## OHM'S LAW

#### FORMULA EXPLAINED.

The relation between voltage, current strength and resistance of a circuit is expressed by the law which was set forth by Ohm and this law was set forth by Ohm and this law is called Ohm's law in his honour. "The strength of the current in amperes in any given circuit is directly proportional to the resistance of the circuit." This is one of the most important laws for a student of electricity or radio to know. The formula, which can easily be remembered in the following form—amperes equals volts over ohms—should be committed to memory, so that one can recite it backward. With this law it is possible to find either one of the three values if the other two are known, and values if the other two are known, and because the formula is so simple it should be possible for any one to learn and use.

It is learned from this law that to increase the amperage in a circuit conincrease the amperage in a circuit containing resistance it is necessary to increase the voltage. The correct increase may be easily figured out by using the above formula. With the aid of this formula it will be found that in a circuit containing three resistances in parallel across the circuit that if each resistance has a different that if each resistance has a different containing three resistances are usually of current will value a different amount of current will flow through each resistance, the small-er the resistance the greater the amount of current.

#### Units of Electricity.

The practical units of electricity may be defined as follows: The practical unit of electromotive force is the volt . A volt is that pressure of elec-tromotive force that is required to tromotive force that is required to maintain a flow of current one ampere strong through a resistance of one olim.

The unit of current strength in an

electrical circuit is the ampere, which is explained as the strength of current maintained by a pressure of one volt through a resistance of one ohm.

The unit of resistance is the ohm. This is defined as the resistance of a conductor that permits the passage of current of one ampere at a pressure of one volt. The coulomb is the current quantity flowing in a circuit when one ampere passes a given point in one second.

The next unit of electrical measurement is the joule. The explanation of the joule is as follows: When a current of electricity flows through a conductor of electricity flows through a conductor it encounters a certain amount of frictional resistance and some of the energy is turned into heat. This development of heat is proportional to the time the current flows to the square of the current and to the resistance of the conductor. The unit joule is the amount of energy expended in heat during one second by a current of one ampere at a pressure of one volt through a resistance of one ohm.

# 746 Waits, one Horsepower.

The joule per second is the practical unit of electrical power which has been named the watt. The unit of power may be expressed in units of current strength and pressure. The power in watts in a given circuit in which a direct current is flowing is equal to the product obtained by applicating the the product obtained by multiplying the current (amperes) by the pressure (volts). To rate the power in watts of most motors or other electrical devices would necessitate the use of fig-ures that are too large for everyday use, so the kilowatt it used. A kilowatt is equal to 1000 watts. In mechanics a horsepower is equal to 33,000 foot pounds per minute, or 550 foot pounds per second. In electrical work the rating of motors may be given in horsepower by furling the watt rating of power by finding the watt rating of the motor and dividing it by 746 watts. which is the electrical equivalent of 550 foot pounds, or one horsepower.

# TOO MANY STATIONS

# AMERICA'S DIFFICULTY.

The crowding of the other by about 600 broadcast stations in the United States is still worrying the Americans. Federal Radio Commissioner Caldwell, speaking at a meeting of the American Institute of Electrical En-gineers in New York on October 14, said that there was hope for relief in the broadcast congestion through a method of synchronising a number of transmitters on a single channel. He pointed out that there were three systems for station synchronisation, and that they promised excellent possibili-

"The first method," said Mr. Caldwell, "is wire control for two or more stations from a common source. This plan offers an economic solution of the very serious problem of chain-pro-gramme operation where twenty to forty channels are sometimes tied up with the identical programme."

# A Way Out.

The second synchronising method suggested by Mr. Caldwell utilises a receiving set installed ten miles from the transmitter to be synchronised. On this set the incoming carrier wave from the distant station on the same chan-nel is picked up and sent by telephone wire to the control room. By the zero beat method the local station is synchronised with the distart station.

The third method is for the broadcasters to use matched piezo cr stals, maintained under the standard tem-perature at the two or more stations to be synchronised.

### RADIO FOR SCHOOLS

#### SYSTEM IN CALIFORNIA.

The radio programme of experimentation has been carried on in the Oakland (Cahfornia) public schools during the past three years, the department being the first in the United States to use it. It began under the guidance of Dr. Virgil Dickson, with Henrietta Johnson largely responsible for the general management. At first, there were two programmes weekly, but as Miss Johnson's time was limited it became necessary to reduce the number of les-

sons to one every two weeks.

Miss Johnson is the assistant director of the Oakland Public Schools Bureau of Curriculum Development Research and Guidance Department. In a letter to KGO thanking the General Electric station for its co-operation in the experimentation she said, in part:

## INSTRUCTION IS PRACTICAL.

"The experiment has been most worth while and it has been definitely proven that radio instruction is practical and a much desired programme for any school system. We trust that further experimentation may be carried on at a later date."

A series of thirteen health lessons was given over KGO during the fall and spring term of 1926 and 1927 by Elizabeth P. Whitmarsh, assistant director of health education. Six of the Oakland schools, one Berkeley school and one Petaluma school participated in this experiment. The lessons were twenty minutes in length. Miss Whitmarsh says:-

#### RADIO STIMULATES INTEREST.

"The results would have been greater had more schools participated in the experiment. In my particular field of instruction this experiment has convinced me that radio does much in stimulating an interest in health habits and arouses an interest in a subject which, having no special time allotment, is often neglected in the pro-

# The Children's Corner

By "ARIEL"

## "EVENTIDE"

Tho' you're away, and life seems sad

and lonely, Clouds gather round and cover up the Deep in my heart, dear, is your image

To you, alone, for ever I'll be true. Refrain:

When day is o'er, and stars are softly

peeping,
Tho fate decreed that you and I should part-I pray that God may have you in his

keeping,
Still you will reign for ever in my heart;
After the night will come the glow of

dawning, Sunshine will chase the shadows all awav Sorrow will fly, no more the sound of

mourning, God hear my prayer, and send you back some day. God hear my prayer, and send you back some day.

When ev'ning comes, I kneel beside my lattice, Dreaming of you I bow my head and

pray-Far over the sea, dear, where you are my heart is; When you come home 'twill be a perfect day

Why is the letter B like fire? Because it makes oil boil.

Why is C like a schoolmistress?

Because it makes classes of lasses. Why is F like Paris? Because Because it is the capital of France.



The Baiclutha Boys' Brass Band, now touring the North Island, which recently broadcast a fine concert from 4VA. The boys are meeting with a good reception on their tour, and are incidentally improving North Islanders' knowledge of southern geography, as one northern paper reports that some local girls were surprised to find the boys did not speak Indian, but only Scotch with an English accent.

# 

"I think it not too ambitious to predict that in the near future instruction by radio will be a standardised depart-ment of instruction, guided by a full time director."

Edgar E. Muller, chairman of the radio committee, enumerates the values of radio instruction as follows:-

1-Necessity for thorough prepara-2-Conservation of time. Lessons must begin on time and end on time.

8—Requires concentration on part of pupils. They cannot ask questions, cannot lag, must keep on the alert.

4-Because of the above, it tends to definiteness -- one of the necessary factors in life."

# THE WEEK FOR THE CHILDREN

# BRIGHT HOURS AT 2YA.

Monday---Aunt Joe's night. Quite a varied programme of items-songs, sketches, etc. Aunt Barry will give a splendid talk to little women.

Tuesday—Uncle Jasper provides the the fun. He will be ably assisted by Pat and Mike, the musical comedians,

and other artists.

Thursday.—Uncle Sandy and his merry band of followers will keep things

lively for an hour.

Friday.—Hullo, it's Uncle Ernest's hour. There will be some merry entertainment provided for the little ones. Saturday.—A pleasant hour is assured. Aunt Gwen and Aunt Dot will bring their nieces and nephews to liven you

# MORE ATTRACTIONS.

Other coming attractions for the chil-dren at 3YA will be the appearance of Miss Dorothy Davies (who is acting as studio pianiste), and Mrs. J. W. Bailey (who is on holiday in Christelaurch). Miss Davies will entertain the children on January 18 and 26, and Mrs. Bailey on January 19 and 25. Mrs. Bailey, who comes from Wangamui, where she and her husband are teachers of elocution, has several times been on the Then she emptied him out to run home air at 2YA.

# NOT SO FLAT AS THAT.

"Was Anne Boleyn a flat iron?" asked the small girl. "A flat iron! Why ever do you ask

"Because I read that Henry VIII pressed his suit with Anne Boleyn."

A friend dropped in to fix my set; I couldn't get a call. He worked three hours, and now, alas

I can't tune in at all. 自然更好多好者的者的是明显对自然是引起以各种自然的种种是现在价度的资料会以各种原则是创度的实现或10回以是所是

# CHILDREN FAVOURED

# BY "ROSE MARIE" ARTISTS

The children of New Zealand will have reason to retain pleasant memof "Rose Marie," now touring New Zealand. In Auckland, Mr. Frederick Bentley, who takes the role of "Hard-Boiled Herman," entertained the children from 1YA on Christmas Eve, and in each of the cities that he visits he will do the same. Rose Marie herself will also be heard at 3YA. A treat is in store for the kiddies when this charming young lady, Miss Harriet Bennet, goes on the

## 如打回5)#51#58#5#6#5#6#8#6#61#11#35#35#\$1#\$1#8##6#1#6#1#4##1#4#\$1#\$1#\$3#\$3#\$1#6##6# CRAB FOR TEA

Jenny Jones went a shrimping one day by the sea,

To catch something nice for her dear daddy's tea, And into her net walked a dear little

Of a crab who had set out the world for to see.

Cried Jenny, "Oh, Joy! Crab for tea will be scrummy.

If eaten with butter and bread that is crummy."

But that crab piped his eye and she to his munmy,

# THE BREAKFAST FOOD **FAMILY**

John Sprat will eat no fat, Nor will he touch the lean. He scorns to eat of any meat; He lives upon Foodine.

But Mrs. Sprat will none of that; Foodine she cannot eat. Her special wish is for a dish, Of Expurgated Wheat.

To William Sprat that food is flat, On which his mater doles; His favourite feed—his special need-Is Eala Heapa Oats.

Can touch such tasteless food. As breakfast fare it can't compare, She says, with Shredded Wood. Now none of these Leander please;

But Sister Lil can't see how Will

He feeds upon Baih Mlits. While Sister Jane improves her brain With Cero-Grapo—Grits. Lycurgus votes for Falher's Oats; Proggine appeals to May;

The junior John subsists upon Uneeda Bayla Hay. Corrected Wheat for little Pete; Flaked Pine for Dot; while "Bub," The infant Sprat, is waxing fat On Biled Bean Patent Grub.

## THE POCKET FARMER.

An old farmer and a young man were arguing about scientific methods of farming.

of farming.

"The time is coming," said the young man, "when I shall be able to carry the fertiliser for a whole field in one of my pockets."

"Yes," said the old farmer disdainfully, "and you will be able to carry the whole of the crop in another pocket."

pocket."

## GERTIE GRUNTER'S RIDDLE

(By Olwen Bower.)

The Farmyard was interested-more, the Farmyard was excited. Gertie Grunter, the prize pig, had found a large and juicy carrot, and, to everyone's surprise, she had very generously offered it or a price to carried to the ly offered it as a prize to anybody who could guess a riddle.

"Such a strange thing for Gertie Grunter to do!" said Hepzihah Hen, in a puzzled voice. "Such a beautiin a puzzled voice. "Such a beautiful carrot, too! Anybody would be proud to own it."

"Quite unlike Gertie Grunter," commented Dulcima Duck. "I can't understand it at all. It isn't as if there was anything wrong with the carrot!"

"No," said Kathleen Cow, sleepily.
"I saw it myself in Gertie Grunter's mouth as she leant over the gate of Sty House waiting for people to com: and guess the answer."

"What is the riddle?" asked Chira-

belle Chicken. "When does the sun flower?" murmured Kathleen Cow, mournfully. "I didn't know it did; but that's the

riddle, so I suppose it's all right."
"I know the answer," said Cuthbert Cockerel, in a pourpons voice.
"You others had better come and see me win the carrot!"

They all went across to Sty House. On the way they met Alphenso Ass and Doreas Donkey, both looking very depressed.

"It's no good trying to win that carrot," said Doreas, sadly.

"We've tried every answer we can think of, and they're all wrong!" said Alphonso Ass.

"Dear, dear-what a shame!" said Hepsizbah "But, never mind, I'm sure Cuthbert will let you have a bite out of the carrot. He says he knows the answer."
Gertie Grunter greeted them very

civilly, and counted over the two acorns which each person had to pay as entrance fee for guessing the

"When does the sun flower?" asked

Gertie Grunter.
"Twelve o'clock, midday," said
Cuthbert Cockerel, and held out his

claw for the carrot.
"Not at all." said Gertie, with a chuckle, "That's shining, not flower-"Surely that's not wrong!" cried

Repzibab, quite distressed. Then she turned her back on Gertie Grunter, and thought hard for a few minutes Chirabelle Chicken guessed, and Gwendolen Goose messed, and so did Dulcima Duck, and even Taraxicum Turkey—but they all guessed wrong, "I know!" cried Hepizhali, turning round at last, "Sure, I know. The

round at last. "Sure, I know. The answer is 'When it does'!"
But it wasn't, and Gertie Grunter laughed still louder, and asked if they'd all agree to give it up.
"There isn't an answer." she said at last. "How could there he, because the sun doesn't flower?" And

as soon as she had done laughing she settled down and ate the carrot herself, and followed it up with the acorns that the Farmyard folk had

"Such a pigeish thing to do!" said Hepzibah, as she hurried back to the Cart Lodge with Chirabelle Chicken.
"But I'm sure it wasn't at all a nice carrot really. Only suitable for a pig!"

The Radio Times.

# A BIRD'S LOST HOME

A thrush built a nest in a railway wagon which was standing in a siding but was afterwards removed.

With a pathetic homing instinct the bird hovered around, and eventually

made for herself a new home on the railway cinder track, where, all un-perturbed by the passing of trains, she laid her eggs and sat on them.

## SNAKE STORY

This story concerns a little boy named Guy Farmer, on a visit with his mother to a farm in the Zoutpansberg district of the Transvaal. He was playing with his terrier when the dog was heard barking furiously. dog was heard barking furiously. Guy's mother ran out and saw a black snake, called a mamba, six feet long, swaying from side to side as it approached. The child stood fascinapproached. The child stood fascinated, and the dog ran up and down between them, evidently anxious that the child should run away while there

was time.

Then the terrier sprang at the snake, and a sharp but short struggle began. The mother snatched up gle began. The mother snatched up her boy and was running to get a re-volver when the barking ceased, the dog staggered a few paces and fell, and the snake came on again Put-ting the boy down, the mother was fortunately able to pin down the snake with a heavy boulder while she fetched the revolver to shoot it. Then she returned to where the terrier lay helpless It was still alive, but died in half an hour Its small master was inconsolable

with grief A stone has been put over its grave recording how the gallant little creature gave its life.

## HOUSES BUILT FROM SUGAR-CANE

A new material called celotex is being made from the refuse of sugar-

cane, and is being used in some parts of Australia for building houses.

Some parts of the Federal Parliament House in Cauberra have been built of celotex, and model houses have been built at Canberra and other towns to demonstrate its value.

## THE BUSY MOUSE

## 89 JOURNEYS TO A BOOT.

When a certain father of a family went to the hearth at his home the other day to put on his boots, lett there overnight to warm, he found one of them half full of peas.

the, of course, concluded that one of his children had put them there, but all denied any knowledge of them. Then the culprit was discovered. In the corner of the room was a wooden box in which the seeds for the garden had been placed, and during the day a mouse was seen to run to the corner. Investigation showed that it had gnawed a hole through the wood and through a paper bag containing peas, and it must have carried the peas one by one to the boots.

There were 89 peas in one boot, so the mouse must have made that numher of journeys. But why? We cannot say, but the penalty of its theft was death.

# JUST NONSENSE

Housewife (to 'pediar): "Get away it of here, the dog."

Pedlar: "All right, madam; but first allow me to sell you a good

The old lady went up to the taxi-driver and told him to drive her to a certain place. "Right-o, madam," said the man.

"Jump in."

But the old lady stood there. "Not antil you've started the eugine." she

The driver got down from his seat and started the engine with a half turn of the crank.

Proceeding up a steep hill the engine suddenly slowed and stopped.
The old lady nodded her head, and

with a knowing smile, said to the driver:
"Ah, driver, I thought you didn't wind it up enough!"

Young lady (on first visit to Western ranch): "For what purpose do you use that coil of line on your saddle?" Cowboy: "That line, as you call it, use for catching horses and

"Oh, indeed! And may I ask, what do you use for bait?"

"I say, waiter," said a diner, "this pigeon pie hasn't any pigeon in it?" "Well, sir, if you ordered a dog biscuit, you couldn't expect to find the animal, would you?"

Doctor: "Where did you first notice the pain?"
Patient: "Between the bathroom and

Old Lady: "How long does this train wait here?"
Porter: "Four minutes. From two to two two two."
Old Lady: "He! He! He! He! He! Thinks

he's the whistle."