$5,000 a Year as a Radio Engineer

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 an advertisement in a magazine, and I 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 good local 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.

Bennett's Own Story of His Success
By Earl R. Bennett

"When I started your course I had only a grammar school education—and 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 $600 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."
THE CHIEF TALKS ABOUT POLICE RADIO

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 driving 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 it 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 WDRS. 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.

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

(Please turn to page 4)
National Radio News

Published monthly in the interest of N. R. I. students and graduates, by the NATIONAL RADIO INSTITUTE
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E. R. HAAS, Editor.
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.

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.

Phileo 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

<table>
<thead>
<tr>
<th>Tube</th>
<th>Type</th>
<th>Circuit</th>
<th>Filament Voltage</th>
<th>Plate Voltage</th>
<th>Grid Voltage</th>
<th>Screen Grid Voltage</th>
<th>Plate Milliamperes</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>1st B. F.</td>
<td>2A</td>
<td>2.2</td>
<td>225</td>
<td>2.8</td>
<td>82.0</td>
<td>10</td>
</tr>
<tr>
<td>24</td>
<td>2d B. F.</td>
<td>2A</td>
<td>2.2</td>
<td>130</td>
<td>2.8</td>
<td>82.0</td>
<td>10</td>
</tr>
<tr>
<td>24</td>
<td>Detector</td>
<td>2A</td>
<td>2.2</td>
<td>20</td>
<td>1.0</td>
<td>5.5</td>
<td>10</td>
</tr>
<tr>
<td>27</td>
<td>1st Audio</td>
<td>2A</td>
<td>2.3</td>
<td>115</td>
<td>1.0</td>
<td>2.0</td>
<td>7</td>
</tr>
<tr>
<td>70-A</td>
<td>2d Audio</td>
<td>2A</td>
<td>2.4</td>
<td>190</td>
<td>4.0</td>
<td>1.4</td>
<td>7</td>
</tr>
<tr>
<td>70-A</td>
<td>Push/Pull</td>
<td>2A</td>
<td>4.8</td>
<td>190</td>
<td>4.0</td>
<td>1.4</td>
<td>7</td>
</tr>
<tr>
<td>80</td>
<td>Rectifier</td>
<td>.5</td>
<td>4.8</td>
<td>190</td>
<td>4.0</td>
<td>1.4</td>
<td>7</td>
</tr>
</tbody>
</table>

Table 2—Power Transformer Voltages

<table>
<thead>
<tr>
<th>Terminals</th>
<th>A. C. Volts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>2.5</td>
</tr>
<tr>
<td>3-4</td>
<td>100-125</td>
</tr>
<tr>
<td>7-8</td>
<td>500</td>
</tr>
<tr>
<td>9-10</td>
<td>500</td>
</tr>
<tr>
<td>11-12</td>
<td>500</td>
</tr>
<tr>
<td>1-2</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Heaters of 24 and 27 Tubes
Primary Transformer of 70-A Tubes
Center Tap of 1-8 Tube
Filament of 50-Tube
Plates of 50-Tube
Center Tap of 1-2 and 1-2

Table 3—Resistor Data

<table>
<thead>
<tr>
<th>No. on Figs. 3</th>
<th>Terminal</th>
<th>Resistance</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>1-2</td>
<td>1,400</td>
<td>Long Tubular</td>
</tr>
<tr>
<td>3-4</td>
<td>1-2</td>
<td>1,175</td>
<td>Blue</td>
</tr>
<tr>
<td>5-7</td>
<td>1-2</td>
<td>1,050</td>
<td>Orange</td>
</tr>
<tr>
<td>6-7</td>
<td>1-2</td>
<td>1,000</td>
<td>Silver Gray</td>
</tr>
<tr>
<td>7-13</td>
<td>1-2</td>
<td>750</td>
<td>White</td>
</tr>
<tr>
<td>10-11</td>
<td>1-2</td>
<td>750</td>
<td>Battleship Gray</td>
</tr>
</tbody>
</table>

Table 4—Condenser Data

<table>
<thead>
<tr>
<th>No. on Figs. 3</th>
<th>Capacity</th>
<th>MFD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>0.0025</td>
<td></td>
</tr>
<tr>
<td>3-4</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>10-11</td>
<td>0.05 with 250-ohm resistor winding</td>
<td></td>
</tr>
</tbody>
</table>

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

By 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, upkeep or mileage? Do you mean a car that will last a lifetime; one that is easiest to take care of; 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 might 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 living room—one for the nursery.

Now, what about the operating current supply? Of course, by far the majority of sets being sold nowadays 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 sale in such a territory—you must consider this factor 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 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

By JOSEPH A. Gerk, Chief of Police
St. Louis, Missouri

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

"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 Radios 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 avoid 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 Gerk 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 transmittor and receiving equipment in large quantities, thereby driving the criminals 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 adding the Radio Industry indirectly.

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

By S. M. ARMSTRONG, Director
Student Service

IT'S quite a ways back now... but most every one still remembers the story of Carpentier's fight with Dempsey. Newspapers all over the world printed column after column about this great championship match for many weeks before the fight actually took place. It got the greatest "smoking-up"—the greatest publicity of any fight we can remember. The "battle of the century" they called it—the most important match in years.

The famous Frenchman, Carpentier, posed for hundreds of photographs, smiled gallantly at hundreds of admirers. Then, one day over in New Jersey, he stepped in the same prize ring with Jack Dempsey.

What happened has long since gone down in ring history. Carpentier had his chance to become champion of the world, and Carpentier lost.

The plain fact that he was defeated doesn't mean a great deal, but the manner of his defeat holds a real lesson for every one of us.

It was in the very first round, you will remember, that Carpentier got his opening. Carpentier's reported speed and swiftness were well in evidence, and he out-maneuvered the champion—caught him wide-open and unprotected. Then with every ounce of force he could muster, the Frenchman drove his right square to the tip of Dempsey's jaw.

What happened? Instead of dropping like a fallen log, Dempsey merely shook his head and continued. Carpentier was aghast, already defeated long before Dempsey crashed over that pile-driver blow that actually sent the Frenchman to the floor for the count.

Monsieur Carpentier simply didn't have enough up his sleeve. And Carpentier knew it from the minute he saw Dempsey shake off the most powerful blow that he could deliver.

Every one of us must go up against a number of obstacles in this life, and when we do, just one of two things happens.

Either we have trained ourselves into good enough shape to whip whatever is opposing us, or haven't.

And if we haven't, we know the feeling that Carpentier had in that first round, the feeling of giving all you have and finding that it isn't enough—the feeling of helplessness, of standing at the mercy of opposition, unable to do more than to wait hopelessly until we get the knock-out.

This is the problem any man has to face in life is that of his career—his job, his income, and his future. All physical conflicts in the world can't compare with the one big mental one. It's the most important, because our success at it brings happiness, independence, comfort, a share of leisure—all the good things of life. And a failure loses all these things that make life worth living.

What could be more important than that we get in our best fighting trim, that we train to the minute for a match that means so much.

If we train, if we are prepared, we won't feel our wallop bounce off because they don't have the "kick" that tells. Let's know each one will count; that we're set to deliver the goods.

That's why training is necessary. That's why you must study. That's why study comes before recreation. It all means that you are getting ready to deliver that punch in the pinch and that the punch will not fail.

LOST!

$1—$5—$10

N. R. I. men lose good, spendable DOLLARS every month—because they mail cash in unregistered letters.

Do YOU ever do this?

Why take a chance of throwing away money that you work hard to earn?

You can send money safely by check—by money order—by registered mail.

So—why take a chance?

Whenever you send money, make sure that you are PROTECTED. Send a check—
a money order—or register your letter.

And, of course, BE CERTAIN to plainly write your name—your address, and your student number on everything you send.
WIRING DIAGRAMS OF MIDGETS

Clarion, Jr., Model 69.

Remler Cames, 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.”

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 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.

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

The Radio business has been responsible for a turn-over of approximately $3,500,000,000 in capital during the past ten years.
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 box you will 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. Dozens of these Radio equipped cars, hundreds of course transmitters, are creating a demand for trained Radio men for radio police work.

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. R. 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 older model receivers. I set about using one a paper cylinder, one inch in diameter, I wrapped and rolled one of the antenna wires, observing that I was slowly unrolled until the choke was fully wound. With this method, I was surprised to hear stations at the high end of the dial bounce in like the addition of another station."

"General coils of the same size wire as was used in the 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 coil of 303 turns sized 30 or smaller and tapped at 107 for the antenna wind, the inner end left to ground and the outer end to grid, the over-all gain is increased to the extent that the "cane" will have to be staggered or the grid resistance increased.

"If you 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 feel that I could possibly have and could get more if I had time to take some of your wonderful course."

"Hills, under 12th lesson but nevertheless I am in on the money. Just added the business that I have been looking for a long time to a new business."

HILLS LIKES "THE NEWS"

"I received your copy of National Radio News today, and I want you to know that I look forward to every copy of it. The very first minute service sheets that the different Radio makes "The News" is very valuable help."—Roy Coyk, Regina, Sask., Canada.

HELPS EX-RAILROAD MAN

"When I started your course I was on the railroad, making $130 to $135 a month. This seemed like good money."

"I had been studying your course for about eight of nine months. It was the best thing I had ever done, because I was laid off after being with the railroad secretary."—Gus Vague, Maple Creek, Michigan.

"I have been working with the R. C. A. Victor Company as Radio repairman for the past nine weeks. I send your Radio from your coast to the job."—A. Atkinson, Philadelphia, Pa.

SERCING CROSEY L.

"I would like to give the following hint on selecting the good Radio, 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 voltage on any stage, the best bet is a broken down by-pass condenser between that stage and ground."

"It is easy mark when you connect the ground wire to the set, replace the capacity between the A.C. line and ground (this does not work for AC and DC circuits)."

"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 hope these practical units can lead to great results. 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. R. I. course."—A. Atkinson.

"I have several jobs in view, and I know that I am going to make Radio my "living proposition."—C. A. Herbg, St. Louis, Mo.