particularly in the Tube and Traffic Committees successful work. The Set Committee has made a very thorough survey of Merchandising Conditions which is also of great importance to every radio wholesaler.

RMA TRADE SHOW

A total of 85,000 square feet of space will be available to exhibitors in the 1930 RMA Trade Show for display and demonstration purposes, it was disclosed by J. B. Hawley, Chairman of the Show Committee, in a report to the Board of Directors of the Radio Manufacturers Association at Briarcliff, New York, last month.

The 1930 Trade Show is scheduled to be held the week of June 2nd in the large, new municipal auditorium at Atlantic City, New Jersey.

Of the 85,000 square feet available for the show, there are 45,000 square feet (exclusive of aisles) available for display booths. 40,000 square feet are available on the same floor for demonstration booths which will be made as nearly sound-proof as possible. There is room for 200 demonstration booths of 200 square feet each.

This is the first time at either the Trade Show or the RMA public shows in New York and Chicago, that it has been possible to arrange for demonstration rooms on the same floor and immediately adjacent to the display booths, and it is expected that a much more satisfactory show from every standpoint will result.

The 45,000 square feet available for display purposes is 50 per cent larger than the actual floor space available at the three hotels which housed the 1929 show where only 30,000 square feet of space was available at the Stevens, Blackstone and Congress Hotels put together.

The new and enlarged facilities available at the Atlantic City auditorium will make it possible for manufacturers to present their products to the trade more adequately and more advantageously than has been possible in the three previous shows.

Chairman Hawley reported to the Board that it was the opinion of the Show Committee that not only would the 1930 show surpass previous trade shows in attendance and results achieved, but that visitors and exhibitors alike will find the 1930 show a vast improvement in business transacted and general satisfaction.

"The Show Committee felt," he stated, "that all important jobbers and dealers who constitute the industry's major buying power would attend the show no matter where held and that the east coast location would draw a large number of the smaller eastern dealers who have never gone to Chicago."

Applications for show space will be issued January 1st and the lists will close February 15th, so that RMA members who desire to exhibit must have their applications in before the middle of January.

It was also announced that the hotels in Atlantic City have agreed to establish the same rates for rooms as prevailed in the same week of June, 1928, so that trade show visitors will be safeguarded against any rise in the rates of hotel accommodations during the show. The hotels have also

agreed to permit no one but RMA members to secure demonstration space in any of the hotels, thus insuring again that the Trade Show will be of the fullest benefit to RMA members exclusively.

CREDIT RELIEF

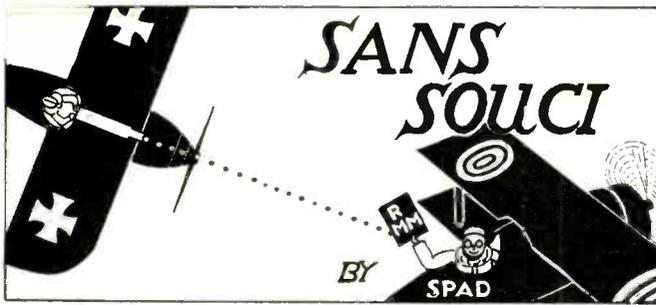
Efforts are being made by the Radio Manufacturers Association, through the industrial conferences initiated in Washington by President Hoover and otherwise, to prevent undue restriction of credits for radio and other time paper. Large finance companies and other financial interests handling radio and other time paper are reported to have restricted discounts recently, placing an additional burden on the sales of radio and other products sold on time payments.

Following appeals to RMA officials from radio jobbers and dealers, steps were taken, in connection with the Hoover industrial conferences, to bring the credit situation before the industrial leaders. Initial results were secured through Julius Barnes, Chairman of the United States Chamber of Commerce. Just before the recent industrial conference of this organization in Washington Chairman Barnes was sent the following telegram by President H. B. Richmond of the Radio Manufacturers Association:

"Situation regarding credit restriction on installment purchases affects radio and many industries. While some economists feel that present situation has been caused through overproduction because of excess unpaid-for merchandise in hands of consumer and this condition possible through liberal extension of installment credit, we feel that sudden curtailment of such credit now being made by commercial credit organizations would be severe blow. Undue credit restriction for installment merchandise purchases will also increase unemployment because of curtailing purchases. We suggest that your conference Thursday give serious consideration to plans preventing abrupt curtailment of installment credit and believe subject requires action by your conference and other official authorities."

At the Washington conference Chairman Barnes responded by calling the attention of the large gathering of industrial leaders to this credit situation and the problem was referred to one of the working committees appointed by the conference to develop remedial action in the future. The Radio Manufacturers Association was represented at the conference by its Washington legislative counsel, Mr. Frank D. Scott, under appointment of President Richmond of the RMA.

Join your Association! As a member, then, give your Association and its officers your earnest support.



Radio engineers are not well constructed mechanically and psychologically according to recent observations. Dr. Howard Kellogg, a well known research medico of Chicago, brought on a rather delicate situation when he recently put on a special movie program for a small group of radio engineers showing various interesting surgical operations. It is rumored that during a "close up" of an appendectomy, several engineers grew pale and staggered from the room while others nonchalantly kept their eyes on objects other than the screen. Which is a distinct tribute to Doc Kellogg's picture taking ability! From these indications we suppose that most engineers shed violent tears at ordinary movies.

* *

A feeling has come over us that we are on the eve of a new departure in vacuum tubes. Surely the old pentoad (engineers spell it "pentode") must be comin' along soon in order that engineers can keep their jobs (if any) and make their scanty livings. In a few more years radio students will argue about who really discovered the vacuum tube. Was it Edison, Fleming, De Forest, Schottky or this fellow Pentoad—I'll bite? We predict that in 1940 the Isohectrode will be the smartest and most fashionable tube for the really elite receiver.

* *

It looks like this automatic tuning business may spell bad news for the cabinet people some day in the remote future. Put the set in the attic or basement—speakers in the wall—and control where you please. We prefer the basement, however, in as much as an interesting relation might be worked out with the new Pratt remotely heated heater tube. The basement location would enable the heating of the tubes from the furnace, at least during cold weather, thereby conserving on the light bill. It is easily anticipated of course, that the public utility people will take issue with this pregnant thought.

* *

We have at least one honest chap connected with RADIO INDUSTRIES. His name is Bill Harper and he asks us to say to our readers that he has just discovered his error in writing an article entitled "Wanted—Radio Men." The title should have been "Wanted Badly—Radio Jobs." His article really wasn't so timely—we might say it was a little late.

* *

Our friends in the East and West may be interested in knowing that Chicago recently experienced a most violent snowstorm. Pretty girls and pedestrians were literally blown along Michigan Avenue by the fury of the snow laden winds. Many spectacular rescues were made by brave policemen and gallant gunmen. Another special feature of the storm was the first appearance on the Radio Air of Universal Wireless who handled apparently more than several messages to Eastern points. It is gratifying to know that the strongest winds are not strong or fast enough to dent the progress of a good old 6000 kilocycle wave, whereas wire lines are not so fortunate. Again Radio has come to the rescue.

* *

The only distressing thing about the storm was that Gene McDonald & Co. were unable to rescue anyone from violent death in the angry old Lake Michigan. The Tribune was sore as hell about this, too—all they could shout about was the high winds, temperature, and the Journey's End for several tramps who were caught napping in Lincoln Park.



Perfection!



"The Speaker of the Year"

All the beauty of theatrical sound reproduction may now be had for the home.

Wright-De Coster Reproducer



Model 117 Jr. Consolette

This tremendously successful theatrical reproducer has been reduced in size and volume to be installed in radio cabinets. It will bring perfection in reproduction to the home or small halls.

It is truly outstanding in purity of tone and fidelity of reproduction and may be had incased in cabinets of rare beauty that will harmonize with the finest furniture.

The cabinet illustrated may be used as a table model or, with the handsome spinet legs, as a very attractive console.



Model 117 Jr. Table Style

Get Full Details

Write for complete information

WRIGHT-DE COSTER, Inc.

2221 University Ave., ST. PAUL, MINN.

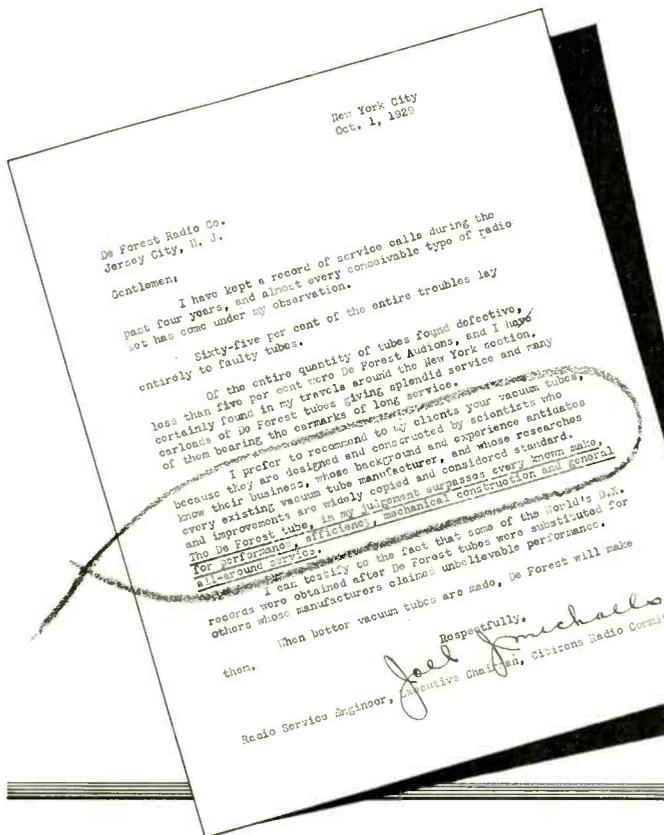
Export Office—
M. Simons & Son Co., 220 Broadway, New York City
Cable Address—Simontrice, New York

Ask the service man, he knows

"The De Forest radio tube surpasses every known make,"

—says JOEL J. MICHAELS
Executive Chairman, Citizens' Radio
Committee

This is one of many unsolicited letters we have received from service men the country over.



de Forest AUDIONS

DE FOREST RADIO CO.
PASSAIC NEW JERSEY

Book Review

FOR JANUARY

"MATERIALS HANDBOOK"

Author: George S. Brady

Publisher: McGraw-Hill Book Co.

FEW industrial activities call for a greater variety of raw materials than the production of radio equipment. From fine silk to coarse cotton, from costly platinum to cheap iron, from dense molybdenum to light aluminum, the gamut of radio materials runs up and down the entire range. Hence the production man as well as the purchasing agent must know much about every conceivable material, or at least have this knowledge in handy form.

It seems that George S. Brady, Associate Editor of American Machinist, has anticipated this situation, if not in the radio industry, at least in many other industries. This capable authority has compiled a handy book of convenient pocket dimensions, covering a wide variety of materials employed in most industries. Each material, arranged alphabetically, is described in concise, simple, readily understood manner, so that the busy executive knows exactly what it is all about. The salient physical and chemical characteristics of each material are given. If certain materials are known by other names, such as trade brands, these are also given. A convenient key to the contents, classifies the materials under their respective general headings, so that the reader may know what there is under steels, refractories, oils and greases, ores, miscellaneous alloys, and so on.

It is difficult to imagine a radio executive without this handy volume to guide him in steering a safe course in the purchasing and handling of radio raw materials.

"RADIO TRAFFIC MANUAL"

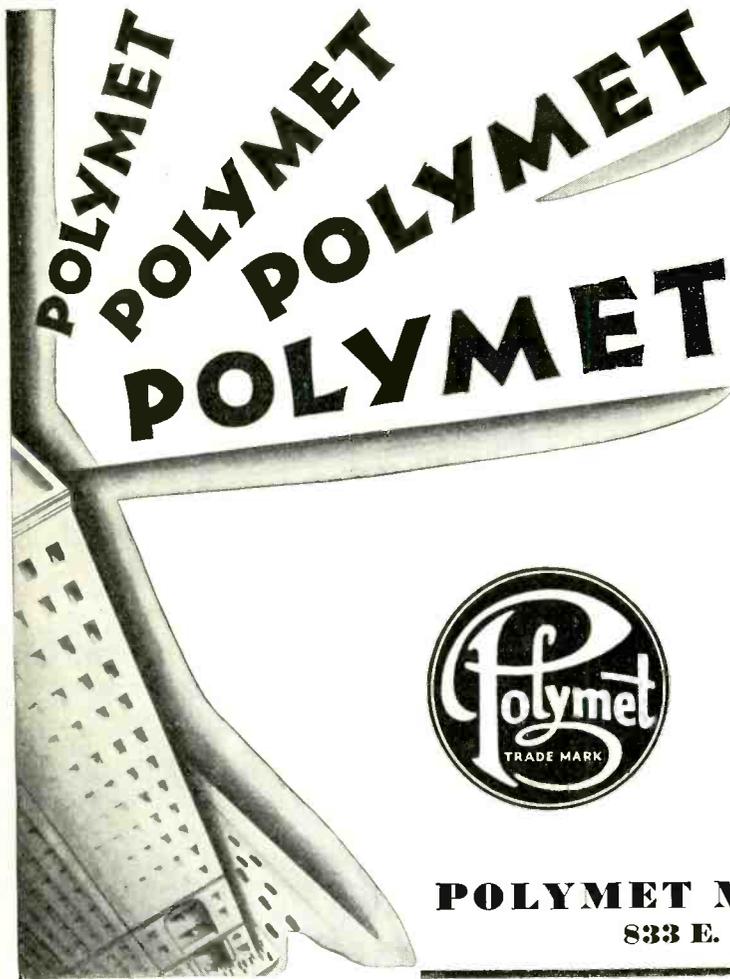
Authors: Rudolph L. Duncan & Charles E. Drew
Publishers: John Wiley & Sons, Inc.

SOMEONE has said that a radio man who does not know how to operate is about as useful in radio transmission as a man who does not understand Chinese, working as a telephone lineman in China. If such is the sad truth, then it is time for many of us to become interested in radio operating, to the end that we may better conduct our transmitting experiments.

Those two well-known radio writers, Rudolph L. Duncan and Charles E. Drew of the RCA Institutes, have prepared another work of outstanding value, in the form of "Radio Traffic Manual and Operating Regulations." As its name implies, this is a handbook dealing with the traffic end of radio. It begins with the code and how to master it, followed by operating rules and regulations, the International Radio-telegraph Convention, and the U. S. Radio Act of 1917. The work seems to cover every possible phase of radio operating as an instruction book as well as a reference book.

EXTRA COPIES

If you want extra copies of this issue please order promptly, as our supply is frequently exhausted a week after date of issue.



WE, too, can shout our name from the house-tops.

But—can such shouting be one-half so impressive as this truthful statement, quietly made:—

“Over 80% of the great radio set manufacturers of the country use POLYMET PRODUCTS”

TRANSFORMERS RESISTANCES
CONDENSERS CONNECTORS
COILS PLUGS

by Polymet

POLYMET MANUFACTURING CORP.
833 E. 134th Street, New York City

Covering Production, Engineering and Distribution in Radio, Television and Sound Projection

Put Your John Hancock Here---

RADIO Industries

With which is incorporated Radio Manufacturers' Monthly
McGraw-Hill Building
520 North Michigan Ave.
CHICAGO

The first signer of the Constitution of the United States started something when he affixed his signature to that tremendously significant and historical document. Ever since then we have been asked to put our John Hancock here, there and where not. *Radio Industries* is asking you to put your John Hancock and address on the blank below. You will be assured your copy of *Radio Industries* each month as it comes from the press. Better have it delivered to your home.

Enter my name on your list for the next One Year, \$3.00
 Two Years, 5.00
and I will remit upon receipt of bill. (or check enclosed).

Name Executive Position

Firm Product

Mailing Address

City State

Say You Saw It in Radio Industries

HOTEL LOCKERBIE

121 SOUTH ILLINOIS STREET

Newest and Most Modern Hotel in the City ~ Conveniently Located just 2 Blocks from Monument Circle

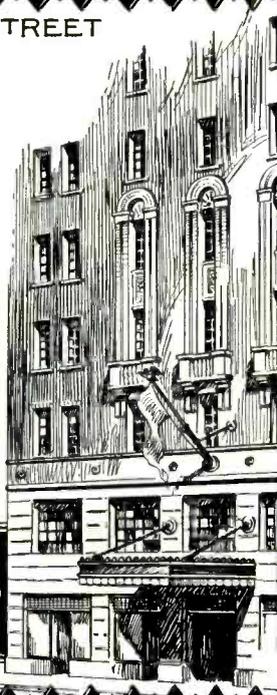
ALL ROOMS OUTSIDE AND EACH WITH BATH

\$3⁵⁰ AND UP DOUBLE

\$2⁰⁰ AND UP SINGLE

RADIO IN EVERY ROOM

ARTHUR ZINK
Managing Director



INDIANAPOLIS INDIANA

WITH THOSE WHO SELL

Bernard Kruger, Pacific coast manager for CeCo Manufacturing Company, Inc., completed his semi-annual inspection trip from Los Angeles (his headquarters) to Frisco, Portland and Seattle, recently.

* *

Irving J. Kahan has been made midwestern representative of the Pilot Radio & Tube Corporation with offices at Chicago.

* *

A. A. Schneiderhahn Company, Atwater Kent distributors in Des Moines, have inaugurated an Atwater Kent Merit Club which provides for the awarding of a silver cup to each dealer meeting a certain sales quota by May 1, 1930.

* *

The announcement of the appointment of S. M. Doak as general sales manager of the United Reproducers Corporation has recently been made by Lester E. Noble, president.

* *

William A. King has again taken up his duties as sales manager for D. W. May, Inc., Crosley-Amrad distributors of Newark, N. J., after an absence during which he organized the sales department of the May Distributing Company of New York.

* *

The Auto Equipment Company of Denver have added the following to their force: Howard Weston, Bob Jacobs and Rex Lorenz.

* *

Sampson Electric Company, Atwater Kent distributors in Chicago, recently carried on a unique publicity campaign in which broadcast studios were set up in five department stores and popular radio stars featured.

* *

Stern & Company, Inc., of Hartford, Conn., have been appointed distributors in the New England territory for Silver Radio it is announced by Harold C. Bodman, general sales manager of Silver-Marshall, Inc.

* *

"Ten Years Young" is the title of a historical booklet recently published by the Radio Distributing Corporation, New Jersey distributors for RCA, on the occasion of the firm's tenth anniversary.

* *

Wilkening, Inc., Crosley-Amrad distributors for Philadelphia, have become distributors also for Johnson motors and boats in the same territory.

* *

Walter E. Daw is the new representative in New York state for the Pacent Electric Company, according to George Seule, Pacent sales manager.

* *

A record for the number of radio shows attended during the past season seems to have been established by Harry H. Steinle, vice-president and general sales manager of the Triad Manufacturing Company, Inc., who visited twelve of them and called on scattered dealers and jobbers as well.

* *

Northeastern Radio, Inc., Boston, announce the appointment of E. J. Haight as service manager of their Copeland division.

* *

David M. Trilling of the firm of Trilling & Montague, Inc., Zenith distributors in Philadelphia, is a live wire. About twice a month he writes a four page "Personal Message" letter to dealers. Each letter is chock full of statistical facts and sales helps easy to digest.

ABOUT COUPONS

* * * * * At that crucial and delightful moment, if you could only be there in person, you could hand your prospect a fountain pen and an order blank and he would thank you for the opportunity to sign on the dotted line.

But alas, you can't be there in person, so you seek the next best thing. If the nature of your proposition permits, you supply him—through a coupon—with some kind of order blank and pray that he will produce his own fountain pen. Your coupon tells him you expect to hear from him. It provides an added incentive to action. It is a big factor in overcoming his inertia. It saves him both the time and the trouble required to get out his stationery and write you a letter. It removes all reason for hesitating—and getting lost.—**Printers Ink.**

EXPECTANTLY YOURS

Radio Industries
520 N. Michigan Ave.
CHICAGO

My duty is clear. I take my pen in hand in answer to your prayer. You may send your bill for subscription.

Name

Mailing Address

City

State

Firm Name

My Position

Say You Saw It in Radio Industries

**SCREEN GRID TUBES PRACTICAL
A STATEMENT**

By H. H. STEINLE

V. P. and Gen. Sales Mgr., Triad Mfg. Co., Inc.

The march of progress in the radio industry has found the screen grid tube occupying an important position. Only six months ago when the tube was first introduced, commercially, in this country, there were grave misgivings and doubts concerning its practicability. Time has been the element plus the acid test of public usage that has turned the tide in favor of screen grid tubes.

Fundamentally they make possible a greater gain in sensitivity. Amplification in the older types of tubes, dependent largely upon the type of set used varied between ten and twelve. With screen grid performance the amplification gain per stage reaches around forty, which is an important item and one which adds greatly to the selling appeal of any given set.

It is a simple matter to recall the time only two years ago when the industry went from battery to AC operated sets. It almost appeared as if the day of the battery set was doomed. But there is still a wide market for battery sets and in all probability this demand will increase particularly in the rural sections of this country where AC or DC power cannot be obtained.

The demand of the present day and it, too will continue, is the direction of AC screen grid tube sets. The public has come to recognize in the new tube the elements which make for greater sensitivity, amplification power, and most of all a greater responsiveness from their sets.

Tube manufacturers throughout the country, for the most part, have been able to attain an unusual degree of uniformity in the characteristics of the new screen grid tubes to make them eminently satisfactory. But as is the case with a new departure, more so in radio, it is essential that experiments be carried on and researches continued. In that way the greatest perfection will be achieved.

But it is a foregone conclusion that the screen grid type tube is here to stay and with it will come a wholesome satisfaction on the part of radio set buyers founded on the knowledge that they have the best value possible.



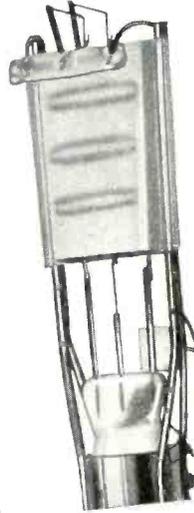
PRIZE-WINNING WINDOW DISPLAY

The display of the W. P. Fowler Music Company, Chickasha, Oklahoma, Crosley dealer, won first prize of \$100 in a radio window



display contest in which practically every city in the State of Oklahoma was represented. The display features three Crosley models.

RIGID ▲ ▲



**YET
EASILY
FORMED
AND
WELDED**



FANSTEEL

TANTALUM . . .

Makes Better Support Members

DO you want to know more about this metal which forms and welds easily, avoiding excessive production cost, takes a permanent set in forming, assuring uniformity—retains rigidity when heated, keeping properly spaced those elements which it supports? A metal, also, which will anchor well in glass, without working loose, becoming brittle, or trapping air bubbles; which de-gases easily, especially if heated during the processing or operation of the tube?

This little known material fills these requirements extremely well. Inherent characteristics, developed and enhanced by Fansteel refining under close laboratory control, make its use recommended for support members. Write for full information and prices.

OTHER FANSTEEL METALS

Molybdenum (99.95% pure), Molybdenum Alloys, Tantalum (99.9% pure), Tantalum Alloys, Tungsten electrical contacts and pure Columbium. Bars, rods, sheets, wire and shapes. All discussed at length in that interesting and instructive booklet, "Rare Metals." Shall we send you a copy?

**FANSTEEL PRODUCTS
COMPANY, Inc.**

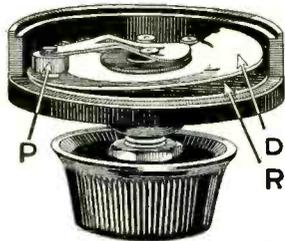
NORTH CHICAGO, ILLINOIS

HARNESSING A MIGHTY POWER —your Radio!

a delicate, intricate network of coils and transformers—cascading amplifications tube by tube.

Such power must be harnessed—if the result is to be a smoothly flowing, clear reception. A CENTRALAB volume control in your radio does just that . . . and it does it smoothly . . . silently . . . surely. It means much if your radio is CENTRALAB equipped.

Write for free
booklet
"Volume Controls,
Voltage Controls,
their uses."



This shows the exclusive rocking disc construction of Centralab volume control. "R" is the resistance. Contact disc "D" has only a rocking action on the resistance. Pressure arm "P" together with shaft and bushing is fully insulated.



Centralab

CENTRAL RADIO LABORATORIES

20 Keefe Ave.

Milwaukee, Wis.

ENGINEERING PERSONALITIES

Mr. H. F. Waring, Engineer in charge of the Transmission Laboratory of the Universal Wireless Communication Company recently delivered a paper before the electrical and radio engineering classes at Armour Institute of Technology.

* *

Mr. George Stephens, formerly Chief Engineer of Balkeit Radio Company, is now associated with the Hammond Clock Company of Chicago.

* *

Dr. Howard B. Kellogg of Northwestern University Medical School and the Illinois Central Hospital, recently entertained the Radio Engineers Club of Chicago with a series of moving pictures of various types of surgical operations. The picture illustrated the extent to which the radio and electrophysical sciences have assisted in the field of physiology and medicine. The lecture which he delivered concerned the electrophysical mechanisms of the human body and the nature of some of the electrical apparatus used in biophysical research.

* *

Mr. Henry Dressel, formerly Radio Engineer with the Balkeit Radio Company, is now connected with the United Air Cleaner Corporation.

* *

The Institute of Radio Engineers and the American Association for the Advancement of Science held a joint meeting at Des Moines, Iowa, on December 28th, 1929. Papers were presented by Earl W. Lewis, Prof. R. A. Brockett, J. K. McNeely, P. J. Konkle, Paul C. Rawls, Prof. R. R. Ramsey, H. D. Hayes, W. I. Griffith and Dean H. M. Crothers.

* *

Baird Television Corporation held a demonstration of their new commercial television transmitter and receivers in their studios in New York last month, according to F. J. Bingley, Chief Engineer.

* *

L. Warrington Chubb, manager of the radio engineering department of the Westinghouse Electric and Manufacturing Company at East Pittsburgh, Pa., has been appointed first assistant to the vice president in charge of engineering of the new Radio-Victor Corporation of America. His headquarters will be in Camden, New Jersey.

In 1905, Mr. Chubb entered the employ of the Westinghouse Company as an engineering apprentice. Up until 1909 he was particularly active in the development and application of magnetic materials. Before the organization of an isolated research department, he had charge of advanced development work as a service to all engineering departments on electro-technical problems and new developments.

At the time the radio engineering department was formed in 1920, Mr. Chubb was appointed manager, and has been very active in this work, having charge of all receiver and loud speaker development and design of Radiolas in conjunction with the General Electric Company, for the Radio Corporation of America, as well as transmitters, carrier current equipments and Photophone. The department in 1920 consisted of approximately 16 employes and has grown to 327.

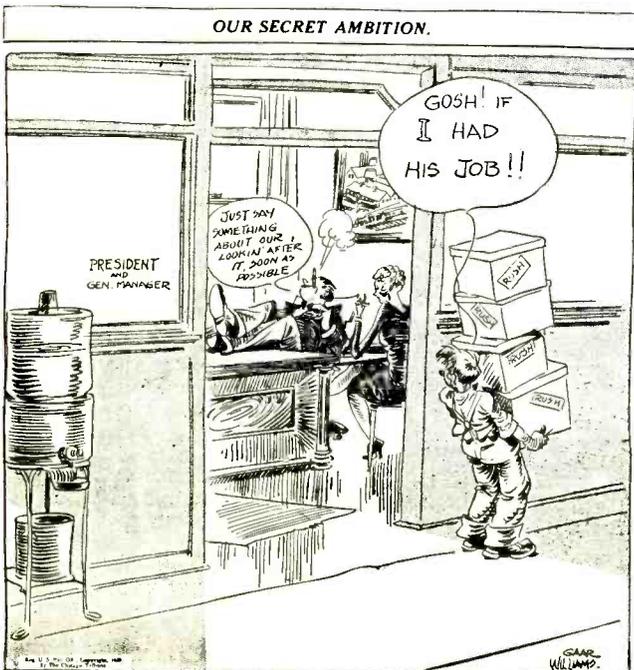
He is the author of many technical articles and discussions in the A.I.E.E., American Electrochemical Society, Physical Society and Technical Press. He is a fellow of the American Institute of Electrical Engineers and a member of many other technical societies, including the International Electrotechnical Commission, American Railway Association, Institute of Radio Engineers, National Electrical Manufacturers Association, Society of Motion Picture Engineers, American Standards Association and National Electric Light Association and Television Society.

BUSES RADIO EQUIPPED

A huge motor bus roaring along in the dead of night at a speed of forty miles an hour, with strains of dance music issuing from an enormous loud speaker mounted on the top of the machine, is becoming a familiar sight in Southern Kansas. W. E. Titus, president of the Radio Corporation of Kansas, has equipped several buses with Crosley radio sets for the entertainment of passengers.



In his latest experiment, Titus did not use a battery set, but installed a 41-S screen grid receiver of the same construction as that sold for use in electrically equipped homes. A small aerial was mounted on top of the bus and without a ground. The dynamotor used was a 32-volt DC motor driving a 110-volt 60-cycle AC dynamo. Six special resistors, or suppressors, connected to the spark plugs of the bus motor, successfully eliminated interference from the engine's ignition system. Passengers report that broadcast programs from stations as far distant as Memphis, Tenn., can be heard plainly even when the bus is traveling at top speed.



Reprinted from Chicago Tribune



HOLED-TITE
TRADE MARK NEW YORK
Radio Tube Pads

are in almost universal use by leading tube manufacturers. R. C. A., Ce-Co, Cunningham, and over two score more.

WHY?

—Because this packing pad prevents breakage.

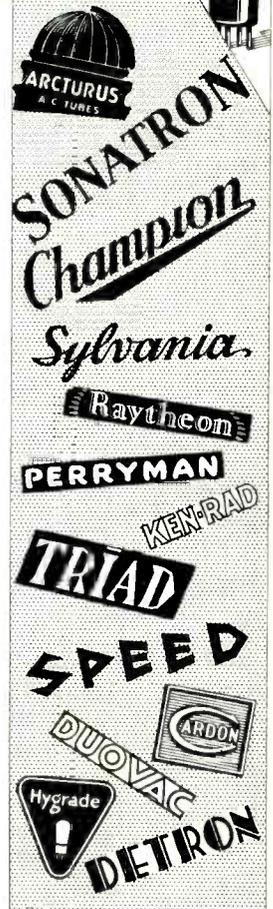
"Come backs" from customers are avoided. Even "unseen" damage is prevented—the kind that does not actually break the glass, but distorts the character of the tube.

Holed-Tite packing pads have replaced all types of tube packing, **because:** (1) they cost less; (2) permit use of smaller shipping containers, another saving; (3) cut down and simplify the operations in packing; (4) save valuable storage space in factory; (5) are clean, never mussy.

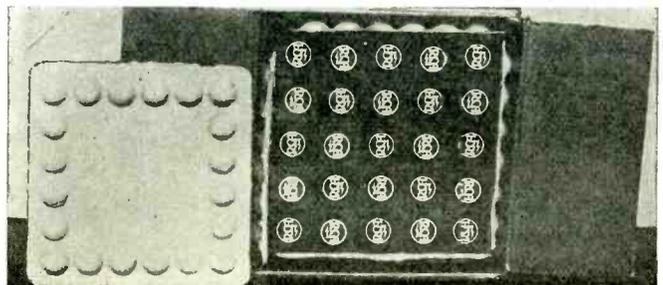
For packing any size radio tube in any quantity. Our Packing Engineers will gladly help solve your packing problems.

HOLED-TITE PACKING CORP.

100 East 42nd St., New York City
(Affiliated with International Paper Co.)



"GOOD TUBES MUST BE PACKED RIGHT"





GILBY FILAMENT WIRE AND SELVAGE MESH for *BETTER TUBES!*

SELVAGE MESH—A comparatively late development has taken the field by storm. The solid even edges simplify welding and this screen material in which the mesh is interlocked is rigid and rugged beyond belief. It may be supplied accurately within .005 plus or minus as specified. Its use will cut production shrinkage and lend a more finished appearance to your product.

One customer says "So far as we are concerned this Gilby Selvage Mesh represents the difference between producing 224's and not producing them."

This Selvage Mesh has proven itself as so valuable that it is being widely imitated. In fairness to all concerned we give notice that our rights will be vigorously defended. Patent applications fully cover both the material itself and the tube of which it is a part.

FILAMENT WIRE—A tube is no better than its filament. There is no filament better than Gilby. Gilby Filament Wire has long been recognized as the Superior Product. Its uniformity, accuracy and long life is readily testified to by tube manufacturers.

We would appreciate inquiries and an opportunity to co-operate with your staff. Samples of Filament Wire and Selvage Mesh on request. Resistance and Ballast Wires, too!

GILBY WIRE COMPANY
Wilbur B. Driver, President
NEWARK, NEW JERSEY



HIGH COST POLITICS IN BUSINESS

(Continued from page 494)

higher salary and under very much pleasanter circumstances."

The experiences of the others were similar, I was assured. Due to the underhanded political conniving of one individual, a once splendid organization is being depleted of its best men, and an old and successful business concern is rapidly losing both money and prestige.

The cause of political degeneration of business is readily identified usually, and, strange to say, even religion is found to be a motive. Recently a young woman who has held important executive positions with two large concerns told me that, at one time, she was ready to resign from a position in which she was unusually successful because of religious persecution. The campaign, managed by a petty official, took the form of situations carefully framed to embarrass the woman, false charges and frequent annoyances, all of which greatly interfered with her work.

During her first year she had saved the company about \$20,000 because of a special technical study she had made. Therefore, she was at a loss to understand the attitude of some of her co-workers until she overheard, by chance, a discussion by two of them and learned that they had determined not to tolerate any member of her religion in the office.

Bigotry Cause of Strife

In this case, fortunately, the condition was relieved by circumstances, and it is natural to suppose that such incidents are infrequent. However, a noted business analyst, to whom I happened to mention the case, has assured me that religious bigotry is a frequent cause of factional strife. In one experience that he related, he found an important department of a large concern considerably overmanned and producing about two-thirds of its expected volume. It was found that the cause was due to the fact that the manager of the department was gradually discharging workers, regardless of their ability, and replacing them with adherents of his faith. This had been going on for several years, and a prompt reorganization of the department soon produced results indicating that the loss had run into thousands of dollars.

Still another cause of the same condition is the secret departure from a business policy which carries factional demoralization out into the field among the customers of a company. A typical case was called to my attention twelve years ago by a friend who had resigned as sales manager of a manufacturing concern in the Middle West. His reason for leaving was further explained a few weeks ago, when I happened to meet him again. This is what he said:

"I knew that the company had been mismanaged when I took the job; but they owned some valuable patents on automobile accessories, and they signed a contract giving me complete charge of sales. I soon found that about half of our customers were suspicious of us and resented the fact that the company was giving a group of wholesalers an inside price. This always had been denied by the president and the salesmen; but many buyers did not believe them, and the resulting condition was a serious handicap to our distribution.

"One of the first things I did was to issue a price list with the signed statement that the prices quoted were the

lowest the company would make to anyone under any circumstances. The reaction was encouraging. I called in the sales force and told the men that special concessions would not be allowed, and that if any of them tied us up with contracts at special prices they would have to pay the difference.

"In a few days one of the men sent in a large order with an extra 5 per cent discount, and our attorney advised us to ship the goods. I so notified the salesman, thanked him for the business, and enclosed a memorandum from the auditor showing that his account had been charged with the extra discount—a matter of about twelve hundred dollars. Two days later I received a wire from him requesting that the order be held up, and within a week he had returned to his customer and resold the bill at our straight discount.

"One of the largest jobbers in the business called about a month after I sent out the price list and placed on my desk an order for more than \$45,000 worth of goods. It was the largest order I had ever seen. I told him so and thanked him. Then, noticing that it called for an extra 5 per cent, I informed him that we would not accept it. He went in to see the president, and that gentleman granted the concession; but he withdrew it when I threatened to resign. Then the customer left, declaring with considerable heat that he would cut us out. But about two weeks later he sent me the order at our regular discount with an apologetic letter explaining he only wanted to be certain that we were not giving any other company a better price.

"Even with these lessons in honest selling, however, the president secretly gave three or four of his special friends an extra 5 per cent, and we were making less than 4 per cent net on our volume. If he realized that he was creating a loss and making me out a liar, he did not care. I stayed on for six months, hoping to convince him he was wrong. A barrier of feeling grew up between us, naturally, and it was reflected throughout the office. Two executives encouraged him, and the office was split into two groups, one working for and the other against me. Our failure to maintain our discount soon got to the trade, and the result was exceedingly discouraging. When I realized that the condition could not be remedied, I broke my contract.

"There were other factors, of course; but this was the major one in throwing away one of the best manufacturing opportunities I have ever seen. The company was comparatively small then, and it is still about the same size. In twelve years it has just about broken even in one of the most prosperous industries the country has ever known. And there is not a doubt that its failure to succeed is due to a spineless and dishonest refusal to adhere to a sound business policy."

Strangely, experiences like these are not exceptional, and the ones enumerated are a small part of the material accumulated in a short while. Undoubtedly, those business organizations in which factional differences and political scheming are not causing expensive demoralization are a small minority. Some day, let us hope, our business analysts and economists will turn their attention to the study of this subject, and then, when business management is informed as to the amazing losses, it will take the trouble to identify the office ward heelers and the scheming politicians, and throw them out.

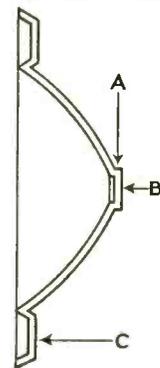


This is a **BURTEX** Diaphragm

—one of millions that are being purchased by leading manufacturers of radio sets.

These are the reasons why you should specify *Burtex!*

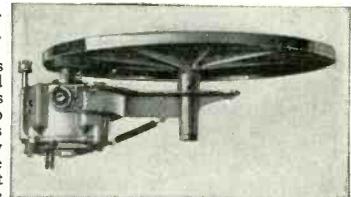
1. Burtex Diaphragms are of one piece construction.
2. Burtex is lighter and stronger than any known paper material.
3. Burtex is impervious to climatical changes.
4. The voice coil collar and mask are integral with the Diaphragm itself.
5. The voice coil collar can be used as a flexing and mounting device—saving the cost of the cone in assembly.
6. The mask is readily adaptable to any installation.
7. Burtex Diaphragms are acknowledged and acclaimed by leading manufacturers and engineers as the finest sound radiators on the market.
8. Burtex Diaphragms are made in a variety of sizes. Special designs can be manufactured to suit any requirements.



A. Voice coil collar
B. Flexing Member
C. Masking Member

STEVENS-SIBLEY ELECTRIC PHONOGRAPH MOTOR

offering many superior and exclusive features.



MOTOR: The motor is of the impulse type and is unique in that it is non-sparking and has no gears or springs. It runs smoothly and quietly without objectionable hum. The drive is against the outer rim of the turntable which insures even, balanced movement. It has a speed adjustment giving all speeds required for correct or modified reproduction. There are no exposed parts, all elements are inclosed in a substantial cast metal housing which is dust and moisture-proof. The motor requires no attention whatever, not even lubrication. The non-sparking feature makes this motor peculiarly desirable for use with electric pick-ups for electric reproduction of records.

STEVENS MANUFACTURING CORP.

42-48 Spring Street, Newark, N. J.

The Straight and Narrow Path



Yes, there is a terrible sermon to preach in radio. The radio sermon today, with socket power operation, is simply this:

Keep within the straight and narrow path—the 5% plus or minus limits set by tube manufacturers. Tubes are made to operate with specific filament, plate and grid-bias voltages. But electric light and power companies do not place much stock in such facts and allow their line voltage to vary from 85 to 135 volts.

The results—excessive low or high voltage—is fatal to satisfactory radio demonstrations and a great hindrance to sales in the suburban and rural territories.

And so we urge you to keep within the straight and narrow path, within that 5% plus or minus voltage. Simple enough, if you make use of the

LINE BALLAST CLAROSTAT

the perfected, inexpensive method of regulating line voltage automatically, now employed in the better type socket-power radio sets. *It costs little, but saves much.*

Write for technical data. Better still, if you are a radio manufacturer or designing engineer, send us a sample power transformer, together with complete data and we shall gladly submit a matched ballast for your tests.

Clarostat Mfg. Co., Inc.
Specialists in Radio Aids

292-7 N. 6th St. : : Brooklyn, N. Y.



½ actual size

AS WE SEE TELEVISION

(Continued from page 496)

quently, the standard broadcast receiver can be utilized for the synchronized sound to accompany the pictures received with a radiovision equipment. In the case of other radiovision workers, arrangements are being made with broadcasters to handle synchronized sounds. It appears, therefore, that radiovision will take the form of radio talkies, and that the absence of fine detail will prove no serious handicap.

Synchronism of transmitter and receiver, so essential to keep the received image in step with the transmitted image so as to prevent grotesque patterns in lieu of pictures on the home screen, is one of the big and serious problems still to be overcome. In fact, this problem threatened to block commercial application of most of the existing systems. Yet this problem is not so formidable once the workers begin giving it real consideration. For instance, many workers make use of the synchronous type motor, operating on the same power system as the transmitter. It is surprising to what extent the same frequency power system may go in covering a given territory. In fact, the power system generally extends as far as the conservative service range of the radiovision transmitter, so that a transmitter may be installed for each power system, thereby solving the synchronizing problem. At first, it was felt that perhaps the looker-in might have to keep his scanning system in step by means of a manual control, with all the work of keeping the pictures squarely on the screen. Yet recent demonstrations have shown that pictures can be tuned in and kept automatically in step for long periods.

As for subjects, it goes without saying that the fun of radiovision comes in snatching pictures out of the air. For at least a year, the average household will get more thrill out of peeping in on radiovision signals of any kind, than in the subject matter, just as in the early days of broadcasting the programs consisted of automatic piano selections, phonograph records and readings, with no one objecting. And yet there are indications that radiovision workers intend putting on interesting programs well within the limitations of their technique. We learn that the Jenkins organization, for instance, has appointed a program director, while the RCA group has long ago had a director for television presentations. Most radiovision workers prefer to utilize the film pick-up method, with subjects recorded on motion picture film. Direct pick-up, while employed by some, is more difficult and does not permit of the elaborate action that can be included on film. Ultimately, of course, the direct pick-up method will be in almost universal use.

All of which would indicate that radiovision is ready for commercial exploitation, as far as it has gone. Naturally, it is far from perfect, and yet it is probably on a par with the signals that greeted the first listeners-in back in 1909, when Lee DeForest was sufficiently courageous to essay a broadcast of the voice of Enrico Caruso from the stage of the Metropolitan Opera House, a full eleven years before the dawn of the present broadcast era.

It is our belief that radiovision can best be commercialized by establishing regular radiovision broadcasting service in every territory to be exploited. If the public knows that there are signals that can be seen, virtually

Hotel Empire

Broadway at Sixty-Third St.
New York City



M. P. MURTHA, General Manager

A NEW fourteen-story fireproof structure containing every modern convenience and "Servidor" service

RATES

Room, private toilet . . . \$2.50
Single Room with bath . . . 3.50
Double Room with bath . . . 5.00

The location is unique:
Subway, elevated, street cars, busses, all at door. Finest parking space in the city

at their doorsteps, ways and means will be found for tuning in those signals. It is to be hoped that the various radiovision workers will get together on one standard or another, in order that the public may buy equipment with every assurance of tuning in desirable signals in any given territory. Nothing will hamper the commercialization of this art more than the existence and persistence of several standards of signals.

There is a big job for the radio industry, by way of providing the essential equipment. For the most part, the radiovision organizations are not over-anxious to produce all the associated equipment. Most of them are only too glad to have receiver manufacturers, for instance, develop suitable short-wave receivers. The power amplifier manufacturers can develop suitable amplifiers and power supplies. The cabinet manufacturers can design suitable cabinets whereby the various pieces of apparatus can be attractively housed and brought into the living room. The radio tube manufacturers can look into the question of neon and other gaseous tubes, for much remains to be developed in this field, followed by a big production of products to meet the sudden demand.



There is an announcer in television programs just as there is in sound broadcasting. The announcer of station W3XCR announces throughout the program at regular intervals, so that "lookers-in" may follow and enjoy the television pictures more readily.

Of course radiovision, as developed so far, is crude. We admit it. There is no argument on that point. Is it ready for immediate commercialization? The next few months will tell. If it is introduced to the public, and if it is half as good as we are assured now, then the radio industry is in for a big boost this year. It will be the boom days of the broadcasting growth all over again. There will be a frantic demand for radiovision equipment, parts, accessories. Manufacturers will be unable to keep up with the demand. Fortunes will be made.

Meanwhile, let us not overlook the stand of the more conservative camp or group, which is keeping a stiff poker face and playing a quiet hand in this game of radiovision development. We hear rumors to the effect that this group has made astounding progress. We understand that the RCA organization has quite an array of engineers assigned to radiovision, and that pictures of real merit are being flashed through space and received with excellent results. Nevertheless, this group seems to want much more time, unless this be simply a smoke

Acme Wire Products

Coils — Magnet Wire Wound
Magnet Wire — All Insulations
Varnished Insulations
Parvolt Filter & By Pass Condensers

All products made to Recognized Commercial Standards including those of:

National Electric Mfrs. Assn.

Radio Manufacturers Assn.

American Society for Testing Materials

For 25 years manufacturers and Suppliers to the largest and most discriminating users.

THE ACME WIRE CO.

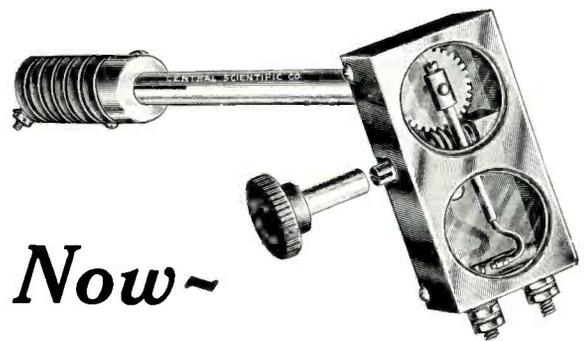
NEW HAVEN, CONN.

Branch Offices:

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CLEVELAND
Guardian Bldg.



Now~

automatic
wave length control!

Accurate retention of a specific wave length depends on temperature control of the Piezo Crystal. . . The Cenco De Khotinsky Bimetallic Thermoregulator now being rapidly adopted by leading broadcasting stations, is perfectly suited to this purpose. Regulated for control at any desired temperature, it's action is sure, instantaneous and automatic.

For Full Information Write to

DIVISION OF RADIO ENGINEERING

Central Scientific Company
Ohio St. and Lake Shore Drive, Chicago

FOREIGN TRADE

in the Radio Industry

A tremendous market for American radio sets and equipment exists throughout the world. There is large demand for tubes, transformers, condensers, speakers, wire, rheostats, resistances, chassis, cabinets, etc. Sales are easy to make and highly profitable.

If you are not now getting your full share of foreign sales, we will gladly tell you how, without any obligation.

Write, wire, or telephone.

Chicago Foreign Traders Corp.

Room 740, 410 So. Michigan Ave.

Chicago, Illinois

Phone—Wabash 0484

screen covering the early launching of a surprise party on the entire industry.

It goes without saying that any leader of an industry has more at stake than the little fellows. Thus the RCA group can ill afford to take a chance with radiovision. If it introduces a radiovision system to the public, that system must include a nation-wide broadcasting service, probably over the NBC networks or over a special network of short-wave stations, and fool-proof equipment. Therefore, the task is far greater than that of the smaller fellows who can launch a radiovision receiver or kit together with a purely local service. From the standpoint of the leader, we can well appreciate the oft-repeated statement that practical television is several years off.

With the merchandising of sound broadcast receivers more difficult than ever before, due to the many homes already provided with excellent socket-power sets, there is no denying the fact that our industry could make good use of something which would lend fresh impetus to radio. And that something might as well be an entirely new and supplementary service such as radiovision. Parts manufacturers, now dependent entirely on orders from set manufacturers, would once more come back into the jobbing field and enjoy a big and profitable slice of business, as in days gone by. Small broadcasters, now with little or nothing to do in the face of the competition of the larger stations associated with the networks, could perhaps secure a license to broadcast radiovision signals on short waves, making use of the film pick-up method so as to be grouped in networks and securing a revenue from sponsored radiovision programs.

No, we must, after all, take sides. We started out with the firm determination that we would simply make the competing facts known, and draw no inference or conclusion. And yet it is so obviously the part of better business, just now, to launch radiovision, even if it is little more than an experiment, that we are keenly in favor of the first camp of radiovision workers.

Let's have radiovision! Even if it's crude, let's have it! There are tens of thousands—even hundreds of thousands, of men and boys who like nothing better than to work out tough problems. They were with us in the days of early broadcasting, and they made our present broadcasting achievements possible. They will again be with us and make practical radiovision possible.

The time is ripe for radiovision. Good, bad or indifferent, let's introduce it! That's what we did with sound broadcasting. Otherwise, that art might still be in the laboratory, struggling towards perfection. History repeats itself. Therefore, let's have radiovision out in the everyday world, with everybody invited to play pioneer, and we shall be well on the way to radiovision perfection.

* *

There are so many magazines. You haven't time to read them all. There is only one Business Paper edited exclusively for the radio manufacturing executive and you owe it to yourself and your business to read every issue. The next twelve issues will reach you for \$3.00.

* *

Four new distributors have been added in the Pennsylvania territory by the Triad Manufacturing Company, Inc. They are: Trilling & Montague, Inc., Keystone Radio Company, Inc., and Bell & Thomas, all of Philadelphia, and R. M. Pepper, of Harrisburg.



The St. Clair

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Garage in connection—
plenty of free parking space



The Eastgate

Hotel Eastgate

*Just a Whisper
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Ontario St., one block
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Moderate Rates

Lower than Loop Hotels

Telephone: Superior 3580

REMOTE CONTROL*(Continued from page 499)*

at any point on the dial corresponding to the frequency of the desired broadcast station. When a station selector is depressed and the motor is in operation, the current flowing through a series momentary relay temporarily closes a D.C. circuit supplying the exciting voltage for a solenoid motor clutch, thereby engaging the driving motor and the gang tuning condenser. This automatic clutch device is necessary in order to keep the inertia of the motor armature from turning the condenser gang after the selector or motor circuit has opened. The same relay also closes contacts which short circuits the voice coil of the loud speaker, thereby eliminating the possibility of any sound being heard until the motor stops operating and the desire signal properly tuned in. The double-pole single-throw locking relay is for the purpose of conveniently starting and stopping the set from a remote or local point. A momentary pressure on the button is sufficient to either start or shut off the apparatus.

The remaining double-throw locking relay, one coil being in series with each of the starting buttons, automatically changes the effectiveness of the volume controls to either remote or local points. This relay permits only one or the other control to be in the circuit thereby eliminating any reaction between them.

The Kolster K-45 receiver which uses remote control utilizes three stages of radio frequency amplification using screen grid tubes, a '27 power detector and a three-stage audio frequency amplifier using two '50 tubes in push-pull, two '27 tubes in push-pull and a first stage using one '27 tube. A 14-inch dynamic speaker completes this receiver.

The construction of all contacts and moving parts has been carefully considered in order to eliminate the possibility of any ordinary trouble occurring, and this new type of receiver is as "fool proof" as it is possible for a radio set to be made.



E. W. MacMaster, Superintendent of Shipping, and Bill Berry, Sales Promotion Dept., both of the Atwater Kent Co., swing high in ship's basket when several carloads of sets and speakers were



being loaded aboard steamer West Texas. In order to deliver this merchandise to Straus-Frank Co., Atwater Kent distributor in Houston and San Antonio, Texas in time for Christmas, steamship officials agreed to postpone sailing date of vessel.

PROGRESS!

Our experience with the manufacture of paper dielectric condensers represents NINE years of progress and achievement.

BEE CEE PRODUCTS**BROWN & AINE**
INC.

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2317-19-21 CALUMET AVENUE

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LET US GET TOGETHER

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*The Service Branch
of Radio Needs*

ORGANIZATION

■
*Join the Growing
Ranks of the*

**RADIO SERVICE MANAGERS
ASSOCIATION**

324 West 42nd Street
NEW YORK CITY

HOTEL EMBASSY

Broadway at 70th Street
New York



**A Quiet, Charming Atmosphere
with Every Comfort**

400 LARGE, LIGHT ROOMS
All with Bath

**\$2.50 a day for one person
\$4.00 a day, and up, for two**

Special Rates for Permanent Guests



Fine Restaurant—Reasonable Prices

EDMUND P. MOLONY
Manager

*Wire at our expense for
reservation*

WHEN SALES ARE SLIPPING

(Continued from page 498)

haps profitless but nevertheless greater volume—every previous year of record is of necessity a poor year. *A failure to gain is not necessarily a loss.*

There are a few positive factors which can sensibly be injected into sane consideration of what the immediate future may have in store.

By far the great majority of homes in this country are still prospects for modern, effective receiving apparatus.

Nothing revolutionary in the way of engineering or cabinet manufacturing developments is indicated for 1930 on a basis of present information. What the future may bring in this connection cannot now be known to a certainty. Suffice to say that many manufacturers are positively disclaiming anything of the sort and, we believe, wisely.

Such a condition indicates an opportunity for trade and public to absorb equipment already produced and an opportunity for the industry—and for every unit in the industry—to maintain prices.

The importance of stabilizing the price situation cannot be over emphasized. Price cutting is too often a product of the same panicky and, quite as often, groundless fears as the wildeyed prophesies with which business has been compelled to cope during weeks past. However, this is no time to call price cutters by unduly hard names. Every man, presumably, knows his own situation best and it is patently impossible to lay down definite rules or practical policies, in a general sense, which can be hoped to fit any individual case. Every producer, every distributor and every dealer, in the last analysis, has to make his own rules in this matter as in others and can only be guided by his own best judgment, whatever that is worth. One thing though should not be lost sight of for an instant:

The quickest way to rout an industry, to demoralize the market for one and all is unwarranted price reduction. When in doubt, stick to your guns.

For the rest, we know of little in the present to furnish definite clues about the future.

But, while there may be no markedly favorable factors, on the other hand, what is there markedly unfavorable? Why should the retail trade have any fears about either a satisfactory measure of volume, and this at reasonable profits during 1930, with this vast market at its present low degree of saturation to look forward to? The year past, during its first nine months, unquestionably showed every record broken and these first three quarters very likely contributed to a record average for the entire year. Why, suddenly, with the psychological effects of an unrelated stock market break as the chief unfavorable factor in an otherwise clear sky, should conditions be utterly altered?

The momentum of 1929 should help in 1930 in a concrete way and there ought to be satisfactory business for satisfactory manufacturers and wholesalers and dealers. For the rest, we believe, the future is unpredictable except that there are, so far as can be discovered, no outstandingly unsatisfactory circumstances standing in the way of those folks in the field of radio who know how to do a job and will do it.

To some extent, of course, radio business will depend

largely on general business for radio sales are intimately connected with the wage earning factor. There are though, no readily discernible threats of import against the national wage factor and logical reasons, why radio will be far from the first product seriously to suffer in a siege of protracted buying, have already been advanced.

We can't but believe 1930 will be a good year for the people in the radio field, at least for those who don't think that the year which fails to set a new high record for volume by 20 or 30 per cent is absolutely a flat footed, out-and-out failure. The country isn't going to crack up nor is any panic impending. The stock market, in this instance at least, is *not* the forerunner of protracted financial depression. It is not the first time we have been led into foolish financial excesses. Let us not now go to the other extreme, deliberately to destroy justifiable faith and confidence.

But we reiterate:

The present situation simply emphasizes the necessity for new means and new manners in radio distribution.

The new industry—radio—great as it is—cannot avoid learning lessons which other industries have had to learn before and are engaged in learning now. No successfully competing industry, the economic set-up being what it is, can hope to escape the necessity for continually learning new and vital lessons, particularly about this phase of distribution, if it is to keep carrying on.

Having used up all this space in pointing the necessity for some brand new thinking about the distribution of radio products, we are going to have to wait until the next month or two to indicate some of the lines we think this indicated thinking will take. At that time we want to recite the experiences other men in other fields, men in advertising agencies and other men responsible for distribution in other lines—all credited with the ability and experience to think constructively about distribution—are saying—and doing.



NEW SALES RECORD FOR STROMBERG

In the face of a crashing stock market and wide-spread uncertainty as to its effects in business, during the month of October the Stromberg-Carlson Telephone Mfg. Co. of Rochester, N. Y., achieved a sales and production record in that month, which was the greatest in the history of the company, covering a period of more than thirty-five years.

While this wave of uncertainty was sweeping the country and while many companies were announcing reductions in the price of radio receivers, Stromberg-Carlson reaffirmed its "No price cutting" policy. Later a price increase was made necessary on one model. These policies have met with hearty approval from Stromberg-Carlson dealers and customers.

Speaking of employment conditions in the Stromberg-Carlson plant, W. Roy McCanne, President, made the following statement at the Institute of Radio Engineers Convention recently held in Rochester: "We in the Stromberg-Carlson Company have been trying to keep a standard sized force continuously busy. We have been trying to avoid the hiring of extra workers during busy periods and the laying off of workers during slack periods. We have been very successful in our effort and have provided continuous employment for fifteen years for a gradually increasing force of workers.

Safe FOR DELICATE WIRING

Defects—rejections—returns. Failure of soldered connections caused by corrosion plays a large part in these expensive occurrences. Yet corrosion may be entirely eliminated through the use of Day-Flux in soldering all fine wiring. Day-Flux is non-corrosive. It has been adopted by many large manufacturers of radios and electrical equipment as the safe flux for soldering delicate connections.

DAY-FLUX +

Such a little thing as the proper flux may determine the life of your connections. Will you test Day-Flux? Send for free working sample. Test it and you will see why Day-Flux is widely used. Don't delay!

JAMES B. DAY & CO.

1872 CLYBOURN AVENUE, CHICAGO

—about these new tube problems



NEW receiver circuits, wired radio, sound amplification—all have confronted manufacturers with unique tube problems.

To assist in overcoming the difficulties encountered in these new circuits and uses for tubes, Perryman Electric Company offers its complete modern laboratory.

Your problem will be held in strictest confidence and be given the unbiased study of experts.

Submit your problem in writing, giving complete details. Your letter will receive our immediate attention. The recommendation of our laboratories will be forwarded within one week.



Laboratories and Plant Hudson Boulevard, North Bergen, N. J.

The Tube with the Patented Perryman Bridge





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Millions have mailed requests for his booklets. He calls his stories of products "Buyographies." From Keratol Hideless Leather and Stetson Hats to Colt Revolvers and Brambach Pianos, Mr. Romer has woven manufacturing romance into sales literature. As our staff member, have him

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The distinctions, advantages and desirability of your product will get across with verbal velocity that gives your message sales-making momentum. Get rates on this Combination Offer — write today.

Radio Industries, 520 N. Michigan Ave., Chicago, Ill.

AIRCRAFT RADIO

(Continued from page 511)

The part which the airplane manufacturers must take care of is that of bonding the metal parts of the ship and aiding the engine manufacturers in designing shielding against the interference from the ignition system. It is absolutely necessary that every metal part of the ship be connected electrically, and that requirement includes the various pipe lines that connect from the gas and oil tanks as well as those that run from the engine to the cockpit and instrument board. It is not sufficient that the threaded connections be used, for it is often found that oil or packing effectively insulates one part of the line from another. There is nothing to prevent an electrical discharge from one part to another and a great deal of damage can be done if the condition exists at the proper place such as in a gasoline line.

In view of the activity along aircraft radio lines during the past few months, there is reason to believe that the 1930 season will see great advances in this interesting and necessary development. When it does begin there will likely be an avalanche, for the aircraft operators will themselves sense the need for apparatus such as that laid out in the foregoing paragraphs.

The deductions made in this article are evolved from an investigation of the aircraft radio field over a period of more than a year and a half and experimental work that has been carried on in that period in the interest of increasing the safety of flying.



MEN WHO HAVE MADE RADIO

PETER M. JENSEN

(Continued from page 514)

pick-up, amplifier and loudspeaker. They were subsequently informed by competent patent counsel that had they patented this combination they would now hold one of the most valuable patents in the industry. Their neglect in seeking patent protection has probably thrown this device open for the world to use.

In 1927 the great improvement in radio broadcasting, and in receiving sets, called for another improvement in reproducers and the new Jensen electro-dynamic speaker was designed for that purpose early in that year and a company was formed for its manufacture and sale. Mr. Jensen was the head of this new company and since its birth guided its policies and supervised all engineering and research. From a small factory building located in Oakland, California, he has seen his company and the popularity of his new product grow until three successive factories have been outgrown and now in the fourth, speakers bearing his name are manufactured in great quantities every day and shipped to markets in every corner of the world.

Aside from his ability as an inventor, engineer and business executive, Peter L. Jensen is a musical critic of ability, which is of great aid to him in his judgment of musical qualities. He is an apt student of history and art and is an authority on both subjects. He has spent a great deal of time in Europe for both research and pleasure but his chosen home is sunny California.

For diversion he plays golf—objective, a 79.

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A fine hotel . . . where homelike comfort is coupled with modern accommodation. A perfectly located hotel . . . surrounded by luxurious private grounds on the shores of Lake Michigan . . . and yet, just 8 minutes to the city-center. 600 unusually spacious, beautifully furnished, cheerful outside rooms with bath. Attractive rates. Every department under expert supervision. Dining rooms with Chicago's finest meals at moderate prices . . . table d'hote or a la carte. Stop here when you come to Chicago. You will be happy at the Chicago Beach!

Write for rates and literature

Chicago Beach Hotel

A. G. PULVER, Vice Pres. & Gen. Mgr.
Hyde Park Boulevard . . . on the Lake,
Chicago

PHONES TUBE ORDER FROM LEVIATHAN

In a cabin of a giant liner in mid-ocean—1,700 miles off the coast of North America—a ship's officer lifted a telephone receiver from a hook, called Vanderbilt 8700, New York and as casually as if he were 'phoning the corner electrical shop, ordered a new set of four pillar tubes for his private radio set.

The unique call, made recently from the S. S. Leviathan to the National Carbon Company in New York, is believed to be the first order for merchandise ever telephoned from a ship at sea. It was made possible by the new "ship to shore" service of the American Telephone and Telegraph Company instituted on the Leviathan.

Purser J. G. Summit of the Leviathan was the officer who discovered the need for new tubes and, facing but a brief stay in New York decided to telephone his order. General Sales Manager Harry S. Schott of National Carbon received the call in New York, chatted for a few moments in comparing notes on the chill New York day and the balmy weather the distant Leviathan was experiencing at the moment, and then ordered the shipment of a set of Eveready Raytheon tubes to await the Leviathan when she docked—three days later.

Even on its first round trip with the new telephone service, the Leviathan has been the scene of new and



Harry S. Schott, General Sales Manager National Carbon Company, and Fred D. Williams, Manager Eveready Raytheon Tube Division National Carbon Company, receive the first merchandise order ever telephoned from mid-ocean.

strange records in telephony. A Newspaper executive, returning from Europe, telephoned a news story from mid-ocean. A business man in San Francisco made the record distance call in telephoning the ship from the Pacific Coast. A telephone connection was made between the ship and an airplane circling high above New York City.

Seeming simplicity marks the marvel of mechanics making these conversations possible. Aboard the Leviathan a special room has been equipped just off the lobby on B deck. Here a microphone transmitter has been installed. An operator in attendance in an adjoining room handles the calls. He is in touch with the long distance station in New York where the calls are switched to their destinations.

The voice from the shore telephone speeds over land wires and cables to the American Telephone and Tele-

KESTER FLUX-CORE SOLDER

FLUX IN POCKETS

SOLDER WALL

Ready to Use



QUICK!

Quick, simplified operation—no separate fluxes, acids or pastes. Quick savings in time and money on many phases of industrial production and maintenance.

A complete line of solders and fluxes for industrial uses.

Our experimental and research department is maintained to study your individual soldering problem and adapt the correct Kester Solder most efficiently and profitably to your needs. A special solder designed especially for you may be necessary to reduce your operating and maintenance costs. This consultation service imposes no obligations. Your request will bring an immediate and authoritative analysis.

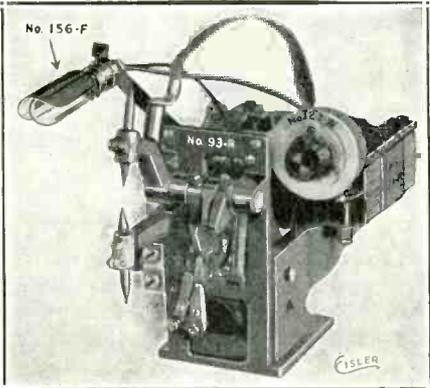
KESTER SOLDER CO., 4216 Wrightwood Ave., Chicago, Ill.
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STANDARD SPOT WELDER



Machine No. 93-R

SPECIAL PRICE \$38.50

\$1.75 ADDITIONAL FOR COMPLETE LIGHT BRACKET

Increased production facilities enable Eisler Electric to offer these Standard Spot Welders at this new low price. Machines are of proven merit, noted for extreme simplicity. In use by all Radio Tube Manufacturers.

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Your industry makes good editorial matter for this magazine; your business story will make good editorial matter in these pages. On our staff now is

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"Business Buyography"

He'll visit your plant, get your story, develop its sales points into a romance in his friendly, phrase-fondling style that has made millions watch for his wizardry with words.

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Your Business Buyography published in 4, 5, 6, 7, or 8 pages of this magazine and 10,000 Booklet Reprints for your mail distribution

Radio Industries, McGraw-Hill Bldg., Chicago, Ill.

graph company's New York City long distance office. Passing through a special section of switchboard, it is amplified and adjusted in the control room and proceeds, still by wire, to the Bell System short wave radio transmitting station at Deal, New Jersey. At this point, it receives further amplification and is sent by radio to the Leviathan.

At present the Leviathan is the only vessel equipped to provide regular ship to shore telephone service.



YACHTS RADIO EQUIPPED

Radio is expected to make motor boating more enjoyable for thousands of owners of small craft in 1930. A Crosley screen grid battery receiver is part of the standard equipment of every Fairform Flyer, a new type of express cruiser, built by the Huckins Yacht Corporation of Jacksonville, Fla. The radio is installed in a built-in cabinet in the main cabin.



The first of the 1930 Fairform models was launched recently and taken on a seventy-five mile trial trip. The radio performed surprisingly well, Frank P. Huckins reported in a letter to the Crosley corporation. Reception was as clear and natural as on shore, he said.



1930 OUTLOOK GOOD A STATEMENT

By A. W. ROBERTSON

Chairman, Westinghouse Electric & Manufacturing Company

1929 brought the electrical manufacturing industry the largest volume of business that it has ever enjoyed. The sales of the larger electrical manufacturing companies showed an increase of about 30 per cent over those of 1928, which was itself a record-breaking year, and many smaller manufacturers did even better. Earnings also increased as the result of manufacturing improvements introduced during the past few years.

During 1930, there will probably be a falling off in the demand for certain lines, as the effect of the recent fall in security values will undoubtedly be felt to some extent; but on the other hand, the general economic situation is thoroughly sound and the movement to stabilize business, being carried out by American industries under the leadership of President Hoover, will probably tend to prevent any great recession, especially for the electrical manufacturing industry, because the use of electricity is now so general that this industry benefits by constructive activity in almost every field.

The excellent radio business of 1928 attracted a num-

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KNOWN FOR GOOD FOOD
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Write for Illustrated Descriptive Booklet

STILES MANAGEMENT

ber of new manufacturers into the field so that the production of receivers in 1929 was unusually large and some makers have found difficulty in clearing their stocks.

The most conspicuous development for the year was the introduction of the screen-grid tube. This new tube proved very popular, but it did not dominate the market and it is believed that its advantages will be more fully developed next year. Improvements in dynamic loud speakers have enhanced the quality of reception, and a decided preference developed for this type as compared with the magnetic loud speaker.

Improvements in transmitters continued steadily, and practically all broadcasting stations are now equipped for 100 per cent modulation. There is a tendency towards increased power, and to facilitate this, larger and more efficient power tubes are being designed.

Marked progress was made in the allied fields of sound recording and reproduction and facsimile transmission. Television also took a step forward, although there are many problems to be solved before this new art becomes a commercial reality.

**INDUSTRY IN HEALTHY STATE
A STATEMENT**

By ERNEST KAUER
President CeCo Manufacturing Company

"What of 1930" is a question that comes frequently to men engaged in radio business enterprises. It would have come anyhow at this time, but the query is more insistent since the business recession which was so marked by events reflected in trade among securities listed with the larger stock exchanges of the country.

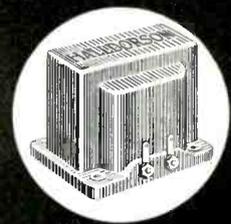
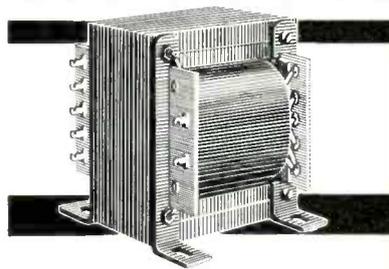
There is no reason to exhibit undue optimism but neither is there any basis for pessimism. It is true that the radio industry experienced a severe slump in the last part of 1929, normally expected to be the best in the year. I dare say there will not be any considerable activity in the early part of 1930. However, when that is said, I believe the worst part of the picture has been faced. Doubtless, a large amount of anticipated profits have not materialized. I do believe, however, that they are only delayed; that within this new year they will be realized.

It must be remembered that the radio industry has had slumps before without impeding the industry's march of progress. In none of the industry's previous experiences however, was there anywhere near such a state of stabilization as obtained in the trial of the period from October to December. Leading members of the industry had to tighten their belts and curtail activities, but in few instances were any of them put to difficulty. Inventories had been too carefully watched.

I think it accurate to say that most leading concerns in the radio industry had a profitable year even if profits were considerably below expectations. The curtailment that did ensue was not an unnatural development following the Autumn of 1928. No doubt the caution engendered by the experience of 1929 will find its reaction in helpful trade in 1930.

This is sure. The radio manufacturing division is in a magnificent state of technical development. There is little excess of merchandise in warehouses or on dealers' shelves. The industry starts with a clean slate in 1930, and with economies in merchandising and distribution, which are being brought forward continually, this new year should be a profitable one.

HALLDORSON TRANSFORMERS



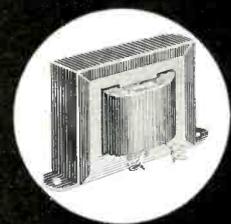
At Your Service—

THE Halldorson Company offers you a dependable source of supply for:

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The name Halldorson is widely known for the quality of the products with which it has been identified and the service for which it stands.

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THE HALLDORSON CO. 4500 RAVENSWOOD CHICAGO ILLINOIS

NOTICE

Radio dealers and radio set owners do not buy factory equipment nor can they be thought of as prospective purchasers of the various materials which go into radio manufacture.

But one publication—*Radio Industries*—is edited exclusively for and circulates to radio manufacturers. In every plant the most thorough coverage is made. The editors receive as many letters from Chief Engineers and Purchasing Agents as come from Presidents and Sales Managers. The subscription list, too, is made up of every type of executive. *Radio Industries* is read by the "higher-ups" and those who aspire to major executive positions. All have their share of influence in the ultimate purchase of your product.

In your sales plans for 1930 include an advertising campaign in *Radio Industries*. Let your advertising message go directly to all manufacturing executives in the industry. And, remember, there is but one publication for you to use. Shall we prove it?

Advertising Department

RADIO INDUSTRIES

520 North Michigan Ave.
CHICAGO

COIL ENGINEER

Electrical Engineer who is capable of heading up a general coil winding department in all its detail, namely, machinery design, coil engineering, cost, and sales. Reply should state technical education, age, past experience, in fact all pertinent information.

Address Box 514A, Radio Industries

MODERN RADIO *Requires* AMPERITE Line Voltage Control

Successful electric radio operation depends on steady voltage. Up to 30 per cent line fluctuation in every community makes AMPERITE Control necessary. Saves tubes—improves tone—reduces service costs.

FREE—Useful AMPERITE Bulletin and list of AMPERITE-equipped radios. Write Dept. R1-1



AMPERITE Corporation
561 BROADWAY, NEW YORK

AMPERITE
Self-Adjusting
LINE VOLTAGE CONTROL

GREBE-CHRYSLER SALES TIE-UP

An announcement has recently been made to the effect that a sales tie-up has been arranged between the Chrysler corporation and A. H. Grebe and company, the former one of the leading automobile manufacturers, the latter one of the old established and well known radio producers. The action is worthy of note coming as it does almost on the heels of the association of General Motors corporation with the units of Radio Corporation of America.



One of the first automobile dealer organizations to show Grebe sets under an announced arrangement between the Chrysler and Grebe organizations was Bishop, McCormick and Bishop, New York Metropolitan distributors of Dodge motor cars.

(Left to right)—Mr. Grebe, Frederick Dose, sales manager of Bishop, McCormick and Bishop; B. T. Bishop, Vice-President, Bishop, McCormick and Bishop; C. M. Bishop, Secretary and General Manager, Bishop, McCormick and Bishop; and, Douglas Rigney, Vice-President and Treasurer of the Grebe Company.

The merging of the Chrysler and Grebe sales organizations will be made manifest at first in the establishment of a radio sales department in the Bishop, McCormick and Bishop sales agency in New York City, where Dodge cars are merchandised. The Transitone radio figures in the picture since the Dodge cars are coming equipped with the Transitone radio sets.

Whether or not the association of the Chrysler and Grebe interests means that Grebe is going to enter the field of automobile radio is not made public at this time. In fact, it is stated in the announcement that the reason for the consolidation is to effect a means of bridging the low sales periods of both the automobile and radio industries. Those low periods come at opposite times in the year so that the combination should work to the decided advantage of the sales organization as a whole even though the matter of automobile radio were entirely outside the case.



NEW RESEARCH LABORATORIES

Ernest Kauer, president of Ceco Manufacturing Co., Providence, R. I., announced yesterday that work is starting immediately on the new research equipment installation which will take up an entire floor of the new four story building immediately adjacent to the mammoth tube-production plant. An expenditure of \$200,000 is scheduled.

"We are going a step beyond any research hitherto followed by any radio enterprise which strictly limits its production activities to tube-manufacture," Mr. Kauer

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said. "We not only intend to develop new tube capabilities; we also will apply them.

"Until now, tube research has been satisfied to find new possibilities in tubes and then stop short, leaving their application in circuits to receiving-set engineers. This has caused a division of energy in reaching a result.

"In our new research department, which will be completed before next Spring, we will not only conduct research for the improvement of tubes, but will also work out efficient circuits for their use."

Anticipating the question, Mr. Kauer stated that CeCo had no intention of going into the set manufacturing business.

"We simply want to aid in the most efficient use of radio tubes. There is too much lost motion, lost time, now spent between the newest tube development and its adaptation in radio sets. We want to help overcome this. By developing circuits which will immediately use the product of our research department, radio progress will be aided greatly. Such plans will be turned over to the set manufacturers for the best use they can make of them."

RADIO AND THE FARMER—A STATEMENT

By COLIN B. KENNEDY

"The importance of radio to the rural population of America cannot be over-estimated. Certainly the use of radio has brought more real benefit to rural set owners than it has to their city cousins," said Colin B. Kennedy, president of the radio receiving set manufacturing corporation that bears his name, located at South Bend, Indiana, when asked about radio in relation to rural districts.

"Radio is of much greater value to the farmer than to the city dweller," explained Mr. Kennedy. "Radio brings to the farm many things which before were obtainable only through newspapers and magazines. This does not mean, however, that radio is a substitute—it never will be—but it has increased the capacity of the farm listener for good newspapers, literature and fine music. It supplies educational features that make for culture and refinement, regardless of environment or locality.

"No longer is radio a luxury to those living far away from the hustle and bustle of street cars, traffic-crowded thoroughfares and throngs of hurrying people," continued Mr. Kennedy. "To the families living in the most lonesome and out-of-way places, radio has become almost indispensable because of its utilitarian value.

"With radio, the farm ceases to be an isolated spot. It becomes a part of any city—it receives daily weather forecasts, market reports, political talks, brief descriptions of current happenings, news of all major sporting events, the latest song hits and grand opera, just as the most modern homes and apartments.

"Farmers have been able to increase the returns on their products simply by taking advantage of the day-by-day market quotations broadcasted particularly for their benefit. I understand that one certain broadcasting station has been very successful in cooperating with the farmers by announcing the loss of stolen or strayed stock.

"And yet the farmers of our country, with a few exceptions, have not been able to reap the benefits of the accomplishments made in the field of radio science during the past two years, because of the absence of electric cur-

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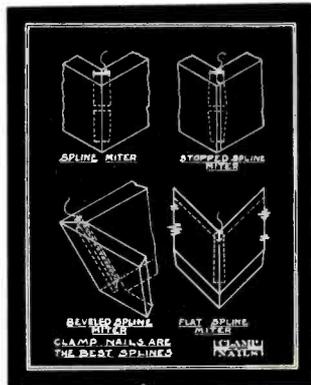
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RADIO INDUSTRIES is read by executives, engineers and production men in plants building over 99 per cent of all radio sets produced in the U. S. and Canada.

rent on the farms, Most farmers still use what the city man would term as old-fashioned battery-operated sets, but better battery-operated sets can be, and will be built for use in rural districts," declared Mr. Kennedy.

"Radio manufacturers will soon develop battery-operated sets for farm use that will be equal in practically all respects to our best all-electric sets."



BOSCH DIFFERENCES SETTLED

Several weeks ago Elihu Root, Jr., as counsel for the American Bosch Magneto Corporation, and Hiram E. Todd, counsel for Robert Bosch Magneto Co., Inc. announced the settlement of all litigations and controversies between American Bosch Magneto Corporation, of Springfield, Massachusetts, and the Robert Bosch interests, including Robert Bosch Aktiengesellschaft, of Stuttgart, Germany, and Robert Bosch Magneto Company, Inc., of Long Island City, New York. This settlement brings to an end ten years of bitter controversy and numerous litigations between the companies, not only in the United States, but also in France, England, and other parts of the world. The settlement agreements were recently signed in Paris by all the parties in interest.

American Bosch Magneto Corporation was organized in 1919 to acquire the assets and succeed to the business of Bosch Magneto Company, a New York corporation which had been established in 1906 by Robert Bosch and certain of his associates. In 1918, the Alien Property Custodian of the United States seized all of the stock of Bosch Magneto Company as enemy-owned and sold it at public auction, the purchasers being the organizers of American Bosch Magneto Corporation.

The Robert Bosch Magneto Company, Inc., a New York corporation, was organized by certain of the former owners of the stock of the Bosch Magneto Company in the year 1921 and has since been engaged in business in competition with American Bosch Magneto Corporation.

Since that time there have been a series of controversies and litigations between American Bosch Magneto Corporation and the former owners of the stock of Bosch Magneto Company and others with respect to the use of the word "Bosch" in various parts of the world.



BEAUTIFUL CABINETS THAT SELL

From the Italian word, "Intarsia," meaning marquetry (designs produced by wood inlaying), was developed the name TARSO, which identifies the product of a remarkable process whereby the grain and figure of the choicest decorative cabinet woods, as well as exquisite inlays and other special designs, are exactly reproduced on plywood panels, on panels of metal or of celluloid.

The idea of reproducing rare wood veneers on high-grade plywood panels which could be sold at a cost less than that of panels veneered with choice cabinet woods, originated some twenty years ago with one Gerhardt Terlinden, then a resident of the Grand Duchy of Luxembourg.

Followed eight years of ceaseless experimentation . . . of improvement in the original process . . . until at last the sure and practical and economical method was developed.

But the young industry, like many others, was stopped

by the war, and after-war conditions were not conducive to its revival in Luxembourg. In 1922, therefore, the business was transferred to Finland, where excellent plywood panels are produced in large quantities; and here it has flourished, the demand for Tarso panels from England, France and other countries increasing so steadily, as the appreciation of the beauty and economy of Tarso panels spreads from one manufacturer to another, that the capacity of the Finnish plant has had to be doubled twice within the last three years.

In 1925 Tarso came to America, the process being owned and controlled in both the United States and Canada by the American Tarso Company, whose factory is at Boston, Massachusetts.

Tarso produces any desired effect with no loss of beauty and at a worth-while saving. It overcomes one of the manufacturer's chief problems (the adaptation of ornate wood designs within a practical price range). The Tarso panel goes to him with two coats of lacquer or varnish, thus still further reducing his finished-goods cost. And Tarso panels obviate the necessity for sanding, filling and staining; they also eliminate the blistering and peeling ordinarily encountered where burl veneers are used.



STROMBERG-CARLSON MANAGERS MEET

Thirty-five branch managers, officials and representatives of the Stromberg-Carlson Telephone Mfg. Co., representing the United States from Coast-to-Coast, held a business meeting Tuesday and Wednesday, December 17th and 18th respectively, at the Stromberg-Carlson plant in Rochester.

The sessions of the conference were all held in the plant and a luncheon was served in the plant dining room. A dinner and meeting was held at the Genesee Valley Club.

Out-of-town managers who attended the meeting follow: Benjamin Gross, H. A. Brennan, L. L. Spencer, Gross-Brennan, Inc., New York City; R. Davis and C. J. Hunt, Davis-Hunt, Inc., Philadelphia; J. E. McCauley and A. B. Crawford, Crawford-McCauley, Inc., Pittsburgh; C. E. Heston, Cincinnati; N. W. Baldwin, Toronto; C. W. Schafer, Paul Myers, A. C. Barg and Everett Worthington of Chicago; C. D. Kinne, Kansas City; O. C. McCanne, St. Louis; R. G. Bookless, Garnett Young and Company, Los Angeles; F. C. King, Scoville Mercantile Company, Atlanta, Ga.; and L. A. Randall, Baltimore.

The Rochester officials and representatives who attended follow: W. R. McCanne, President and General Manager; George A. Scoville, Vice President in charge of sales; E. A. Hanover, Vice President in charge of production; Ray H. Manson, Vice President in charge of engineering; B. Woodbury, special representative; E. A. Reinke, Chief Sales Engineer; W. T. Eastwood, Advertising Manager; E. R. Stonaker, Consulting Traffic Engineer; J. S. Gibson, Radio Manager; D. W. Brown, Manager Rochester Sales; F. K. Cannon, Export Manager; J. W. Kennedy, Rochester Sales Department; F. H. Anibal, Special Representative in Rochester; S. H. Hanford, L. A. Casler, F. B. Farley, H. Nicholson and R. C. Reno of Lyndon, Hanford and Kimball, Advertising Agents.

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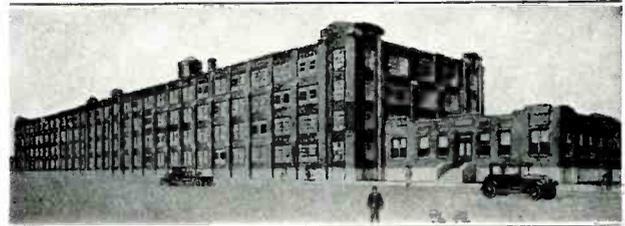
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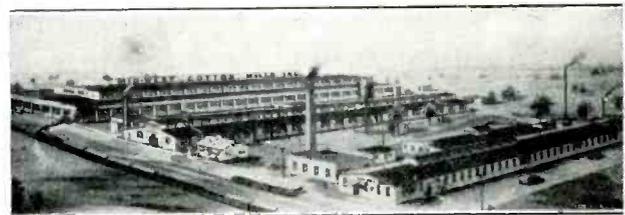
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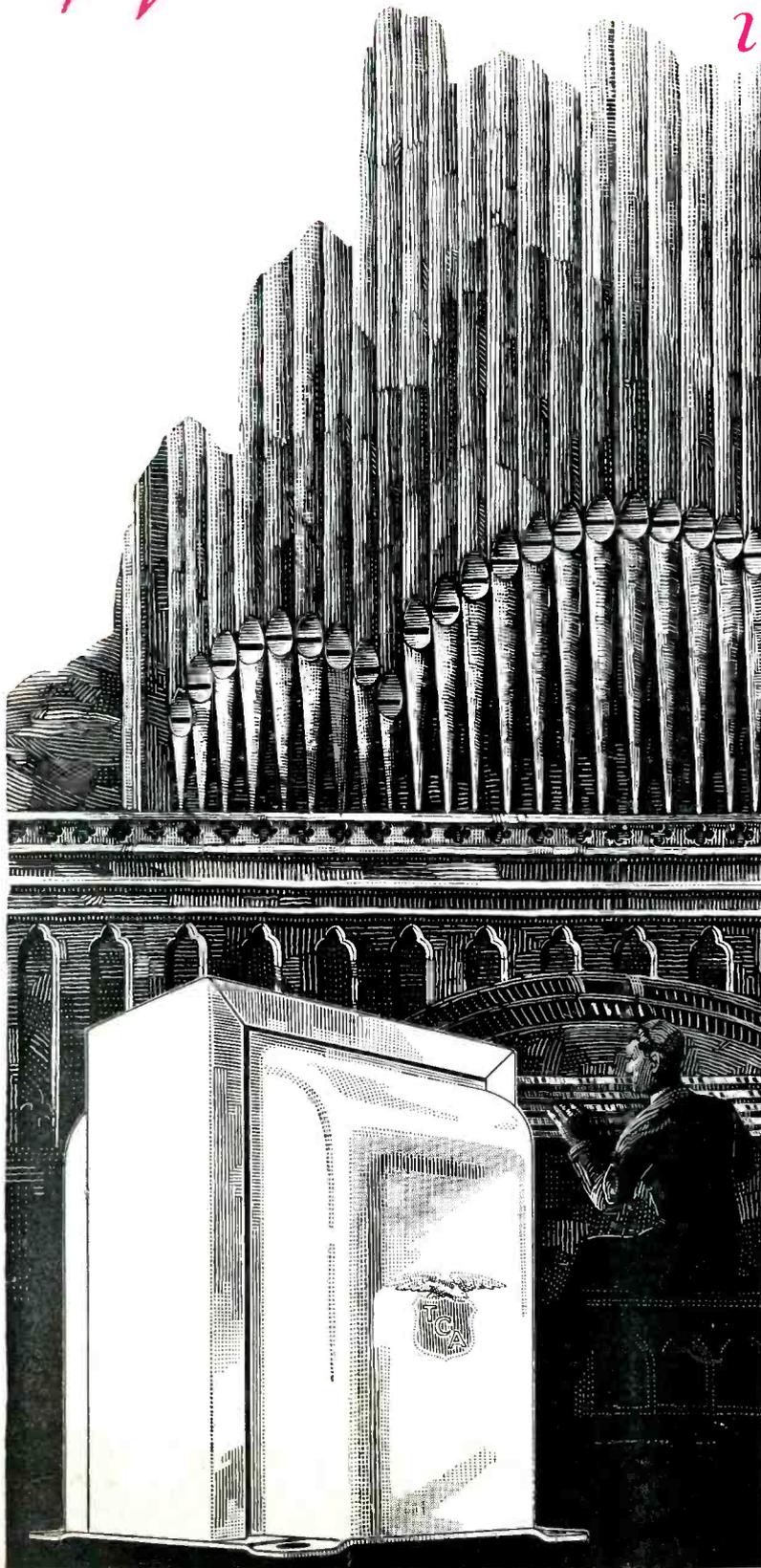
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