"Radio in Aviation"  
NUMBER

Read in this issue—

A. ATWATER KENT  
WALTER C. HINTON

and other writers on interesting Radio subjects
Contest Winners!

Each of the following N. R. I. men won a $10.00 cash prize in the N. R. I. prize contest announced in the March issue of the National Radio News. The prize winners are:

Mr. Raymond D. Myers, Box 15, Idaho, Para.;
Mr. O. G. Baker, Lincoln, New York;
Mr. Edgar A. Mathias, 1422 North
Haugh St., Indianapolis, Ind.;
Mr. E. C. Whine, 1232 Kenzie St., Elkhart,
Indiana.

There were a considerable number of entries—a great many of them were very
good, and it was a difficult task for the
prize committee to select the winners.
The prize committee wants to thank
each and every one of you N. R. I. men
who submitted your ideas in this con-
test. You have shown some mighty fine
interest and a good spirit, and we only
wish that we could give every man a
first prize.

"Letting well enough alone" is a foolish motto
in the life of a man who wants to get ahead.
In the first place, you can't "let it alone" if you
can do better. No matter how well you are doing,
by doing better. Those who say "why do this
when the fool is enjoying the little he has, I will
hunt for more."

"The energetic American ought to turn this
proverb upside down and say "The fool who
does nothing but think he is doing something is
a fool.

Arthur Brisbane.

National Radio News
Now in Libraries

N. R. I. students may be interested
in knowing that the National Radio
News has been placed in a number of the
leading libraries throughout the country.
That means that the News is being read
by a larger number of people than ever
before—the N. R. I. name is being adver-
tised everywhere and that N. R. I. Radio-
Trians are getting a lot of valuable
publicity. The comments of some of the
librarians follow:

We are interested in receiving the current
issues of the National Radio News—also we would
like to have a complete file to bind for preserva-
tion in our reference collection.
—New York City Public Library.

Our Electrical Engineering Department and a
great many others of the students and faculty
here will be interested in the National Radio News.
—University of Missouri, School of Mines
and Metallurgy Library.

We are very glad to add the National Radio
News to our reading-room periodicals.
—Hartford, Conn., Public Library.

The National Radio News will be of real help
in our library. Thank you very much for it.
—Hancock, New Hampshire, Library.

We hope it will be possible for you to send us
all the numbers of the National Radio News as
we want to make them available to our readers.
—Birmingham, Alabama, Public Library.

Can You Answer These?

How is Radio being applied to railroading? See page 10
Who is N. R. I.'s oldest student? See page 8
Who is often called the Henry Ford of Radio? See page 6
How important is Radio to Aviation? See page 4
How many workers does the world's largest
Radio plant employ? See page 7
Does it pay to size up your prospect? See page 13
How important is self-confidence? See page 9
What about the demand for battery operated sets? See page 13
What new Radio development has been made by the
Canadian National Railway? See page 14

Speaking of Radio progress—just 32 years ago this month, Mar-
coni had developed his Radio appar-
atus so that communication was
made between the shore and a ship
10 miles away! Comparisons be-
tween that and present day Radio
are useless. We would just like to
know what Radio will be like 32
years from now!—Editor.

Radio Sweeps Onward in Big Expansion

I like to look back about this
time each year over the splendid
Radio has made.

I look back and recall how
we discuss how
small and insignifi-
Radio was just a
few short
ago.

In making this comparison I get
some idea of how truly great and
significant the Radio field of tomorrow
will be.

When I first started in Radio, my
friends tried to discourage me. They
told me I could never get anywhere
with that apparatus—apparatus that
amounted to nothing more than a couple
of old Ford spark coils and a bundle of
wires. Thousands talked about my
"foolish ideas" to my back, but I am
mighty glad today that I stuck it out.

In fact, Radio has developed so rapidly
and has made such a wonderful record
and has been of such great influence
that even some of us pioneers in Radio hardly
dreamed 18 or 20 years ago that it would
be like this.

Over 250,000 people are employed in
Radio today. The annual turnover is
approximately $1,000,000,000.

But the Radio technique is not confined to
the narrower field in which some people
regard Radio today. It extends into
a number of fields-solving problems in
many lines of industry.

For instance, Radio is largely respon-
sible for the development of the talking
picture. It has practically made the
"movie business" over.

Then, it has given the phonograph indus-
try a new and improved means of rec-
cording and reproducing—completely
reviving the tide of music.

Then, there is wired wireless or the
transmission of Radio signals over tele-
phone, telegraph, electric light, and even
trolley lines. It has opened up a new era in
communication and remote control.

This is also expected to do a lot in solv-
ing some of television's problems.

Also in medicine and surgery, Radio
technique is playing an important role.

In prospecting for minerals and other
deposits, radio waves are being used to
e good advantage. In fact—approximately
one-half of the new oil wells discovered
last year were brought in by the use of the
Radio prospecting.

Perhaps, one of the biggest "outside fields" in
which Radio is being applied today is that of
Agriculture. The debt that Agriculture owes to
Radio is great. Without Radio, Agriculture would
be greatly hampered and progress would be slow.

But Radio has provided Agriculture with eyes and
ears. Radio is a big factor in its present develop-
ment and will be a still bigger factor in the
future.

With the aid of Radio beams, directional
finders, high-powered aircraft transmitters
and receivers, and aircraft altimeters that tell the
pilot exactly how far he is from the ground when
he is making dangerous landings in foggy weather
these and many other big developments in
Agriculture are due to Radio.

The opportunities for the Radio man are not to
be underestimated in this new field. Radio opera-
tors will be needed for his cabin planes. Some
of these jobs are being made right now with specially
equipped cabins for Radio operators. Then, there
will be a need for Radio men to handle the beam
on the airplane into the stratosphere where the
radio waves are always in the air. In all, it seems
that Radio technique has just scratched the surface of the many possibilities
ahead and in the near future Radio principles will
be put to work in a number of new fields.

The man with thorough Radio training will find
an ever widening field of opportunity ahead of
him.

N. R. I. men can well be proud of the fact
that they are playing a part in this fascinating
drama of Radio's progress. Let's carry on—let's tackle
out with a new courage for there are even
bigger things ahead of us in Radio.

J. E. SMITH.
Radio Essential in Aviation

By LIEUT. WALTER C. HINTON
(Pilot of First Plane to Cross Atlantic.—Ed.)

LIKE other military airplane pilots, I was put through an extensive course in the fundamentals of radio telegraphy. I learned to send and receive code with sufficient speed and accuracy to qualify me for an aviator.

From that time on it proved to be of ever increasing importance to me in my flying operations. Radio was an essential part of every important flight I ever made and it is going to be just as essential to every flight as time goes on.

After completing my training as a Naval Aviator I was assigned to duty as pilot and instructor of twin-motorized planes. These planes were large enough to carry a full crew—in addition to an assistant-pilot and mechanic, there was a radio operator aboard.

In May, 1919, the U. S. Navy Seaplane NC-4 made the first such round-the-world flight, consisting of the Atlantic Ocean. Ensign H. C. Rodd, U. S. N., was our radio man and I was assigned to be the assistant-pilot and instructor.

All during the flight from Rockaway Beach, New York, to Plymouth, England, we were in constant radio communication with the Navy Department in Washington, Naval as well as civilian and radio compass stations. This radio communication was of great value to us during this flight, and was a good check on our navigation. You must remember that this work was done ten years ago, when the vacuum tube was still a new, experimental device, and the present day circuits and methods of shielding were unknown. The men who planned our radio and the men who worked on the radio equipment at home did a wonderful job.

Thomas S. McCaleb, our radio man, built this set right there in the Amazon Jungle and operated it successfully and consistently every day, down there on the Amazon, where radio communications are extremely hard to effect.

"Mac knew his stuff." When a man makes a real success of a thing, as he did with our radio communication, and as he did later when he designed and installed the radio communication equipment for the Liberian Government in Africa, you can almost say he will say that the man was a genius.

Mac is no genius—he just loves his work and puts his mind on it.

After struggling up the Amazon River all day in a canoe, on the stern of which (Continued on page 8)

The students' mailbag

"I am now connected with the Varney Airlines, and I am contemplating accepting a job as co-pilot for some radio work, for a salary around $1000 a month. So I want to brush up on short-wave operation."

William Penn, e/o Varney Airlines, Airport, Salt River City, Idaho.

"I have been up to my neck in servicing jobs for the past two weeks—mostly receivers. The electric sets seem to give me the most trouble because of fine wave fluctuations thereby blowing tubes. In these two weeks I have increased my weekly bill about twenty dollars. My jobs have all been very successful."

Clarence E. Scholz, 410 Second Ave., Buffalo, New York.

"I made about $65 or $70 in the last 10 days here—not so bad for a small town." J. W. McGill, 97 Gray Street, Dennis, Ohio.

"I am doing all the radio repair work for the Yale Radio and Electric Co. They wanted a man that could put out the work, so I showed the Manager my Radio-Tronic card that you sent me and got the job. I am doing the repair work for a commission basis and charge about $30 a month." N. A. Collins, 117 South 8th St., Tulsa, Oklahoma.

"Albough I've finished only 7 lessons, I have made $73.00 in my spare time doing Radio servicing." E. L. Roeske, Box 55, L'Orignal, Ont., Canada.

"I was a brakeman on the P.R.R. for nine years, I decided my future was along the railroad. Since enrolling I have made over $400 and although I have not yet finished my course, I would not take back the knowledge I have gained. I secured a position as radio mechanic for a local firm here after I was only half through my course. I find that even after being put in full charge of the shop, I have gained quite an experience with a nice increase in salary." Robert E. Metcalf, 33 E. Pennsylvania Ave., Westbury, L. N. T. Y.

"In the past 6 months I have repaired nearly 150 sets both A.C. and direct current, netting me nearly $100."

Glen C. Sabin, 414 Main St., Street, Northampton, Mass.

"I am working as a wireless operator on S. S. Jalisco, a Chilean ship, on a part-time basis. I am making $22 a week, besides having all my expenses paid and rated as an officer." Major Derle Sorelli, c/o The Scindia Steam Navigation Co., Central Bank Building, Calcutta, India.

Most of these letters have come in from students for the past few weeks that it has been difficult to pick only a few to include in the mail bag this month. From every part of the country we have received letters from students telling of their success and just how much money they are picking up right now. These are the manuscripts of the summer months. What these men are doing—every N.R.E. man can do. Get your share of the Radio profits this summer and fall.

EDITOR.
My Faith in Radio's Future

By A. ATWATER KENT

My belief in the future of radio extends to every field of the industry, for improvement in one branch brings development in others. With better broadcasting facilities for both broadcasting and reception, there is greater satisfaction all around.

There are great things ahead for radio. My belief that the future of radio is even greater than past or present has caused me to expand our present manufacturing area from fifteen and one-half to thirty-two acres. This was necessary in order to meet the steadily mounting public demand for Atwater Kent sets and speakers.

In these days of modern, high-speed business, it is a real privilege for any man or woman to have a part in this romance of radio. Any form of entertaining is interesting and brings forth a thrilling response from every person connected with it in any role carrying responsibility.

Radio has all this thrill and, in addition, it has the appeal of adventure. Developments come so rapidly, new vistas open up so suddenly, the circle of activity widens so quickly, that every day brings a new opportunity for action.

There are never any dull days in radio. All groups—manufacturers, broadcasters, engineers studying the science of this new and mysterious means of communication, and the listeners, the lead speakers—all get a new thrill at almost every hour.

Those of us who are deeply immersed in the practical development of radio may perhaps fail to realize, at all times, what a great adventure we are engaged in. Personally, I am deeply grateful that circumstances have cast my life in this intensely interesting field. I enjoy it thoroughly. Indeed, speaking with complete candor, it gives me a tremendous happiness. I get a "big kick" out of it all, and I'm sure that everybody else in radio gets the same thing. Nothing has ever taken hold of the imagination of the people as radio has, and I'm proud to be able to play the part I have in its development and wider use.

I could not be happy doing the same thing every day in the same way, cut and dried to order. I like a game which puts me on my mettle, which makes me keep my wits about me, which forces me to meet and beat new problems.

When you are engaged in such an activity your life is full, your hours fly quickly, the zest of achievement is in your work and the reward of success is waiting for you just around the corner. Such work, I think, keeps one young and happy.

It seems trite, perhaps, to endeavor to list the advantages of radio, its influence on our life and customs, the manner in which it has become a part of every-day things in which we are all interested, the great extent to which it has become a vital influence for good in the social, cultural and educational life of the nation.

It is easier to vision what radio now means by trying to imagine the void that would be left were radio suddenly abolished. Just a moment's thought shows us that, having seized this new instrument with such avidity, its absence now would actually be looked upon as a national calamity. We could not again live without radio.

Radio has added a new side to our lives, just as did the airplane and the automobile. It has passed through much the same stages of development which they encountered and it will become permanent just as they have become established.

There are now better facilities for broadcasting and better facilities for hearing the word while programs on the air. There are millions more listeners and a greatly increased number of purposes for which radio is employed.

There is stabilization in every field of the industry.

During the last two years broadcast programs have become better and better, until now the millions of people constituting the great radio audience may hear the best in music at almost any hour. Of course, we shall have always trivial programs on the air, the same as we have varied entertainment on the screen, but there are better programs on the air now than ever before.

I have been delighted to note that there is a keen appreciation on the part of the public of the advantages and privileges it now enjoys from radio. The public realizes that this great growth has been made possible by the willingness of manufacturers, broadcasters and others to spend millions for development and promotion. Surveys of the industry indicate that the public is showing its appreciation in the most effective manner — by the purchase of radios in steadily increasing volume.

Buyers' demands greatly exceed production capacity of our plant, in spite of the fact that we were turning out construction of this sixteen-and-a-half acre addition.

It is a matter of pride with me to realize that this is the largest radio plant in the world and one of the large industrial plants in the United States. We have been able to change fast enough to do new things fast enough to solve new problems fast enough to lead or keep abreast of radio development.

This should be a source of gratification to all of us because radio has become, in its short life, one of the major industries of the country. In view of the amazing things that have come from radio in the last few years, he would be bold indeed who would undertake to predict the future. But assuredly all of us in the radio game have many more years of thrilling adventure and satisfaction in accomplishment ahead of us.

The Atwater Kent Radio factory is the world's largest. Thirty-two acres of floor space. Provides employment for 10,000 persons. This huge plant demonstrates Mr. Kent's faith in radio's future.
Student Keefer finds few things more fascinating than working with his Radio lessons and experimenting with his "high-power" set shown here.

**Hi!**

Radio-Amateur

Meet

Student Keefer

"DAD" KEEFER at 83 claims to be N.R.I's oldest student. And, believe me, he has more down-right pep and genuine interest in Radio than a lot of younger men I have seen in my day. Although student Keefer is old in years, he is young in spirit and in his Radio enthusiasm, and I call him one of my "boys" with the same feeling and interest as I do when speaking of any of my Radio students. Student Keefer served in the Civil War—I wonder how many other N. R. I. men can say that.

He now lives at Deer Lodge, Montana. He has a big 10-kw radio set, and from his knowledge of Radio stations all over the world it didn't take me long to recognize the fact that he is some DX bound when it comes to working his set. He keeps it in perfect repair and operation. He also has an amplifier and provides his neighbors with plenty of Radio entertainment. He says that he has done more to sell Radio sets in Deer Lodge, Montana, than anyone else knows of.

Dad Keefer's son is a chip off the old block—he has a real interest in Radio too. His son is connected with one of the large Radio manufacturers in Oakland, California.

Just recently student Keefer paid his second visit to the Institute. He makes it a point to stop by and see us every time he comes to Washington, and, believe me, we are mighty glad to have him and show him around the place—the same as we are glad to have any N.R.I. man with us who stops over in Washington.

"Dad" claims that the older he gets the greater his interest in Radio becomes. He said "you know I get out of sorts when I see how so many young people pass up Radio opportunities. Many of them don't realize just what is ahead in Radio. Why, if I were young again I would get into Radio 'right' with both feet and do the job up in a jiffy.' One doesn't have to be around student Keefer long to know that he is all "sold" on Radio and Radio's future. He doesn't hesitate to advise any man today to dig in on his course harder than ever, get everything he possibly can out of his training because there is a real chance ahead to cash in on it.

Not only does student Keefer claim to be the oldest N.R.I. student, but the oldest Radio student in the world pursuing a regular course of instruction. We are mighty glad that we can have such an enthusiastic "young man" in our student body as "Dad" Keefer.

**Radio Essential in Aviation**

(Continued from page 4)

He had fastened an automobile generator driven off the fly wheel of an out-board motor to charge his storage batteries, anyone would think that he had put in a full day.

Soon as evening camp was made Mac's real work started. He would send an Indian up a tall tree to fasten his portable aerial, and radio communications would commence.

Sometimes Captain Stevens and I would fly into the main camp and after the business messages were finished we would sit around the campfire in the jungle and listen to jazz music from (KDKA, short wave) Broadway, New York, 4000 miles away.

The only way that any expedition can find its way in unmapped territory is to guide itself by navigation, just the same as a ship at sea, with sextants, chronometers, celestial sights, and correct time. So, every night Mac had to set up his

**Self-Confidence Will Help You Crash Through**

By E. R. HAAS, Director

SELF-confidence is something of which very few of us have too much. It is one of those rock-bottom essentials to a big success in any line. It will pay you to try yourself—see how much self-confidence you have, how you can make it work for you, and how you can develop it more. In fact, it is the basis of self-confidence. Some men go through life without knowing they possess POWER simply because they haven't had the self-confidence to test themselves out. They haven't called upon that POWER to work for them.

Take the boy who used to dive first from the shore at the old swimming hole. Then—step by step—gaining confidence each time he raises the height of his dive until finally he is cutting curves from the highest branches of the old elm on the bank.

But—if he had never taken the first dive off the shore, he still would be shuddering at the risk the fellows take who climb to the top of the elm tree.

Self-confidence comes the same way—step by step.

It comes from meeting each and every emergency and opportunity with "I can and I will."

A man can never do his best work unless he tackles the job with a feeling that he can do it—and do it well or find out the reason why.

Don't confuse self-confidence with egotism.

Egotism is blind conceit.

Self-confidence is merely recognizing your ability, and so conducting yourself that others will get the impression that you "know your stuff"—that you are willing to back your work up to the limit, and if you can't put the job over—then you will step out and let someone in who can. That is the spirit that gets across—and that is real self-confidence and it is a good idea to take stock and see just how much self-confidence one has, and cultivate and develop it. A "self-confidence" can be built up that will carry you over the rough spots and help you win out against big odds.

As you go along in your Radio course, study it hard, master all the details as well as the big basic facts. Then you'll have the knowledge that you need to do high class, expert Radio work.

Once you acquire that knowledge and power—that specialized Radio ability—USE IT. Don't be afraid to tackle Radio jobs. Go into every one that you start thoroughly—master it—step by step—tackle it with a feeling that YOU CAN DO IT. That's how you develop self-confidence. It comes through experience, through tackling new jobs and doing them successfully.

Approach your prospect or customer with a confident air; walk, talk, and act as if you believe in yourself. Unless you do this—unless your actions are backed up by your own belief—how can you expect others to believe in you?

It doesn't matter how great one's ability is—how complete a man's education is—his achievements can never rise higher than his own confidence. You can never go higher than you THINK you can.

So look ahead to your Radio work with confidence. Back it up with vigorous, never wavering self-faith. That's what counts. That is what the world expects, and that is what you will want to do to reach the top.

There are big things ahead in Radio for men who know Radio and know how to convince others that they know it. It's the men who have given a little thought to developing self-confidence who will make still more money in Radio.

So I say it will pay every one of us to stop once in a while—take stock of ourselves and see if we really believe in ourselves. The man who knows Radio and knows he does will go far.
Radio Communication on Trains
By J. A. DOWIE, Chief Instructor, Member I. R. E.

Recently, a large group of railroad officials and radio engineers witnessed a successful public test on radio communication using a 110 car freight train running from New York to Utica, over the New York Central lines. This test showed that there was constant communication between the caboose and the locomotive car. Over the 95-mile trip, both conductor and engine man, separated by more than a mile of intervening freight cars, were in oral communication at will, and without any interruption of conversation, whatever, or interference with their customary duties. Both these factors were taken as an indication by observers of the great economic value of railroad equipment speeding up freight train movement because of its dependability and simplicity.

During this trial trip, communication was established between conductor and engine man on the moving train, and the signal car at South Schenectady, when the train was 8 miles away. The communication is afforded by small, compact, low-power radio transmitters and receivers operating in the 100-150 meter band. At this wavelength, the equipment on the train demonstrated that its use set up no interference with outside broadcasting or public radio reception, and in turn it was noted that other broadcasting service in no way interfered with the train communication.

One of the principal features noted by the observers aboard the train was the simple and easy manner in which communication was interchanged. Pushing a button in the caboose caused a piercing whistle to issue from the present loud speaker located in the cab of the locomotive over the signalman's head.

The engine man had only to pick up a familiar type of hand telephone to establish connection between himself and the conductor in the caboose was carried as easily and clearly as an everyday telephone conversation in the factory, often to voices of 30 and no attention is required by the train crew during a trip.

This simple method of simultaneously explaining the complete system of the transmitter is all automatically performed by the simple action of picking up the telephone.

The equipment used on both locomotive and caboose set was designed by the General Electric Company of Schenectady, and it is of compatible simplicity and compactness. On the locomotive, a metal box holds the transmitter and receiver. It is made up of steel boiler plates, welded together, and is installed on the deck of the tender. It is completely weather-tight, being made to exclude water or other foreign material. The entire assembly is supported by four springs, and in addition a system of snubbers is provided to prevent excessive oscillation.

The transmitting compartment contains three 50-watt tubes and one 7½-watt tube. Four of the latter size tubes are used in the receiver. The 7½-watt tubes are of the standard train controlled type, while the larger 50-watt tubes are also used for experimental use in the Signal Department service. The 50-watt tube is a standard design used for aircraft and radio applications for a number of years.

The power unit for the equipment, which contains the necessary dynamo, filter condensers, resistor, etc., is also housed in a metal container. Two dynamotors are utilized. The larger one operates only when transmission is taking place and supplies plate voltage at 1000 volts, direct current, to the transmitter. The smaller machine runs at all times when the equipment is on the road and delivers plate voltage and bias voltage for the radio receiver. The use of this small machine permits the elimination of all batteries in the set.

Power on the locomotive is supplied from the headlight generator, no storage battery being required. On the caboose, a standard generator driven by a belt from the axle, is used to charge a 33-volt storage battery. This battery supplies all the power required for transmitting and receiving. The total amount of power drawn by the equipment when transmitting is approximately 36 amperes at 32 volts, direct current, while in receiving, the current is approximately 8 amperes. This current is required by the receiver dynamotor and the receiver filament.

The loud speaker used in both engine and caboose is of a special type capable of producing a maximum amount of voice volume, and destined especially for these trials. One loud speaker is bolted to the roof of the cab over the engine man's head. The other is mounted to the roof inside of the caboose. The opening for the sound is protected by means of a heavy wire screen so that an accidental blow will not damage the sound producing unit inside.

The antennas on the locomotive consists of a brass pipe mounted around the water tank of the tender. It is supported on insulators about 12 inches above the metal framework and is so low that it does not interfere with taking on water and coal. On the caboose, a simple wire antenna is provided.

Other routine communication intricate to the operation of the train would have otherwise required considerable time to relay between the cab and the caboose, was speedily carried on this trip with any delay completely eliminated by the use of the radio equipment.
Radio Engineers See Big Future for Radio

By R. S. HUDIBURG, Assoc. I. R. E., Member N. R. I. Staff.

I WISH every N. R. I. man could have attended the recent convention of the Institute of Radio Engineers held here in Washington in May. Those students and graduates who came home with a new determination and a firmer belief in the great future for Radio and the men in it. It looks good to see N. R. I. pins on the lapels of Radio engineers who are becoming famous. It was fine to have these fellows come out to the Institute and bring with them some of the leading figures in Radio. We hope nobody's lessons were delayed during this time as we were kept busy for two or four days showing these visitors, from all parts of the country, the big organization we have here to serve N. R. I. men.

The convention was a big success from the first day when we were shown to the White House to meet President Hoover to the final adjournment at the National Academy of Science. Since then Washington has been recognized as the center of Radio, everyone was busy going through laboratories, broadcast stations, and departments of the Government that are aiding the development of Radio.

An entire afternoon was set aside for the Naval Research Laboratory where we saw some of Uncle Sam's experiments in precision measurement, Radio compasses, aircraft and submarine transmitters, chemistry and physics.

At the U. S. Bureau of Standards we saw some of the most delicate recording and measuring instruments in the world. Of great interest were the experiments in which three transmitters used the same serial but operated on different wave-lengths without interference. This new principle may greatly relieve the present congestion on the air.

At the National Academy of Science—one of the most interesting buildings in Washington—models of all types of electrical instruments were displayed. The unusual feature here was the privilege extended visitors to conduct their own experiments, from simple battery reactions up through the most complicated demonstrations of cathode and infra red rays.

The mornings were filled with the discussions of various papers submitted by some of the greatest radio authorities in the world. The three outstanding discussions of these meetings covered Television and telephotography, the use of Radio in aviation, and the use of Radio in motion pictures.

These three fields are comparatively new but their future is beyond the imagination of the average man. Television, while in its infancy, is rapidly nearing commercial practicality and possibilities were discussed by Dr. Alfred Goldsmith, the foremost engineer of the Radio Corporation of America; Professor H. K. S. Jenkins, the noted Washington inventor and pioneer television experimenter. The latter freely predicted that Radio will soon bring into the home what he called "Radio vision reception" of such events as inaugural ceremonies, baseball games, flower festivals and baby parades.

The discussions of the principles that are being applied to the talking movies were very interesting. Experiments in Television and Radio indicate that in time we will have "talkies" right in our own homes. The day is not far distant, according to leading engineers, when the American stage can be brought into our very parlors. Those delegates to the Institute who have been working on Aviation depended upon the development of Radio. With the sky offering smoother highways than steel or concrete, and navigation growing more and more upon aviation for transportation. Since Radio is the eye and ears of the plane, there is hardly a doubt that but the next few years will see a great increase in the radio beacon and compass stations throughout this country.

It is thought that aviation's need for Radio may even precede the need for television and that angle at least in the higher frequencies.

One of the highlights of the convention was the banquet held at the Mayflower Hotel, at which Dr. and Mrs. H. H. Thomas, President of the I. R. E., awarded the 1929 medal of honor to Professor G. W. Pierce of Harvard University for his pioneer contributions to Radio. The ceremonies included a demonstration of Photo-Radio followed by the audience, held spellbound by the speeches of such great pioneers of Radio as Dr. Taylor, Mr. F. D. Forrester, and Dr. Pierce. These men traced the progress of Radio from their own early experiments through the present great advancements as to the indelible predictions of the future.

These predictions of cosmic wonders would have stirred enthusiasm in stone images. That opportunity now existing to see these thousands of new positions which are opening up right along make the writer feel that in the next few years an avalanche of iron will stream the roads of this baby-giant industry. The flight in Radio today are starting to have a great impact upon thousands of men who will be clamoring for admittance to the great field. The great opportunities become generally known.

While unanimously agreed that the future of Radio offers possibilities beyond the imagination, the present contains its problems—the biggest being the need for men who know Radio, to fill the existing gaps. I have heard this on all sides from manufacturers, dealers and retailers—that the real need in Radio today is trained men. It made me mighty glad to know that N. R. I. is training men who are capable of filling these positions.

Size Up Your Prospect

HERE'S a good tip on the importance of sizing up your prospect. You can't always tell whether a man who wants some service work done is a good prospect by just looking him over, but sometimes you will come out way ahead by giving this matter a little thought—unless, of course, you just want to go "on a last." Student Fred J. Robinson, who lives up in the mountains in New Mexico, wrote this about one of his prospects. You will recognize the name of Mr. Robinson as the author of "How to Get a Jump on the Competition." Mr. Robinson lives in New Mexico.

"I was told that I had a prospect about six miles from me who was interested in Radio, and as I often received calls over this distance I decided to call on him.

"A Mexican came for me to fix his set. He said he could not make it work. I started out with him in his car and drove up into the mountains about six miles to where it was so rough we couldn't go any farther. Then I left the car and walked across the mountains three farther before reaching his home. You will laugh at what I found there—it was a real set about four inches square and looked like one of those premiums that comes with a can of coffee.

"The nearest station was 300 miles and this listener was working good. I went to work on it, fixed the areas, wired up, and brought the aerial in and made it so he could receive stations over a range of 25 miles. It was working good, but he didn't have any money—so what do you think he did? Well, he went out and got two of his little "goats", and gave it to me for my pay!" (Signed) MR. ROBINSON, CLEVELAND, N. MEXICO.

So size your prospect up carefully—unless you want to go on a lark.

J. E. S.

The other day a misinformed gentleman made the astounding assertion that those present would not want to own an automobile in a few years. It is all right.

But it is just as absurd to contend that the people operated set will be replaced by the people operated set. From A.C. electric current, 12,000,000 electric cars in America alone without electric current are without the benefits of radio according to statistics compiled by the Federal Radio Commission. This means that there is still a tremendous market for the battery operated receiving set.

BULLETIN

Student S. S. Milhem is asking the assistance of N.R.I. men in locating his date. He is a Boston boy, aged 17, who disappeared April 27th, 1929, near Milton, Pa. He is 5'11" tall, weighs 160. He has brown bobbed hair, blue eyes, weighs about 150. He is five feet six inches tall, and has a slight scar on the right side of the neck.

The driver named Samuel Rutoff. The latter is about 20 years old, who has 155, has nine inches, has black hair and brown eyes. Anyone knowing the whereabouts of either of the above, please notify the father at No. 4, 5th Avenue, New York, N. Y., or the National Radio News.
The Gunn Allimeter perfected by Professor Gunn of the Bellevue Naval Research Laboratories is heralded as one of the biggest Radio developments in the Aviation field. This Allimeter is so precise and accurate that the pilot knows at any time whether he is above or below the ground and can be flown without collision, the ground being as clearly seen by a glance at the instrument as the instrument itself. In flying over water, the gunn allimeter shows the height of the water's surface, the readings of the beam is equally accurate. Should the plane start to fly to the right or center of the beam, the right hand read reflects more than the left, and vice versa, thus showing the pilot that he is going off course, and in which direction.

As can easily be seen, the pilot need not be an expert to fly a gunn allimeter; he need not even carry a map, so you see the science of radio, applied to an age-old problem, increases every day the dimensions of the world's newest means of transportation.

A beacon that sends an audible signal broadcasts two letters of the Morse code on the same frequency, side by side. For instance, the letters were A on the left and B on the right side of the beam, the pilot could be told whenever he was off the course by which letter to change his course.

Of course, the radio directional beacon only tells the pilot whether or not he is headed in the correct direction.

But the Radio-Aviation specialists have come forth with that. In the pilot's cockpit is a chart of the course, the way, by which, may not always be in a straight line or even straight across the country. Ever so often along the course will be a "Localizer Beacon" that sends "UPWARD" or "DOWNWARD" signals as the pilot comes within range of the radio beacon.

By selecting each localizer beacon, with the chart of the course, the pilot can tell exactly where he is, without being able to see anything outside of his cockpit.

The General Electric Company and others are working on what is known as the Redefining Allimeter, which, when perfected, will tell the pilot not only what the land, sea or air objects are, but a device, which is nearing perfection, will make it possible for the plane to make a safe landing in an accurate landing without seeing the ground.

Even so, the possibilities for radio in connection with aviation, transportation, and other means of communications are nearly unbelievable.

The greatest difficulty being experienced by the aviation fraternity is that of radio equipment, it is not easy to obtain good, good equipment but to obtain trained men who know how to use it. Any manufacturer who will work out a systematic plan of training men who know how to use the Radio equipment, will make a fortune.
Broadcasting from the sky

Below: A jazz orchestra doing its best before the "mike" while soaring high in the sky in a big cabin plane. The successful experiments in broadcasting from plane to ground have opened up a new field rich in opportunities for Radio men. Commercial aviation has been stimulated immensely by Radio's developments.

Plans Plane Driven by Radio Waves

A Los Angeles inventor, Maurice Poitier, predicts that in the future airplanes may be driven by power transmitted from land stations. His working model, the "Spirit of Night," shown above is equipped to receive Radio power and has a reserve rocket power system for quick take-off and to attain greater speed. From what Radio has done in the past 10 years it is not unreasonable to believe that transmission of power may be accomplished to a practical degree in the future. Only a few short years ago people ridiculed the idea of a man's voice being carried around the world in a fraction of a second and the other marvels that Radio has accomplished. The bigger things are still ahead of us in Radio.

A Radio Equipped Plane

Thousands of passengers are being carried in big cabin planes every year. New air lines are opening up right along. Notice the arrow in this picture. It points to a wind-driven generator just under the top wing. Under the new International Air Regulations a Radio operator is carried to attend and operate the Radio apparatus. Big airplanes are being built now with a separate cabin for the Radio equipment and the operator. Radio men will also be needed to install and operate the Radio apparatus at the airports.