When a shallow dish of water is

set in the sun for a certain length

of time we find that the water dis-

appears or is evaporated. If the

sun were not shining or the at-

mosphere were quite humid the

water either would not evaporate

at all, or, at best, more slowly. It

is well known that water does not

evaporate at low temperatures. It

is, in fact, heat which causes the

evaporation. In much the same

manner, if a metal body, for ex-

ample, the tungsten filament of a

vacuum tube, is heated enough

free electrons will be evaporated

from the filament. Even though

the electrons may leave the fila-

ment with high velocity, they

would be quickly stopped by air at

ordinary atmospheric pressure un-

der ordinary conditions. But if the

evaporation were in a vacuum

(a space containing very thin or

no air) they would not be so quick-

ly stopped. This is because the

electrons are so very small. As

a matter of fact, even though the

electrons may be evaporated, emit-

ted or projected to some distance

from the filament, they will nor-

mally be attracted back at the

same rate they are projected. This

is because when the electrons

leave the filament they leave the

filament with a positive electrical

charge remaining upon it. Then, the electrons being themselves

negative charges, they are at-

tracted back because of the posi-

tive charge on the filament. There

are then at all times electrons be-

ing projected from and returning

to the filament, so that a cloud of

negative charges is present all

around that body of ...etal. Since,

In radio transmission where

vacuum tubes are employed it is

very often necessary to use a va-

rishie condenser, for example, in

the antenna circuit, to vary the

wave length. The variable conden-

ELECTRON EMISSION OR EVAPORATION.

as we have seen, these electrons

are negative charges, the cloud

must be a large negative charge

surrounding the filament, and

there must be also a repelling ef-

fect of the cloud upon electrons

Now, if the temperature of the

filament is raised, as, for exam-

ple, by passing a larger current

through it, more electrons will be

emitted in a certain length of time.

That is, the electrons will be emit-

ted faster. But the faster they are

emitted the faster they are at-

tracted back (or repelled back by

the electron cloud), a_d a condi-

tion of equilibrium is still main-

tained, although, of course, it will

be a new condition. In addition to

the temperature, the conditions

which determine the rate of elec-

tron emission are shape and chem-

ical characteristics of the material.

There are also other considera-

tions, but those named are, per-

It has been stated in a previous

article that molecules and atoms

may also be evaporated from a

substance. If the temperature of

the filament is high enough atoms

of the tungsten will escape from

the metal with considerable veloc-

ity and will strike the glass walls

of the vacuum tube. The same

thing occurs in an ordinary tungs-

ten filament incandescent lamp.

If enough of these atoms are al-

lowed to leave the filament it is

burned out or ruptured at a certain

place. Also, every increase in the

number of atoms evaporated means

a decreased lift of filament. It is

quite necessary, therefore, not to

heat the filament of a vacuum tube

stand five amperes of current at

The construction is shown in the

illustration. The variation of ca-

pacity is secured by turning the

drum, which is controlled by the

knob. This knob and dial are the

only parts showing on the front of

a panel, the condenser being easily mounted on the back. The conden-

ser may also be mounted on a table for experimental work. Very

smooth and close adjustment of

capacity is had and results in close

tuning. The condenser is availa-

ble in two sizes, one with a capacity range of from 0.0001 to 0.005 microfarads and the other with a

range of from 0.0001 to 0.0012 microfarads. The smaller size is best

suited for reception. With the ca-pacity range of the larger size, the

wave length range may be varied from 50 to 100 meters in the aver-

One of the advantages of this

type of condenser is the freedom

from warping plates, which might

cause short circuits at certain set-

tings of the condenser. Another is

the low power factor, low dielec-

tric losses, which helps in mak-

ing a transmitting set more effi-

cient. It is small for the capacity

range and very rugged mechanic-

ally. Also, it is permanent in cali-

bration, which is of considerable

advantage.

A Herald-Sun Feature.

age low power transmitter.

its maximum capacity setting.

any more than is required.

APPARATUS NO DEVICES

By RALPH BROWN, RADIO ENGINEER

A VARIABLE CONDENSER FOR THE TRANSMITTER.

haps, the most i portant.

just leaving the filament.

THE JUNIOR BRITISH WHIG

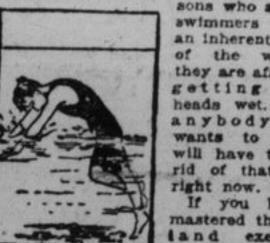
BIGGEST LITTLE PAPER IN THE WORLD

HUMOR PLAY WORK

THE SWIMMING CLASS - LESSON III

By JACK GIHON The Man Who Taught One Thousand Dose. New Orleans Boys and Girls How to Swim

to swim. That is—getting rid of any come up until the breath is all gone. if you're a lively boy.



mastered the dry land exercises given you last week, you are ready to go into the water. That does not mean that you can expect to plunge in and go speeding off at a champion's pace-far from it. You have two important things to practice it, making sure that your learn first-breathing and balance. We will take breathing first. Now you naturally inhale through the nose and exhale through the mouth; in swimming, that habit is reversed. You breathe in through the mouth and out through the bose. Practice

It a few times before going into the Now you're ready! Jump into water -not deeper than your waist-and | trudgeon. This is the stroke which, play around for a few minutes. First | in his long experience in teachduck your head (you can hold your | ing boys and girls to swim, he has mose the first time, if you want to.) | found best for beginners. You'll find out it isn't so bad. But it probably will take all your nerve to

duck your head without holding your Start bobbing up and down slowly. hardest job he will have in learning exhale through the nose. Do not joy—the finest place on earth to be sons who are not out of your nose, no water can enter!

an inherent dread you will find that it is not at all unof the water- pleasant-most persons I have taught care, with sun a-trickling through they are afraid of to swim rather liked it, in fact. the leaves and splashing on the bank, getting their Practice that until you can do it, and I would have no themes to write heads wet. And Now for balance. Swimming is only to please a fussy crank. anybody who a matter of balance, anyway. Take wants to swim a deep breath, and put your face into will have to get the water. Give yourself a little pushrid of that fear off, and kick your legs in the manner described last week. Arms should be If you have pointed over the head. After you

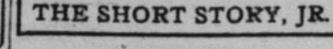


body is perfectly straight and only the legs moving, you will find you will make progress through the water. Why, when you've done that, you've almost learned to swim! But DO NOT go into water more than waist-deep.

Next Saturday Mr. Gihon will tell about the effective use of the



Answer to to-day's: Taft, Pierce, Cleveland.



The First Swim

Been thinking all the time about how happy I would be when school Start by taking a deep breath through be glad and free to go to that old Right now the beginner faces the your mouth; then as you so down, swimming hole, the scene of summer

I thought how quick an afternoon swimmers have it. After you practice this exercise, would fly if I were there, a-paddling in the shady pool without a single

I'd close my eyes, and that old pool



could hardly wait until upon its bank I'd be. Well, yesterday the day was warm; I thought the time was here to beat it to the pool and plunge into its depths so clear.

So in I went, and Jiminy! The water sure was cold! First thing I did was swaller all the pool that I could hold. A water-bug got onto me. You should have heard me yell! Then something stung me on the head and it began to

I got some water in my ears; it made me feel so queer-and then some cows came down to drink and got too all-fired near. I thought I'd try a dive or two, but hit the water flat. So I put on my muddy clothes and beat it home at that.

Cuckoo Agent: "Can I sell you an encylo-Abie: "No, I couldn't ride one if I

"Ouch! Who threw that "Aw. don't take it so hard."



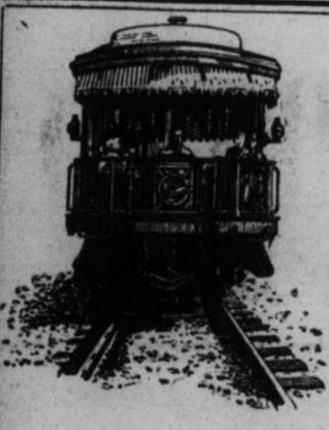
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Hide Market.

Beef hides, 45 lbs. and down, 6c lb.

Bee, hides, 50 lbs, and up .. 5c lb.

Beets, 2 bunches

Carrots, 2 bunches

Barley

Filets, 1b.

Haddoch, fresh, lb.

Kippers, pair

Finnan haddie, 1b.

Perch, 1b

Pike, 1b.

Cramps! Cramps!

Cramps! How to

Herring, fresh, lb. 8 to 121/4

Sweet potatoes, 2 lbs,

Onions, 1b.

Celery, for 2

Lettuce, for 3

Dairy

Grape

Orang

CALL STREET, S	
Dairy Products.	
mery butter, lb 40	
butter	
iers' rolls	
butter	指言. \11
fresh, dozen 30 to 32	WIND THE RESERVE TO SERVE THE PARTY OF THE P
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ns, dozen	
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ser shown is very well adapted for this purpose, and, in fact, may be used in any transmitting circuit where a variable condenser is required. It will stand up to 4,000 volts, as has been shown in tests made by the manufacturers. It will

Will readers interested in these radio articles kindly communicate

Calfskins 8c to 10c per it. Rib roasts, lb. 25 to 30 Now girls you will have to live up to Pork chops, lb ' to .35 all this. Bran, ton\$30 to \$32 Hogs, dressed, cwt20 Hay, baled, ton ..\$28.00 to \$29.00 Carcase, dressed .. \$8.00 to \$10.00 Jones. \$28.00 Fronts, lb, quarter Corn, yellow, feed, bush85 Hinds, lb., quarter The Lampman hopes that the owt. \$4.50 to \$4.90 Chops, lb

Straw, baled, ton \$16 to \$18 Sausage meat lb, Straw, loose, ton\$14 Wheat, local \$1.15 to \$1.25 Hides and Wook Wool, unwashed, coarse per lb...8c 12 % | Wool washed coarse 10c 22 Wool washed medium12c 12 % | Wool, rejectsat value Halibut, lb.28 to .30 Deacon skins60c each 18 Lamb and sheep skins, up to .. 65c 10 Horse hides \$2.00 12 1/2 Tallow, rendered 6c per It Steak, cod, lb. 12 1/2 to 15 Beeswax, clear 30c per lb. Trout, salmon, lb. 18 to 20 White fish 18 to 20

THE MAN ON WATCH

Porterhouse steak, lb. 30 to .32 the wedding bells ring oftener than the fire bells this month? is offered at "current" rates.

Well here we are in June. Will

ers in town at the church conven- did not invest right here at home.

Stop Them Quick them should be sung before the in- trance to the penitentiary, according When you have cramps, it is a vocation at a church service. It to the Portsmouth Philosopher. mighty quick relief that you want. should not. Good old "Nerviline" is sure as death to relieve cramps in a hurry. Just a

vomiting or the like occurs. Sold man, Girl Guides do not sulk, pout, vitally concerned. everywhere in large 35 cents bottles. | or refuse to obey their mothers.

six Browns, five Smiths and

.25 housewives who this week entertainse ed visiting ministers of the gospel 30 were prepared to supply pie at break-18 fast to those used to that course. Men of means should take notice

of the religious and charitable bequests of the late Abraham Shaw, a man of moderate means, who gave Wool unwashed medium 10c a goodly portion of his goods to

> Sleeping in church is again becoming common. Last Sabbath snores were heard in two churches, a Methodist and an Anglican. Some excuse might be made for the doctor who nodded, but other people should be able to keep awake.

The 24th of May has won out as the more popular holiday, and would be better if Kingston would fall in line and do its fire-cracker work on that date instead of the 3rd of June. You cannot even get the new generation away from the 24th of

More good Kingston money has Farmers of Kingston township lately gone to the bow-wows. Misticularly women, fell into the hands of smooth outsiders and believed in week with so many O.T.A. support- they are mourning the fact that they

> The "Standing Room Only" sign Some one asks if the national an- may soon be displayed over the en-

The Ontario Synod this week disfew drops in sweetened water, and the pain is gone. Buy a bottle of trusty old Nerviline to-day and keep it handy. Nerviline is a comraon household necessity, and is so us all commanders.

Last week there were no less than three general Hospital healing and spiritism. The tendency to ignore big matters like walking veterans supplied one of the these or wave them aside, as is so often done by the clergy, is wrong. A progressive church will tackle Last week there were no less than cussed vital topics when it got onto A progressive church will tackle when cramps, nausea, diarrhoea, According to a Montreal clergy- questions with which the people are

-THE TOWN WATCHMAN.

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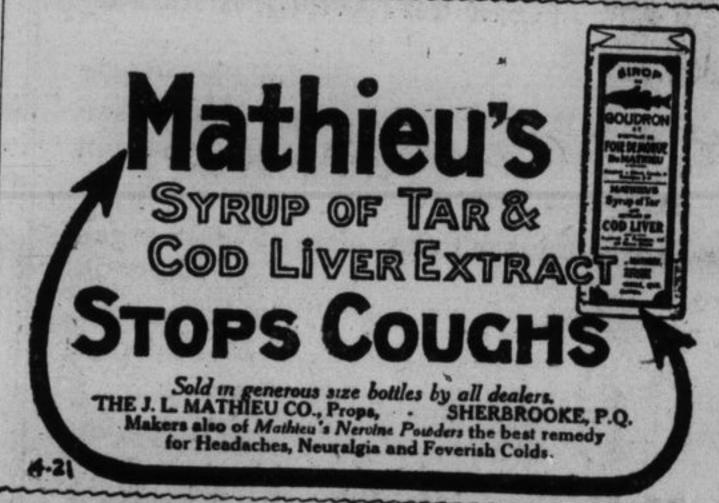
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