

How to Detect and Remedy the Open Circuit, Short Circuit and Leakage.

Radio circuits are subject to the same ills that the ordinary power circuits are subject to. However, to cure them is not such a difficult task as might be supposed, especially if some logical procedure is used.

If a receiver is well put together in the first place and all contacts and other parts gone over once in a while, there is no reason why there should be any trouble. But the human being is prone to err, so that for the once in a while" that is liable to happen, this article will be devoted to the explanation of what might happen to a simple receiver and the best way

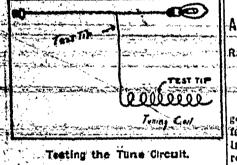
to fix it. The usual troubles of the receiver

fall under one of the following three andings:

- 1-An open circuit. 2-A short circuit.
- Leakage.

An open circuit can most easily be detected by means of a series lamp. Nearly every one has available the or dinary 110 volt lighting circuit. Take a ordinary extension cord and cut ic wire at any convenient place and time these two ends as test clips or tips The extension cord is plugged nto the house lighting circuit at any member outlet and which the two cut ends are held logether the lamb will light as the circuit is closed. When the tins are held open the cirnit is "open" and the light will go

Suppose it is desired to test for an open circuit in a tuning coll. Connect a little brush. Or if this does not seem me tip to one end of the winding and to remety the trouble, thip off old surhe other test clip to the slider. As the face so that an entirely new surface



# TIPS TO THE RADIOIST

The higher the aerial the stronger the signals. An increase of five to ten feet in the height of the flat top aerial will increase signals.

Addition of a variable condenser to the secondary or to the primary of a loose coupler often helps to tune out the undestred signals.

The sliders on tuning coils often make poor contacts with the slide rod. Thus much of the signal strength is lost. You can overcome this by soldering a desible wire to the slider.

Increase length of spreaders of two, three or four-wire aerials from six to ten feet for best results. Each wire should be from four to six feet from its neighbor. Two wires one or two feet upart are no better than one wire. Likewise four wires on short spréaders are no better than one wire.

series and to check either one separately, short circuit the tips of the cord leading to the other receiver just] outside of the case. Should it appear that there is an open circuit in the cord, short circuit both receivers where the cord enters the case and with a buzzer or lamp connected to the tips on the end of the cord test

for an open circuit. Care should be exercised by the operator when adjusting a crystal detector to see that his fingers do not touch the surface of the crystal or the contact point of the little spring The oil secretion that exists in the skin together with the dust that it collects will render a crystal detector inopers the by the Insulating, film that it will cause to form on the portion of the crystal surface that is touched. Should

the surface of the crystal get dirty as evidenced by the received signals ecoming weaker and weaker, try cleaning the crystal with alcohol and s presented to the spring.

AMATEURS SHOULD PLAY FAIR tadio inspector Schmidt Urges That enn revolve

Regulations. Nine out of every ten radio fans are MOTION PICTURES IN COLORS oud sports but the tenth is either a This with poor judgment or a roster." How Process Developed by an Ameri-

It is up to the amateurs to see that can. Has Been Brought to High restrictions are not imposed upon Point of Success.

setts Institute of Technology.

From the Outlook.

How Radio Goes to Prison.

How Trees Grow.

## THE OATHOLIC JOURNAL

WHY HOW OLD FORM OF WINDMILL HAS BEEN IMPROVED ON. -Up to within the last few years, the windmill has remained practically much the same and unimproved since prehistoric times. Recently it has been

taken on a new and remarkable development, assuming the character of a "wind turbine" for producing electricity. In one torm, as thus modified, Is a collimitation arrangement of steel stars placed vertically

and at an angle so as to catch the wind. Thus forms the outer part, which is fixed and harnovable. The wind, entering through the slats, causes the liner part to revolve, the latter having a central axis set at top and bottom upon bali bearings.

Thus delicately poised, the inner part revolves in response to the slightest breeze, and, as it turns, it drives muchinery by which the energy developed is converted into electricity. A windmill of this kind, with three or more supernosed "stories" and one central shaft, is capable of delivering 300 horsepower. The old-fashloned type of windmill utilizes only about 17 per cent of the power of the air currents caught by its vanes. It

is thoroughly unscientific. In Denmark today properly constructed wind motors produce more than 70 horsepower with a rood wind The Danish wind motors, how-

ever, are built on a principle whoily different from that above described. They have vanes resembling in form atrolane properilers, somes hut moduled, these Westing assembly "of sheet Mont-and five in number.

A windmill of this type automatically turns its vanes edgewise to the wind when the latter blows too hard, thus insuring the safety of the apparatus. In the other type the same object is grined dirough the fort this not more than a certain amount of alr per second can enter between the vertical slats, and thus a limit is set to the speed at which the inner part of the contrivance

# Courage is Dependent on Fear as an Antidoto

Courage is absolutely dependent upon fear as an antidote. There would be no beaufful girls if all the girls were equally beautiful. The fact is that the thing we exto

so much and call courage is almost invariably the result of fear in the beginning. What happens is that in the heginning we are afiald of some thing This puts us on our guard. and we start in to prepare ourselves against it. When the critical moinent comes we seen to do a herole thing Well maybe it is but it is all due to the preparation based on fear. What I say about courage, there fore is that it isn't so much a quality in itself, to be brought up by exercise just the way you increase your biceps, is such things as ghosts. Wal, mayas it is a quality inherent in training.

Concareous acts are of two kinds; those based on complete ignorance of the consequences, and those based on fear. In case you happen to be unusually timid, the thing to do is to use your timblity as an asset, get it to work for you by preparing you for can be employed to advantage To be a fraid and not to know what to do about it is very bad, because a it ain't worth it." man who is afraid and doesn't do anycoward in emergencies. He will turn farmiy sown. and run But if he takes hold of his

acquire enough control over it to keep, checked gingham dress. it under just enough at critical moments When you see an acrobat standing

church spire, you shudder with sym 'two days now.' stant like that you would to plif over; room, just on the back stairs the mere thought of it makes you faint But if you had six months to

house," she said. "Clean, big, and practice in you would no doubt get away from things." I shivered. away with it even if it was only by an ... Make yourself to home." She went eighth of an inch.-Thomas L. Masson ; out and left me alone. in New York Sun.

screamed from the foot of the stairs. NATURE KNEW HER BUSINESS والمراجع At the supper table I ventured a

Why the Fact That Ice, Floats Has question or two. Had Important Bearing on History of Earth.

Is it ?" If it were not for one peculiar proprty of water, the past history of the arth would have been completely alave been burn

events water does exactly the same thing First the strenge point le that

# THOSE FOOL LITTLE GRUDGES

#### If One Only Would Pause to Consider the Question, Are They Really Worth While?

By AGNES H. HOWARD The first time I crossed the Atlantic had the good fortune to find myself (@. 1923, by McClure Newspaper Syndicate.)

in good company. The passenger list "That there is the house you're was comparatively small and the after. Big, ain't it? Kinda gloomy weather was mild. So, by the time lockin', I'm thinkin'. My wife sez-" the ship approached Liverpool, the I gave the summer boarding house passengers were fairly well acquainted and the atmosphere was decidedly speculative glance. "How much is the fare?" I asked genial. What interested me most about the trip was the sadness rethe driver.

"Fifty cents. I hope you like indected here and there during the last there. There's some as says there's two days, John D. Barry writes in queer things happened in that there the Minneapolis Tribune. "Well, we'll never be together house."

"What sort of things?" I queried. again," said one passenger, and an-"Oh, t'ain't nawthin', but there's other said, "I hate to leave all these some about these parts as thinks there pleasant people."

Since that time, after voyages of a be so, maybe so. 'Tain't for me to week or more, even of ships where say. I ain't never seen none." He the passengers have been rather detached, I've noticed a somewhat simlaughed.

"I hope I don't see any !" I er-lilar feeling. claimed anxiously.

GHOSTS

Among college students it's well "Oh, maybe you'll have luck," he known that during the last year of said. "She ain't had no trouble lately college there's a pretty general softwith that boardin' house. I guess that ening up. In the men's college it's what is to come. That is where in air ghost is getting to be a dead one very marked. I suppose it's just as telligence which is sometimes useful, for sure. Them queer people that used marked in the women's colleges, perto own the place has been dead goin' haps more so.

on ten years now. I wouldn't worry-Men who had cherished grudges against each other for months or "No, I won't," I promised, but never- vears and hadn't spoken would begin hing about it will generally prove a theless the seed of wonder had been to speak again and would perhaps become friends. Acquaintances that I paid him and advanced toward the had passed with a slight nod would tear when he has time enough to house. I was greeted at the door by grow more agreeable. Somehow animake it useful to him, then he can a large, middle-aged woman in a blue-mosity, chilliness, all unpleasant behavior began to seem foolish. It be-"I'm Miss B---" I offered, by way came clear that in this association of explanation there was something worth while, "Oh, yes. Come right in Your room something that hadn't been fully apon his hands in midair on top of a has been ready, waiting for you for preciated before and that the thing

to do was to make the most of it partiente four \_ If your should try a she took me upstairs to a large while it lasted

"it's one of the very best in the BUFFALO HERDS HAVE GROWN

Animals in Canadlan Government Proserves Must Be Killed to Prevent Evil of Overcrowding.

"Supper's at seven," she fairly Twenty-five years ago the Canadian government purchased a small herd

"What is this I hear about ghosts herd was regarded merely as an obaround here? Some interesting legend, ject of curlosity. Then a game pre-She eved me sternly. "Now, who's been a filling you up from a United States rancher, was

with nonsense?" she questioned, turned into the inclosure. The pretered and mus hinself might never matter to sharply, I thought ..... I say serve is located at Wainwright, Alta. thar ain't no such thing as ghosts, and and extends over 162 square miles of, to is heated and smaller when we ain't got none here. We ain't aim sandy prairie which was considered

of buffalo and placed it in a national park at Banff. For several years the serve was decided upon, and the herd,

together with other buffalo acquired

cooled, and in the ordinary course of ing to keep them long." I wondered unsuitable for agriculture. The bufwhether it was the ghosts or her vis- falo, 709 in number, thrived from the itors she didn't "aim" to keep long! start, and last spring the caretakers

alide is moved back and forth the light them, by playing fair, says Radio Inshould minkin lighted. If the light spector L. R. Schmidt of the Ninth A great defect of moving pletures

district.

They Learn the Laws and

goos out at times there is an open cirnit in the coll. If the light goes out the coll is inred too slider dues tain cautions and by becoming posted photographic film is thresome to the tot make good contact with the wind. on the radio laws and regulations. A taste and futiguing to the eye.

INF. If a burrer and battery are avail thined from the superintendent of doc- in coloring moving picture films, but able they can be used in testing for uments, government printing office, none had been very satisfactory until an open circuit in the same way that Washington, D. C., for 15 cents. It is the problem was taken up by Dr Dan-explains why ice floats in water. the lamp can be used. Connect the worth while to spend 15 cents in order lel F. Constock of the department of but in the local sector of the local of the test clips or tips and any low resist. game.

unce circuit can be tested.

tested with a buzzer and battery, but sage around a corner they put on all Doctor Constock has perfected a proc of at the top. to not use the house-lighting circuit the power they have with the hope ess based upon the chromatic optics of connected to the ground a short circult would exist and an excessive current flow.

vessels in distress, all stations shall at the Righto theater, in New York, If the ground wire is connected to the water pipe, connect one test tip to use the minimum amount of energy and attracting the attention of artists the ground and the other to the gas necessary to carry out any communi-as well as of the general publicpipe, which is also grounded. The cation desired." buxzer should buzz if one bas a good fow resistance ground.

Amateurs should keep their wave length to 200 meters. They should use a "pure wave" or, To be apprehended by means of

Leakage usually exists between the wall of the station in such a manner centum of that in the greater." adaterial, and that rain and snow cannot cause a path along which the cur rent can ground. In bringing the lead

SHORT-HERE. PUT TEST TIPS HERE

To Test Telephone Cords.

in through the wall, insulate it well According to the New York Morning and inside the station use as short a Telegraph, Mr. John Barrymore, stroll- obtained from tar by a Swedish procthece of well-insulated wire as is pos ing aimlessly through the Plaza recent ess. The powdered carbon is pressed ble to make good connection with the ly, was encountered by an old friend to form electric light carbons, or

teurs will send the calls a dozen of Popular Radio.

Peinting, thereto,"

more times.

"Why, Jack !" exclaimed the old friend. larger sizes for electro-chemical work. fest the continuity of the cir. "It's been such a long time since I've The method is based on the fact that nery district is still the center of the of a pair of telephone-receivers, seen you. ' How are you, anyway?" finely divided carbon makes up a large leather industry. the tips of the cord phone to the Mr. Barrymore announced that he was percentage of the composition of tar in the receivers are in reason- perfectly splendid, or something to the and is what gives the black color, this biy good condition a slight click will same effect. "But look here! Aren't being due to the carbon particles susthe heard. If the response in one re you opening in 'liamlet' tonight? What pended in an otherwise dense and ceiver seems to be weaker than that about it?" "Well," he remarked in a transparent yellowish brown liquid. in the other, examine the disphragm noncommittal tone, "it's a good part."

he most plying the weaker reponse and see if it is bent toward the place, Try tuning the diaphragm MURDOCK LOUD SPEAKERS it such in the case. Be careful an the disphragmy of a receiver is

wire the leads of fine wire the con-

manif of the circuit of a Wind When the Ward when the the training the Choice in the second

The rings of a tree grow from the **\$5.00** life-giving fluid found in the outer thereby: ring and promoting its growth. Compares favorable with Loud Speakers at \$20.00 How Airplane Has Improved. In the first days of the Wright air-Rudolph Schmidt Co. 51 Main Street East mark of 212 miles an Bour.

uing to do so until it becomes ice

copy of these regulations may be ob- Various experiments have been made occupies more space than the water bed. from which it is made, and so easily murmured to myself. bursts jugs and water pipes. It also But if water followed the general my head up with a start, opened my mately 9,000 head. and the govern-

than water and would form at the bot- or was the strange newness of the preserves from becoming overcrowd-The great trouble with amateurs is in association with Dr Herbert Kal-The ground connections can be thut when they want to send a mes- mus, an electrochemist of distinction, tom of ponds, rivers, and seas instead place working its spell on me?

That would mean that in past ice upright in bed. There was no specuto: tost for grounds because one side that some one in Texas might pick up color photography, by which the colors ages all the living inhabitants of the lation this time. I had heard someof the lighting circuit is already their message. The object should be of nature are reproduced in the film water, including the progenitors of thing. I listened. A faint, light, tap-bridge party. The worman who usually grounded and if the other side were to use the minimum amount of power and may be thrown on the screen by man, would have been frozen to death, ping noise about ten times-then ab- takes care of my son was in. I told to get the message to its destination. any projecting lantern. The inventors for numerous forms of life are always ruptly stopped. I waited for more, him that he would have to go to the "In all circumstances, except in case call this process "technicolor," and a to be found beneath the ice-topped Then something slid, and I heard a party with me. This displeased him, of signals or radiograms relating to technicolor film play is now running seas of today.

#### Why Penguin Lost Wings.

Ages ago the penguin, whose wings are short, paddlelike flappers, entirely useless for flight, could fly as well

should be well insulated from its sup- ing apparatus is of such a characterit in juil is the insulated for few human or animal enemies, it came felt for the electric light switch. A the oven. viown to the point where it enters the more wave lengths, more or less sharp. The inmates there may stretch out on the water. Generation after generaly defined, as indicated by a sensitive their prison cots and listen to the stir. tion it failed to use its wings for flywave meter, the energy in no one of ring strains of the United States Navy ing. and so in the course of long evoswing, it cannot touch any grounded the lesser waves shall exceed 10 per band, the daily police reports on stolen lution these wings became very small then he (or she) stopped. automobiles, and perhaps they may and stiff, and lost their long feathers, The wave must be "sharp." As to even speculate on the ease with which until now they cannot be moved at the middle joint like the wings of flying frozen to the spot. I could hear my this the regulations state: "At all sta the radio waves penetrate the stone

tions the logarithmic decrement per walls of their prison. A loop aerial birds. But the penguins became wonderful complete oscillation in the wave traint is used to catch the waves for the relivers and swimmers, using their emitted by the transmitter shall not celving set. After using ear phones exceed two-tenths when sending dis to tune in, the operator switches the wings one after the other as a man tress signals or signals and messages programs onto a loud speaker placed paddles a cance with a double paddle, and steering with their feer in the rotunds of the juli; by this

Amateurs frequently are at fault. is meany, the inmates in the distant-calling stations too often. The law celts hear the entertainment plainly. Why Leather Industry Stays "Put." While marvelous and revolutionary states that they can call three times often, however, Capt. W. L. Peak send "d e" once and sign their station allows the 320 men to feave their cells changes have been made in the city call three times; but often the ama and come down to the auditorium .-of New York, the leather industry remains where it started 226 years, ago. In the early days the tanneries were

> shifted to Beekman street. While the screamed, but I could do neither. I real tanning establishments have been scattered to points where their odors would not be a nuisance the old tan-

Why Cooked Foods Are Best. All foods are more stimulating when are the oldest and the outside rings the pulse; the effect of stimulating room. I've been wondering where he the newest. This can be easily proven substances is diminished, and that was. I wanted to put him out before by the greater percentage of sap or of depressive substances is increased i closed up for the night.".

> Why Stars Twinkle. Stars twinkle because they are so

distant that not even the most powerplane, 19 years ago, the speed of their ful telescope can show them to have to varying atmospheric den

That, of course, is why lee always and crept-into my cold, unfamiliar mated that there will be an addition.

Less than ten minutes later I sat

erunch, crunch, crunch,

myself. Soon after I fell asleep.

It must have been at least three Blank was going to serve ice cream hours later when I was awakened by and angel-food cake. He at once

as any other sea bird. Since the bird tomobile and soft, deliberate footfalls All went well until my son rambled inhabits only remote lands in or near on the carpet, which were not retreat- out into the klichen, where he saw as the regulations state, "if the send-radio and then to be entertained by the Antarctic regions, where it has ing. I clutched the bedclothes and Mrs. Blank taking two cakes out of

port. The lead-in should be brought that the energy is radiated in two or lawbreakers in Washington, D. C. to spend all its time on land or in thousand curses on houses which are She said, "Frank, Fil bet you can't coming toward me had stepped on a My son replied: "They're angelboard which gave a small squeak, and food cakes, because that's what we came for."-Chicago Tribune.

I dared not make a move. My muscles were taught. I was like one drew my feet up slowly, silently. I

tried to collect my thoughts. I began in addition to the plan for the univerto think rapidly ! There was not a sal inger-printing, the rogues' galthing I could do-but what could the faring of the country are now adding creature do to me, anyway? He could minute descriptions of teeth.

but kill me, at worst. But I was not ready to die. An unconscious prowler—a victim of insomnia? Some one in the wrong state prisoner who had broken parole room-why, of course, I had it! A in the early mays the tanheries were that ! If I could have moved my lips out the remainder of a two-year sen-Carbons of high grade are, it is said, streets. In the course of 20 years it or lifted my voice. I would have tence. His teeth revealed his identity.

> closed my eves! Then it happened:

The ghost grabbed me! L remember plunging forward, and then the awful, terrible falling sensa-

I returned to consciousness to realize that Mrs. K---- stood over me eaten raw than when cooked. Cold with a lamp in one hand and a big and heat are depressive, and moderate Angora cat gathered under one arm. The mixture of several foods has a out of bed? Hope you didn't hurt And, besides, everybody knows Greece "What's the matter? Did you fall stimulating, cumulative effect. The yourself none. That bed's quite high, is in a bad way."-Birmingham Ageinside out; that is, the inside rings act of chewing causes depression of I found 'Ghosts' (I gasped) in your

the "ghost I"

### Wifely Windom.

Recently the sirplane has touched the light is a mere point and appeal to that."-Wom cury smallamates with the lead ad-

Two hours later I prepared for bed, counted 6,146 of the animals. has been the lack of color. The star, hhove freezing point it stops getting At last I was ready. Something like though the 1922 "crop" cannot be This can be done by observing cer- ing black and white of the ordinary smaller and begins to expand, contin- cold chill can down any spinal- col- counted until the bison are a herded. of at least 1,000 calves. Besides this "Strange and rather clammy," I herd at Wainwright, there are other buffalo in Canada in sufficient num-About three minutes later I brought bers to bring the total up to approxiit grew colder, ice would be heavier ness. Had I really heard something, of them every year to prevent the ed.-Popular Mechanics Magazine.

Frank is Frank.

One afternoon I was invited to a because he had planned to play all "You are a fool-a 'fraid-cat," I told afternoon. Knowing how much he likes angel-food cake. I told him Mrs.

the mingled sounds of a retreating au-ichanged his mind about playing.

Teeth as Well as Finger Prints. The unhappy criminal son is likely heart beating like an automobile en- to have no chance to escape the penalgine and my mouth and throat were ty of his misdeeds. Nor is anybody growing dry. At last, instinctively, I likely to have a chance to hide his identity for insiocuous reasons, since,

Recently a prisoner on Welfare island who had been sent up under an assumed name was discovered to be a and sent back to Sing Sing to serve

### A Foreign Entanglement.

"My boy writes me that he has joined a Greek letter society at college," remarked the self-made man. "It's the Alpha, Gamma, Lamma or something like that. I'm going to give him a piece of my mind." "What for?"

"I don't want any boy of mine joining one of those foreign organizations.

Mercury Cleans Rifle Barrels. It has been found that mercury can I staggered blindly to my feet and be used very effectively to clean rife stared blankly at the cat. I had seen barrels. The end of the barrel is tightly corked, and about one-half fuld ounce of mercury is poured in. Then, after the other end is corked, "The best way to keep in with one's the barrel is slowly tipped from end husband is to find out his vanity, if to end a number of times. The mer-

ret.-Popular Michanics Magasine.