



Clifford L. Coon

## \$5,000 a Year as a Radio Engineer

### Bennett's Own Story of His Success

By  
Earl R. Bennett



I WAS located in a small town in North Dakota where one would think the opportunities for doing anything were very limited. One day I noticed your advertisement in a magazine, sent for the details, and later enrolled in your home-study Radio course.

A very short time after I started the course I got busy in the evenings—soliciting service work in my neighborhood. This gave me a good deal of practical experience, so that I was soon making \$20 to \$50 a week in my spare time.

I continued this for about six months and then decided to go to Chicago to get into Radio as a full time proposition. No trouble at all was encountered in obtaining a position with the Mohawk Company as a tester and balancer at a starting salary of \$35.00 a week. I stayed with the Mohawk Company for about nine months and then got a position with the Scott Transformer Company as a service man.

Shortly after that time I was promoted to the position of chief tester with a very nice increase in salary. Early this year I was again promoted, to assistant engineer, working in the laboratory under Mr. Scott, on experimental and development work at a salary of \$5,000 a year.

You will be interested to know that another N. R. I. man, Mr. A. Finnie, is Service Manager for the Scott Transformer Company.

I hope that sometime in the near future I will have the pleasure of visiting you at the Institute and thanking you personally for all that you have done for me.

"When I started your course I had only a grammar school education—had no trade or profession—knew nothing about Radio. After three months' study I obtained a job in a Government wireless station at Columbus, Georgia. Shortly afterward, I was placed in charge of the transmitter at the control station WVR in Atlanta, Georgia.

"I left there to accept a position as factory foreman for the Radioceptor Manufacturing Company. My salary averaged \$500 a month. In about six months' time the wanderlust caught me and I left for the Gulf, shipping in turn on an oil tanker, a fruit boat and a coastal excursion steamer.

"Later I came to Evanston and took the position as Service Manager for the North Shore Radio Shop. Last spring I purchased this company outright. Business is good and Uncle Sam has one more income tax source.

"Everything I now have can be attributed to your training. I own a \$17,000 home, well furnished, three cars, my own business, and am permanently established here. Starting your course was a turning point in my life. Without your training I would probably be among the army of the unemployed. I have never hunted a job, since I took your course. The jobs hunt me.

"Television is on its way. It will be a gold mine for those who know Radio and get in on the ground floor."

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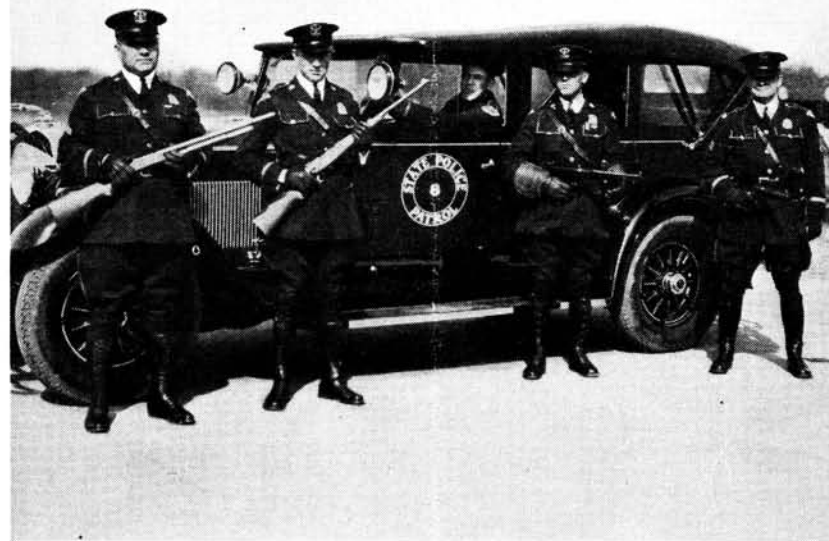
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WASHINGTON, D. C.

FEBRUARY, 1931



## POLICE RADIO ISSUE





J. E. SMITH

## The PRESIDENT'S PAGE

FROM POWEL CROSLY, JR., President of the Crosley Manufacturing Company, comes a statement that there are now approximately as many Radio receivers in use as there are residence telephones. The Department of Commerce has estimated about 13,500,000 Radio sets in use in the United States. Two-thirds of the 20,300,000 telephones in this country are in residences. Mr. Crosley points out that telephones have increased only 500,000 in the last year and a half while Radio receivers have increased nearly 3,000,000.

### Radios Gain on Telephones

PRACTICAL utility for broadcasting and proper acoustics were given first consideration by the engineers who designed the new studios of WBBM, Columbia's Chicago station. That accounts for the seeming incongruity, in otherwise beautiful surroundings, of four stout ropes rigged with pulleys from the ceiling of the studio to a travelling microphone.

H. Leslie Atlass, Columbia's district manager in charge of the Chicago area, explains this oddity in these terms:

"After all the Radio studio is a workshop. It serves one and only one purpose—the setting for a program pick-up. If that pick-up is to be perfect, mechanical requisites must come first and decorative niceties last. The four ropes allow us to adjust to perfection a particularly sensitive microphone. If log-chains would better serve our purpose, we would run log-chains from the ceiling.

"The thousands who listen to a Radio program are little concerned with whether the walls of the studio are salmon or tan, but they are vitally concerned with the quality of the program."

FORTY per cent of the population of the United States live more than 75 miles from any broadcasting stations. In these poorly served territories, where only one or two programs are received, few Radio sets, naturally, are yet in use. But these populated areas offer great opportunities for future Radio sets sales, as has been demonstrated each time an increase in power has been granted to the broadcaster serving such a territory.

The Federal Radio Commission has under consideration granting high power licenses to twenty-seven important broadcasting organizations now asking for fifty kilowatts each. If this request is granted, strong and satisfactory broadcasting will be laid down over the entire country, including present sterile areas. The people in these regions want receivers as soon as they get broadcasting, and so immediately an additional demand for Radio will be opened up.

This action will mean \$10,000,000 in broadcast station sales; \$100,000,000 in receiving set sales; great prosperity for the Radio Industry and the employment of a hundred thousand Radio men.

RADIO renders another important service to mankind in tracking down criminals—preventing crime. Widespread popularity of Police Radio means new installations of transmitters and receivers, sales and service. N. R. I. men will continue to cash in on each new use found for Radio. Graduate Norman Hood is getting his share—he's building the Police Radio installation for the city of Akron, Ohio.

Elsewhere in this issue are articles of great interest to Radio-Tricians concerning Police Radio. It's going to be a big thing in this country—opening up a lot of additional Radio work.

## THE CHIEF TALKS ABOUT POLICE RADIO



J. A. DOWIE, Chief Instructor

### Michigan State Police Installs Powerful Radio Transmitter

By J. A. DOWIE

The Police Alarm System used by some state police at present usually consists of a low power radiotelephone transmitter with a few scattered radio receiving sets tuned to a certain frequency which is more or less a local enterprise. In the State of Michigan, however, the police Radio system is a State-wide enterprise operated by the State police. It is one of the most up-to-date Police Radio Alarm Systems used, providing an instantaneous communication system for the entire State.

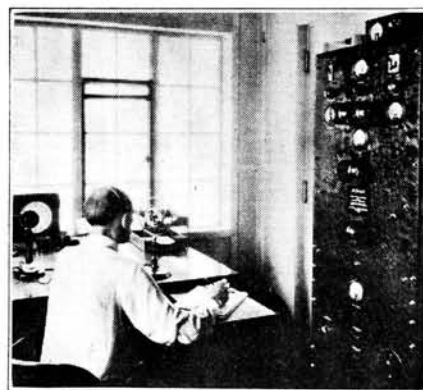
At the East Lansing Barracks, where the police radiotelephone transmitter is located, it formerly took the telephone operator from one to two hours, frequently longer, to call all the sheriff's offices, municipal police departments and State police detachments to give them

important information on an emergency call such as a bank robbery, State penitentiary or State asylum breaks. Such information can now be transmitted in a few seconds or a fraction of the time formerly required. Furthermore, all interested parties, whether at police stations or in cruising police cars, are reached at the same time. Such routine reports as descriptions of stolen cars, missing and wanted persons and the like are transmitted at regular intervals.

It was only after considerable negotiations with the Federal Radio Commission that the Michigan State Department of Public Safety received the necessary license to operate a powerful radiotelephone transmitter. Since this is the first State to use a transmitter of State-wide coverage, criminals are rapidly learning to keep out of Michigan. No longer is a crime the exclusive business of just the community affected. The police forces of the entire State and even neighboring States are instantly informed of a crime, and the criminals are caught in a vast drag-net from which there is no escape.

The call letters of the East Lansing police transmitter are WRDS. It has a rating of 5,000 watts built and installed by the DeForest Radio Company. The transmitter serves as an instantaneous communication medium with thirty-five scout cars and cruisers patrolling the highways and byways of the State, and with eighty receivers in the offices of county sheriffs, municipal authorities and State police detachments. The stationary receivers operate twenty-four hours per day, being constantly tuned in

(Please turn to page 14)



Dispatcher and remote control panel, Michigan State Police Barracks, East Lansing, Michigan.

# National Radio News

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NATIONAL RADIO INSTITUTE

Washington, D. C. February, 1931



## POLICE RADIO



One night a Radio equipped police car was patrolling a section of Detroit when ordered to a home where burglars were reported. It picked

up the message when it was a block from the house. In less than 30 seconds the burglars were under arrest.

Such broadcast alarms are repeated three times so there will be no mistake. One Indianapolis police car last January picked up a description of two negroes who held up a filling station and captured them before they had gone six blocks. As they were hauled into the police car the third broadcast was just beginning. One of the negroes rolled his eyes at the Radio and said: "Bo-o-oy! Listen to that thing telling on us."

The success of various city and state police departments in the use of Radio for criminal apprehension, is creating new big fields for Radio-Tricians.

Nearly every large city and a number of states have or contemplate installing transmitters and Radio equipped cars. Smaller cities will rapidly follow suit. Criminals finding difficulty pursuing their trade in the Radio-police cities will turn their activities to the smaller towns. The smaller town taxpayers will demand modern Radio-police protection. It will be a necessity.

There are 191 cities in this country of 50,000 or more population. Additional hundreds of cities are between the 10,000 and 50,000 mark. With the larger cities using from one to three transmitters each, and upward to 100 Radio equipped cars for each city; the smaller cities similar equipment according to area and population, the volume of work open to men with Radio training will be enormous.

## WEAK SISTERS

There's one in almost every organization—the fellow who just can't seem to make the grade—who can't do his bit. His fellow workers each have to do more to make up for his shortcomings. Weak Sisters we call them.

The Weak Sister is the fellow who is happiest when he's telling of his misfortune. He is always behind when there's a job to be done—he always quits as the job grows hard—"I can't" is his battle cry.

If Edison had been a Weak Sister—we'd still be using oil lamps and gas for lights. If George Washington had said "I can't," when the British had him backed up against the Delaware River, you'd still be paying your taxes to King George.

Success doesn't grow on trees. If it did there'd be no kick in succeeding—because Weak Sisters would be on a par with the fellow who is willing to work for success. If the Weak Sister would spend one-half the time and energy he wastes in bemoaning fate—in working for success, he'd have some of the things he envies in others.

What if it does take a fight sometimes to succeed? Real he-men have been willing to put up a scrap for what they wanted, from the earliest days of history.

Of course, if comfort, pleasures, money, self-respect are not worth fighting for—then let him remain a Weak Sister. Respectable men don't want his company anyhow.

The Weak Sister claims "The World Owes Me a Living." Let him take Milt Parsons' philosophy to heart "The World owes you a living, and the world's willing to pay, but it's up to you to do the collecting."

The line between failure and success is so fine that we are often on the line and do not know it. Many a man has thrown up his hands at a time when a little more effort and a little more patience would have achieved success. There is no failure except from no longer trying.—Elbert Hubbard.

Be sure to read the "Mailbag" in each issue of the NEWS. It is written entirely by students and graduates of N. R. I. and contains valuable hints and inspiration.

# RADIO-TRICIAN SERVICE SHEET

REG. U. S. PAT. OFF.

COMPILED SOLELY FOR NATIONAL RADIO INSTITUTE ~ WASHINGTON, D. C.

## Philco Model 20 and 20-A Receivers

Model 20 Receivers are for Operation on 105-125 volts, 50-60 cycles AC Lines.  
Model 20-A Receivers are for Operation on 105-125 volts, 25-60 cycles AC Lines.

Table 1—Tube Socket Readings Taken with AC Set Tester, AC Line, 115 Volts

Tube		Filament Voltage	Plate Voltage	Grid Voltage	Screen Grid Voltage	Cathode Voltage	Plate Milliamperes
Type	Circuit						
24	1st R. F.	2.2	225	2.8	82.0	10	3.0
24	2d R. F.	2.2	130	2.8	82.0	10	3.0
24	Detector	2.2	30	1.0	2.0	8	.....
27	1st Audio	2.3	115	.....	.....	7	3.0
71-A	{2d Audio}	4.8	190	43.0	.....	.....	18.0
71-A	{Push-Pull}	4.8	190	43.0	.....	.....	18.0
80	Rectifier	4.8	.....	.....	.....	.....	36/Plate

All readings taken with antenna disconnected and ground on.  
Volume Control on full

Table 4—Condenser Data  
(Other Than Filter Condenser)

Table 2—Power Transformer Voltages

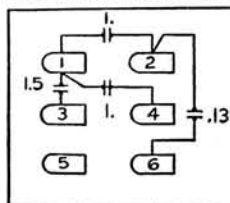
Terminals	A. C. Volts	
1-2	2.5	Heaters of 24 and 27 Tubes
3-4	105 to 125	Primary
7-8	5.0	Filament of 71-A Tubes
5	.....	Center Tap of 7-8
10-11	5.0	Filament of 80 Tube
9-12	650	Plates of 80 Tube
6	.....	Center Tap of 9-12 and 1-2

No. on Figs.	Capacity MFD
(11) (17)	.00025
(20)	.01
(8) (7) (23)	.05
(9)	.05 with 250-ohm resistor winding
(15)	.25 (two sections)
(14)	.5

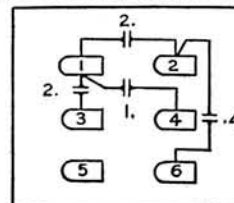
Table 3—Resistor Data

No. on Figs.	Terminal	Resistance	Color
(20)	(1-2)	{ 1,400	Long Tubular
	(2-3)	{ 187	
	(3-4)	{ 75	
	(5-6)	{ 2,470	
	(6-7)	{ 975	
(10)		33,000	Blue
(13)		50,000	Orange
(19)		100,000	Silver Gray
(16)		250,000	White
(18)-(21)		500,000	Battleship Gray

Model 20—Filter Condenser—Part No. 4235

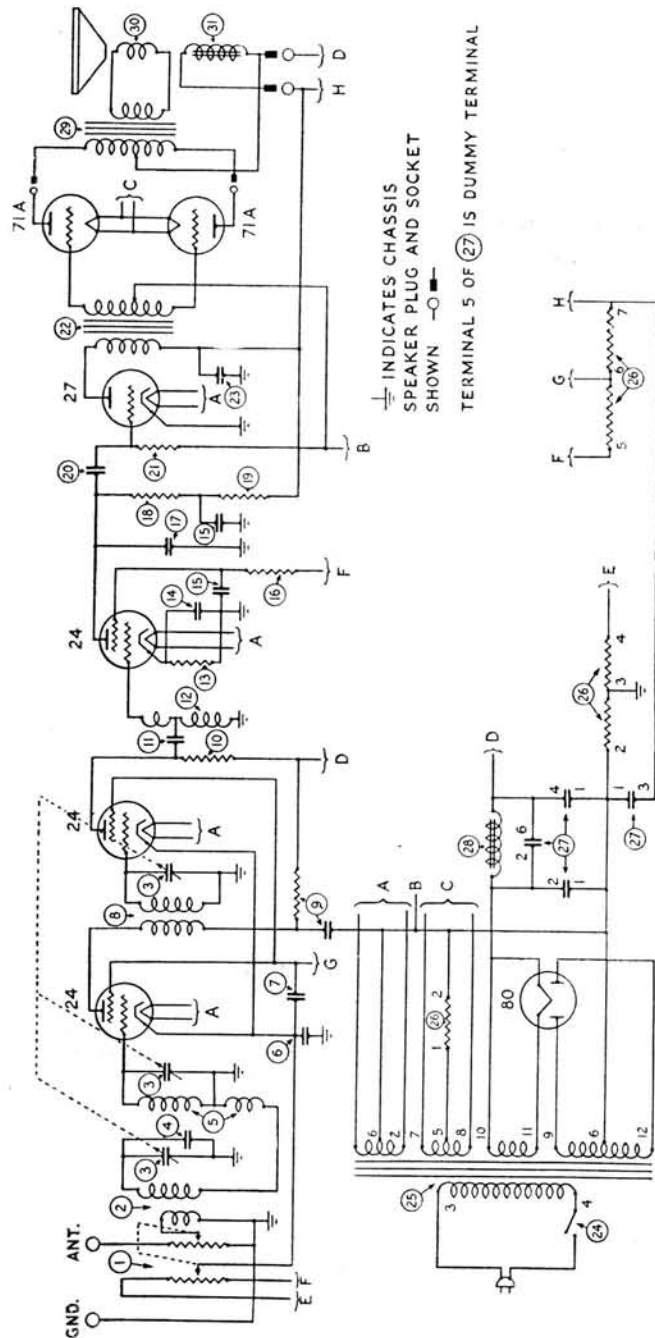


Model 20-A—Filter Condenser—Part No. 4269



After the first few samples were manufactured, a second compensating condenser was added in parallel with the second section of the tuning condenser.





Philco Model 20 Receiver Wiring Diagram.

## What is the Best Radio ?

By **GORDON BIRREL**  
Merchandising Expert



**GORDON BIRREL**  
Merchandising  
Expert

If you ask an automobile expert the question, "What is the best car on the market?"—he will probably reply something like this: "It all depends on what you mean by 'best.' Do you want to take into consideration the original cost, the upkeep or mileage? Do you mean a car that will last a lifetime; one that is easiest to drive in traffic, or one that rides the easiest on long trips?" And he would probably go on asking questions just like that. The question would be as hard to answer as the one I frequently hear—"What is the best Radio?"

The "best Radio" depends entirely on the use you intend to make of it. What is best in Radio must depend entirely upon the viewpoint of the person who will finally use it.

Ten years ago, almost anything that would bring in signals—had a number of controls on the front and looked more or less complicated could be sold as a Radio. However, our public of today is becoming more and more Radio-wise. One thing that they demand in a Radio is simplicity of operation. Therefore, this feature should be kept in mind as one of the most important items with which we must contend in deciding what is the best Radio.

The Radio fan has never been able to pull himself away from the thrill that comes of receiving programs from a distant point. Although you will find some who are quite content with local programs you'll still find a majority of those who like their "DX." This is the chief reason for the rising popularity of the super-heterodyne of modern construction.

Then comes the question of compactness. The overnight prestige established by the Midgets makes them worthy of careful consideration and study.

The importance of these two Radio types or features has been proven by the fact that super-heterodyne in what might be termed Midget cabinets have been placed on the market.

This brings us to the consideration of Radio as furniture in the home. Great strides have been made by the cabinet manufacturers to develop their product to a point where it would fit into almost any scheme of decoration. Colors have been used. Period furniture designs have been embodied in the Radio cabinets. Their design has been made to a point where there is a special model for the den—one for the

living room—one for the nursery.

Now, what about the operating current supply? Of course, by far the majority of sets being sold now-a-days are for A.C. operation—but there are still millions of homes in America which are not wired for electric current and in purchasing sets for re-sale in such a territory—you must consider this fact carefully and purchase a set which, while battery operated, is up-to-date in its other features and will operate from battery current with results equal to the A.C. operated receiver in another location.

And while discussing the matter of current supply it is well also to remember that there are still some sections of cities in this country which operate on D.C. current and it will be years before it will be changed to A.C. And even in localities where A.C. is used—consideration must be given to the fact that in some cases the current will be 50 cycles or 25 cycles, although in the majority of cases it is standard 60 cycle.

Most Radio sets today have provision for phonograph pick-up. This idea is mighty handy, but it must be remembered that they are of absolutely no use unless you have a phonograph and also an electric pick-up for the phonograph. The purpose of these connections on a Radio set is merely to make it convenient for you to play a phonograph record and amplify it through the Radio set. This gives rise to the question "What about purchasing combination sets with a built-in phonograph?"

Possibly a good idea—but then—what if the person already has a phonograph? He wouldn't want two; and, even though he doesn't have a phonograph—does he really want one after he gets his Radio?

It all boils itself down to a problem of making a careful analysis of what the final owner of the set will require

(Please turn to page 13)

# and now — RADIO AIDS IN CRIME PREVENTION

**T**HE Radio transmitting station of the St. Louis Police Department went 'on the air' on August 12, 1930, and has been in continuous operation on a twenty-four hour schedule since that time. The results obtained thus far have been highly gratifying and a large percentage of our arrests were made as a result of calls sent out in this manner.

"While it is true that a number of these arrests would have been made without the assistance of Radio, there were a number of cases wherein the perpetrators of the offense would have certainly escaped if a slower means of communication had been used.

"The utility of a police radio system is primarily the reduction in time required to transmit orders to police officers nearest the scene of a reported crime or disturbance. Formerly such requests for police assistance would be telephoned in to either the nearest police station, if the victim knew its location, or else to police headquarters.

"In the latter event the call had to be relayed to the proper district station with instructions to send a police car to the location of the disturbance. Valuable time would be lost during this repetition of the call and very often the place where police assistance was required would be a considerable distance away from the station. In the case of hold-ups the bandits invariably make their escape in an automobile so that a delay of a minute or less frequently means the difference between apprehension and escape.

"Through the cooperation of the newspapers and the local telephone company, the public has been instructed to merely ask the telephone operator for 'police' and they are connected to the Radio dispatcher. The latter can then relay the information to the police car nearest the scene of the crime or disturbance.

"Additional information can also be transmitted to the car while on its way, in the event that such information reaches the dispatcher after the initial order has been transmitted. Thus, descriptions of the bandits or the license

By **JOSEPH A. GERK, Chief of Police**  
St. Louis, Missouri

Another use for Radio—helping track down criminals. This article, telling how criminals are apprehended by means of Radio, is told by the Chief of the famous police force of St. Louis, Missouri.

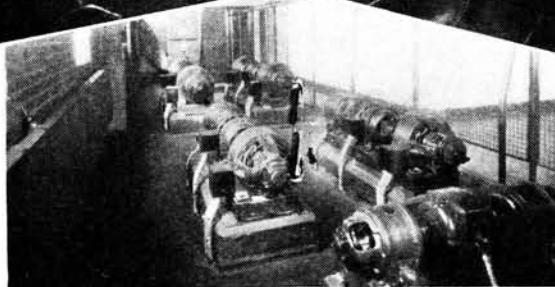
Picture at the right. Control room of KGPC, where the man hunt begins.



Below: Driver's seat of squad car, showing dashboard with Radio installation and dispatches.



Above: Rear seat of squad car. Note special arrangements for batteries to operate Radio.



Center: Joseph A. Gerke, Chief of Police, of St. Louis, Missouri, the man who catches criminals with Radio. Left—KGPC's power plant.

number and make of the car used in the get-away can be given, if subsequently obtained, so that the occupants of the

police car will be on the lookout for a car or persons of that description while on their way to the scene.

"Meanwhile all other police cars have received the same information, which greatly reduces the chance of a successful escape. This rapid dissemination of information greatly increases the effectiveness of the police department and keeps the officers assigned to Radio equipped cars on their toes, so to speak.

"There are about eighty police cars equipped with receiving sets at the present time, most of which are on duty twenty-four hours a day. This number is to be increased to about one hundred in the near future. The receiving sets are locked in tune to the transmitting station so that there is no temptation on the part of the car occupants to while away what might otherwise be a dull afternoon or evening by listening to broadcast programs.

"In addition to the cars, receiving sets are located in all the district police stations so that the commanding officers are at all times instantly informed as to occurrences in their districts.

"There seems to be good evidence that the knowledge of the speed and effectiveness of the police radio system is discouraging a number of criminally minded, causing them to curtail their activities to an appreciable extent."

National Radio News thanks Captain Gerke for his article on the Radio Activities of the St. Louis Police Department.

Progressive police departments all over the country, in their effort to protect the citizens of their city or state, by the installation of police Radio systems, are directly and indirectly aiding the Radio Industry.

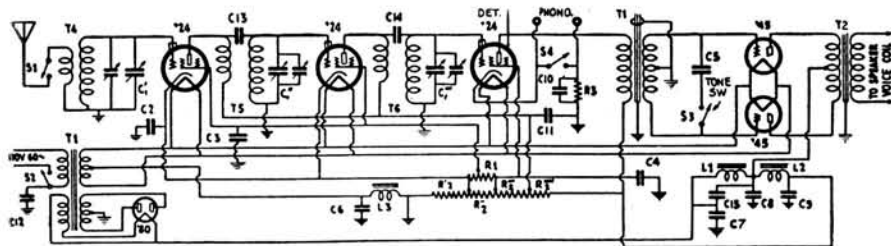
They aid directly by the purchase, installation and maintenance of a transmitter and receiving equipment in large quantities. And by their constant drive against criminals they discourage the activities of crime in their section—drive it to a less well protected community, which in turn—in self-defense must install a police Radio, thus aiding the Radio Industry indirectly.

A demand will continue until all cities are equipped or until criminals seek less hazardous occupations.

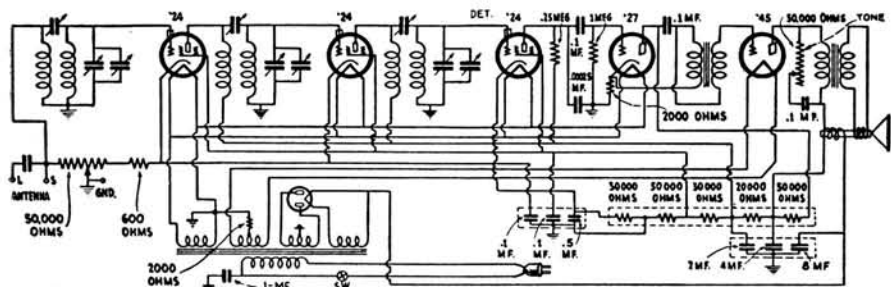




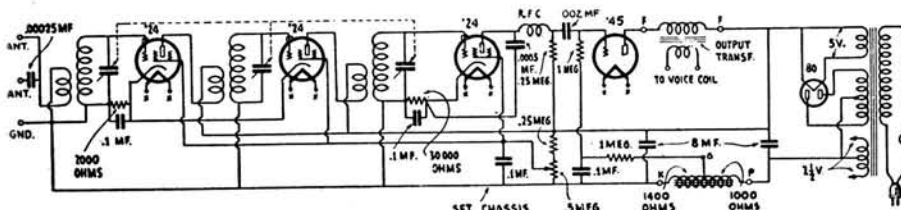
WIRING DIAGRAMS OF MIDGETS



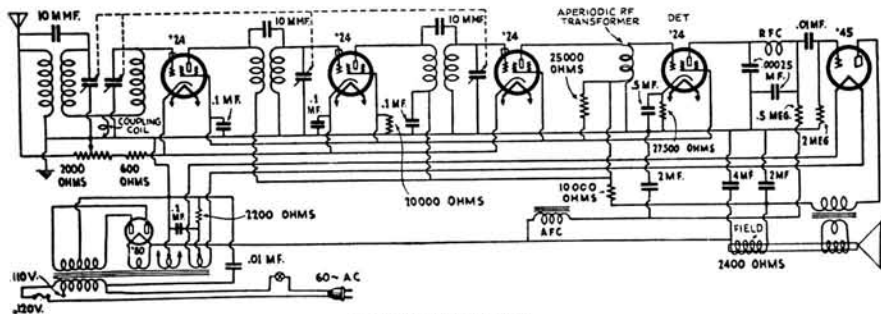
Clarion, Jr., Model 60.



Remler Cameo, Model 14.



Melorad "Cathedral Tone."



Radlette, Model 14F.

What Is the Best Radio ?

(Continued from page 7)

or expect of it, regardless of whether you yourself will be the owner or whether the set is purchased for re-sale. The more careful the analysis the more opportunity you will have to turn over your stock rapidly—and in this day and age—stock turn-over—the amount of times that you can use your money in the course of a year—is one of the biggest items to contend with in business.

REMLER NO LONGER HANDLES PARTS OR KITS

The Remler Division of Gray & Danielson Manufacturing Company, San Francisco, California, announces that due to a fire which destroyed their plant some time ago, they have discontinued the manufacture and sale of kits and parts and now confine their activities to the manufacture of complete sets. Do not write them for kits or parts as they are not in a position to fill the orders.

SMILE

It costs nothing, but creates much. It happens in a flash and the memory sometimes lasts forever.

Up in Wardner, Idaho, they learn about other things along with Radio. If they get tired of store-bought food—down comes the old 30-30 rifle off the hook—in goes a clip of shells—a tramp through the woods—then "what a dinner," or we should say "several dinners."



Student Leonard L. Milke, at the left, and his party sent us this picture after a very successful day in the woods.

The Office Pup says—



WHEN a department store in Brooklyn can sell 725 Radio sets in one day! AND WHEN the Philco factory reports the highest weekly shipping and sales of its history!

AND WHEN all previous records for sales and number of employees are broken at the Stromberg Carlson plant!

Radio business must be good.

Notice to Canadian Students

Student Joseph Clarke wants to help any Canadian students who are in the market for Radio tubes.

Mr. Clarke will sell N. R. I. students in Canada, tubes at list price, less 40%. This plan will save paying the duty on incoming shipments on purchase made from firms in the U. S. A.

These tubes carry an unconditional 30-day guarantee. Mr. Clarke says, orders sent to him will be shipped within 24 hours. Shipment will be made by Canadian National Express, or Canadian Pacific Express. Charges will be prepaid on orders of more than three tubes.

Mr. Clarke is a student of the N. R. I., and has offered to supply these tubes to N. R. I. men, solely through his desire to cooperate.

All orders and correspondence should be taken up direct with Mr. Clarke. His address is: Mr. Joseph Clarke, 608 Church St., Toronto, Ontario, Canada.

The Radio business has been responsible for a turn-over of approximately \$3,500,000 in capital during the past ten years.

## Michigan State Police Installs Powerful Radio Transmitter

(Continued from page 3)

on WRDS, while the car receivers are operated only when on patrol duty or when bound for the scene of a crime. Operators are on watch twenty-four

hours each day, so that the station may be used at any time. For calls that come in requiring immediate broadcasting, there is provided a remote control apparatus for the telephone operator in the barracks adjoining the station. The operator simply pushes a switch button and waits for the green light to come on before speaking into the microphone. This operation requires from ten to fifteen seconds as the transmitter stays "warmed up" continually. For calls of a less important nature, the telephone operator calls the radio station on the telephone and the radio operator broadcasts the call directly from the station.

The transmitter comprises five panels for the transmitting apparatus proper, together with a speech panel alongside the operator. No motor-generators are employed, since the equipment is entirely A.C. operated through the medium of mercury vapor rectifiers for the high-

voltage B and C supplies, and A.C. on the filaments. The equipment is arranged for remote or local control, and progressive switching is employed so that the various functions are automatically brought about in the proper order. Specially designed DeForest water-cooled tubes do away with the usual elaborate water-cooling system.

It is interesting to note that the tubes are kept burning at half temperature when not transmitting, to provide prompt service at all times. The progressive switching system begins with the filaments at half temperature, followed by turning the filaments on

full, then applying plate voltage on the power apparatus.

An automatic recorder serves to keep track of the number of hours the station is in operation, as well as the number of calls handled.

The equipment comprises one oscillator, three intermediate power amplifier stages, and a power amplifier. The second radio frequency stage is 100% modulated for maximum effectiveness. The transmitter can be tuned from 1500 to 2500 kilocycles. Thirty DeForest tubes, ranging from the 427 or A.C. detector-amplifier tube to the 5-kilowatt water-cooled tube, are employed for the complete transmitting and receiving equipment.



DeForest, 5000 watt transmitter at Michigan State Police Barracks, East Lansing, Michigan.

## Making The National Radio News Better

You'll notice several changes in this issue. First there's our new cover, designed to make the News more attractive, a book you'll want to keep always for reference. Second, as a trial feature we are including a "contents" list, listing the items of importance and chief interest, to make the News more valuable for reference.

This "contents" list feature will be tried for several months. If you fellows

think it's useful, we'll make it a permanent feature.

A word of explanation about the picture on this month's cover.

The picture shows one of the Radio equipped squad cars of the Michigan State police, with its crew of determined criminal hunters. Thousands of such Radio equipped cars; hundreds of police transmitters, are creating a demand for trained Radio men for police-radio work.



### NOISY SPEAKERS

"This may help some of the gang, Mr. Smith. I ran across a dynamic speaker which had a terrible buzz, noticeable on certain notes of the musical scale. It finally turned out to be a seam in the cone which had come unglued. Watch out for the seams in speakers which are noisy." R. B. White, Coldwater, N. Y.

### SERVICE WHERE OTHERS FAIL

"I am doing fine in the servicing game. I have passed out some of the business cards which you sent me, though not many of them and am busy repairing and servicing sets—about all of my spare time and do not need to go after the business. I have never asked for but one job and that was a real one. Knowing that several fellows had worked on the set and obtained no results, I asked for the job of putting it in shape to his satisfaction or no charge of any kind. I got it to working; the customer said it was better than it had ever been.

"I cannot say enough for the N. E. I. for the course and wonderful service you have given me." J. W. Goodman, Altoona, Pennsylvania.

### AN ADVERTISING IDEA

"I've made an arrangement with a local news dealer, to put one of my letterheads in each copy of the Radio Magazines he has for sale. On the letterhead is written 'YOUR RADIO SERVICE IS SOLICITED.' Naturally this lands my ad in the home of the Radio owner—and he sees it when he is most interested in Radio—that is, when he opens his Radio magazine. This stunt has been paying dividends." K. W. Griffith, Little Rock, Arkansas.

### HILLS LIKES "THE NEWS"

"I received my copy of National Radio News today, and I want you to know that I look forward to receiving each issue. The up-to-the-minute service sheets on the different Radios make 'The News' a very valuable help.

"Anyone who is not keeping his copies is simply throwing away good money, because they contain valuable information that would cost a lot of money if purchased separately somewhere." Roy Hills, Regina, Sask., Canada.

### HELPS EX-RAILROAD MAN

"When I started your course I was on the railroad, making \$150 to \$200 a month. This seemed like good money.

"I had been studying your course for about eight or nine months. It was a good thing I was prepared, because I was laid off after being with the railroad seven years.

"I made up my mind to start in Radio work. I made good from the start.

"I am doing service work for Montgomery Ward Company with a good business of my own. My income runs \$30 to \$80 per week with an average of about \$50 per week." Guy Woodard, Battle Creek, Michigan.

"I have been working with the R. C. A. Victor Company as Radio repairman for the past nine weeks. My knowledge of Radio from your course got me the job." A. Atkinson, Philadelphia, Pa.

Remember, boys, "The Mailbag" is your page for exchanging ideas. There are some good kinks and suggestions in this issue. Read all of them and help by sending in your ideas.—Editor.

### INCREASING SENSITIVITY

"I want to give N. E. I. students my suggestion for increasing sensitivity in any Radio that has a choke in the first stage.

"For some time I wanted to find some way to give the low frequency waves a boost on the earlier model receivers. I set about using a paper cylinder, one inch in diameter, I wrapped and cemented one turn or layer of ordinary camera film. On this film I wound 100 turns of enameled wire about 34 or 36 size, doped the ends fast and slipped the coil off the form. Then I shunted the coil across the antenna and ground posts of the receiver and was somewhat surprised to hear stations at the high end of the dial bounce in like the addition of another stage.

"Several coils of the same size wire but with different insulation were tried and again came a surprise. The effect was opposite. I have since discovered that if the choke coil is replaced with a thin spool of 393 turns size 30 or smaller and tapped at 107 for the antenna lug, the inner end to ground and the outer end to grid, the over-all gain is increased to the extent that the "gang" will have to be staggered or the grid resistance increased.

"While I have tried this coil on several sets, I have not tried it on any other antenna than the one at the shop." Oscar Prescott, Vinton, Iowa.

### \$132.00 IN SPARE TIME AT 12TH LESSON

"My present occupation only gives me every other evening at home. However, with that little time, I have all the Radio work that I can possibly handle and could get more if I had time to take care of it. I have just completed the twelfth lesson but nevertheless I am in on the money. Just added up the business that I have had since I enrolled in your wonderful course. My earnings since enrolling are \$132.00. This is way over and above the cost of your course and I want to state right now that I am more than grateful for what your course has already done for me." J. W. Worick, Garrett, Ind.

### SERVICING CROSLEYS

"I would like to give the other fellows a hint on servicing Crosley Show Box, Jewel Box, etc., which are 'dead.' These sets have been out long enough now for the by-pass condensers to have gone bad.

"When one of these sets is found inoperative, with a blue rectifier tube, or low plate wattage on any stage, the best bet is a broken down by-pass condenser between that stage and ground. If you get a spark when you connect the ground wire to the set, replace the capacity between the A.C. line and ground (this goes for the new models too)." C. L. Cromer.

"I am mighty proud of my Junior Radio-Trician card, and I am glad that you have taken such an interest in me, the same as you take in all your students. And boy!—those practical units cannot be beat. When I had completed my seventh lesson, I bought and repaired a Radio, sold it and doubled my money. I surely could not have made that profit if it hadn't been for the N. E. I. course.

"I have several jobs in view, and I know that I am going to make Radio a real paying proposition." C. A. Hixley, St. Louis, Mo.