

Democratic Watchman

Belleville, Pa., April 4, 1924.

PECULIAR FACTS ABOUT RADIO WAVES.

There is on the market a most remarkable toy. It consists of a miniature dog-house and occupant. The former is made of wood and the dog is of a celluloid material. The tiny animal responds to the human voice. By sharply calling, "Here Rex!" or some similar command, or even by clapping the hands together smartly, the toy canine bounds from his quarters with startling realism. The dog, of course, does not actually run from the coop. His feet do not move; he simply slides out, for a distance of a foot or more. The performance is uncanny to those not in on the secret. The dog's antics, as in the case of a real animal, are due entirely to the commanding voice or sound. It is accomplished by means of sound waves. The dog is backed into his little house until he rests against a hidden spring. A sharp command or, in fact, any loud sound, sets up sound waves of a strength sufficient to release the spring which propels the toy animal forward.

This illustrates, in a way, the principle of radio communication. Sound waves from the wireless radiate in all directions and affect those receiving sets tuned up to receive them. Radio waves, though really sound, have the same velocity as light and electricity, namely, 186,000 miles a second. Dr. Steinmetz, electrical wizard, says the only difference between radio and light is the wave length. Most wireless broadcasting is done on a 360-meter wave length. The wave length of a beam of light is only 1-20,000th of a centimeter. The wave length of the X-ray is 100 times shorter. On the other hand, the electro-magnetic wave of long distance transmission lines has a length of 5,000,000 meters.

There is a difference of opinion whether light and sound waves travel by means of a mysterious substance in the air known as "ether." Dr. Steinmetz backs up Einstein in the latter's contention that there is no such thing as ether. "For a long time we have believed that light and sound are wave motions of some hypothetical thing called ether," comments Dr. Steinmetz. "This theory never was satisfactory because it required that the ether must be so extremely thin that the earth and all bodies move through it with terrific speed—100,000 feet a second—without any trace of friction, and at the same time the ether must be a solid body of high rigidity. This is unreasonable." Dr. Steinmetz further explains that if electro-magnetic waves alternate about 1,000,000 times a second they are radio waves, but if they alternate nearly 100,000,000 times a second they form beams of light. Though remarkable progress has been made within the past year in developing the radio-phonograph it is still in its infancy and much is yet to be learned.

No longer is it necessary to have unsightly outside aerials with some of the newer and more expensive types of receiving sets. A radio wave passes through a brick wall almost as easily as it does through the air because the thickness of the wall is only a small fraction of the wave length. On the other hand, a light wave cannot go through the same wall because it has not the same penetrative powers. Radio waves are able to travel through buildings and other obstacles with almost the same speed as in the air. Only with elaborate sets, though, can aerials be done away with. The beginner, also those of small pocket-books, must continue to use outside wires. A single wire aerial 100 to 150 feet long is sufficient. Stranded copper or solid copper wire should be used. Even insulated wire is satisfactory. The higher the aerial the stronger the signals. An increase of 5 to 10 feet in the height of an aerial will wonder.

Do not string aerials across a street or across electric wires; also keep them off electric light and telephone poles. Those living close to trolley lines find that sparking from passing cars interferes with the operation of their receiving sets. One radio fan partly overcame the difficulty by stringing his aerial at a right angle with the trolley wire; another set up single-strand aerials running in various directions.

Within five miles of a broadcasting station, it is said, one can hear indoor aerials 40 feet long stretched from room to room, can be used satisfactorily with crystal detectors. The crystal detectors, however, are only good on short range work. For those who use outside aerials of more than one wire it must be borne in mind that two wires one or two feet apart are no better than one wire because they conflict. Like use four wires on short spreaders are no better than one wire. The wires should be at least 10 feet apart to give the best results, though some say six. Most difficulties experienced by the amateur are due to faults of the aerial. An unsoldered splice or improper insulation is often the trouble. Always have the aerial above the tree tops. Bring the "lead" wire into the house on insulators. The lead wire should be the size of the combined number of wires in the aerial. Insulate ends of aerial wires with several small insulators. Check up your ground wire. It has been found that poor "grounding" causes as much trouble as poor aerials. Gas piping makes a poor ground but cold water pipes are excellent. Solder all connections to plumbing. You can have as many grounds as you want, the more the better.

Static atmospheric disturbances caused by heated atmosphere, dust storms, the aurora borealis or "northern lights," rain, snow, etc., are a great source of trouble. Under such conditions the listeners' ears are assailed by a bedlam of noises resembling the breaking of crockery. The U. S. bureau of standards issues a warning to both receivers and operators to keep their aerials away from tin roofs because sound waves have an affinity for them. Aerials should be at least 30 feet from the ground, if possible. The bureau says that

"when the antenna and the connection to the ground are properly made and the lightning switch is closed, the antenna acts as a lightning rod and is a protection to the building."

The beginner cannot understand why, when the air is filled with so many sounds, he can adjust his apparatus to receive a certain message. The plan used to eliminate radio interferences is compared to the following simple experiment: Press down the forte or loud pedal of a piano so that the strings are released, and then whistle some note or sound a note on a violin. The sound waves from your mouth or from the string of the violin will instantly set the corresponding piano strings in vibration, which fact can be immediately determined by both the ear and the fingers. It will be noted that the string which is being excited will vibrate while no other string on the piano will be much affected. If you raise or lower the pitch, you will find that the piano string will vibrate with greatest amplitude when your note corresponds with it.

Similarly radio broadcasting stations adjust their instruments to send off waves of a given length and the messages that are sent out are caught and heard only by receivers that are tuned up to that same wave length. Furthermore, receivers so adjusted will not be affected by messages of other wave lengths. On practically all receiving sets is a dial which permits the operator to tune his instrument to whatever wave length he desires, provided it lies within range of his apparatus.

The government plans to apportion different wave lengths among different classes of users and the radio-phonograph conference held recently at Washington, urged a system of allocation which ranges from 6000 meters for trans-oceanic radio telephone service to about 200 meters for amateurs.

RABBITS: THEIR CARE AND KEEP.

There are few pets more interesting to children than rabbits. They are gentle and winsome members of many a household and quite generally prime favorites.

Those who keep animals for pets, especially animals that are wild by nature, should study them carefully and find out their needs and dislikes. Rabbits are easily cared for but there are some important things that must be observed or provided if they are to be kept healthy and happy. To the prospective pet rabbit keeper it will be well to bear these facts in mind:

The rabbit house or hutch should consist of two parts, the one closed and the other open. The latter is the yard or run which should be a framework enclosed by wire on sides and over top. The closed portion may be an ordinary box at least two feet square for a pair of rabbits, but it should be tight and warm, affording protection to the animals from rain, drafts or a burning sun. Dampness and chills are always to be avoided, hence it is necessary to raise the house off the ground at least six inches. A few small holes should be bored in the floor for drainage and a few may also be made near the top of the house for ventilation.

The furniture of the rabbit house needs to be only a little dry hay or straw. The bedding should be kept clean. It is a good plan to remove soiled bedding and all refuse every morning and to supply regularly new and fresh hay.

Rabbits are naturally clean in their habits and in their feeding, so that attention must be given both to food and housing. Regularity in feeding is very important, both as to hours and as to the quantity of food given. There should be a fixed feeding time, then you will be less likely to forget the little animals dependent on you. The morning meal should never be given later than 8 o'clock; never feed them at noon, as that is the time for rest and sleep; the second meal should be given about sunset, and this is the principal meal, as rabbits eat with the greatest appetite during the night. You may give them almost anything in the way of fresh vegetables, oats, peas, beans, meal, bran, and sweet apples. A varied diet, such as carrots, hay, turnips, celery tops, lettuce or cabbage, given in moderation, will please them and do them good. Apples and pears, or the peelings of these, they are fond of. Fresh green grass is very good for them, also carrot or turnip tops, and potato parings. Do not give wet, green foods. After heavy rain the green vegetables should be well shaken and dried. Rabbits should never be fed entirely on bran and corn. As a rule rabbits do not require as much drink as many animals, but water should be kept within their reach, especially when there is a scarcity of green food. Remember always that overfeeding is as cruel and harmful as underfeeding.

In lifting your rabbits to and from the hutch, grasp both ears firmly with one hand, and with the other support the hind quarters.

EACH DAY.
Speak a gentle, kindly word.
With a goodly smile,
To an animal or bird—
It is worth your while!

—Our Dumb Animals.

Some New Styles.
Embroideries have taken quite an amusing turn this season; even printed materials have designs which tell a story or show distinct pictures.

There is a new and fascinating silk which has all the letters of the alphabet.

An embroidered motif on a Lelong frock shows a horse-racing scene, while at another house a game of polo is pictured. Another lovely evening frock has glittering embroidery representing fireworks, and a little yachting or seashore model has a large design of embroidered ships.

Plaiting was never more popular (though in this instance it makes merely the trimming—a white geometric frill at one side embroidered in heart, diamond, club and spade, hence the name). It is widely used for whole frocks, aprons, panels and in many other ways.

THE KEYSTONE POWER CORPORATION.

Included in the Huge Power Combine Which Will Serve Five States—Generating Equipment which Has Been Linked Together Rated at 2,000,000 Hp.

Eleven electric power manufacturing companies, including the Keystone Power Corporation, linked themselves together on March 20th in a co-operative distribution system to be known as the "Coal Field Super-Power Group." This group represented \$315,000,000 of invested capital, and will serve five east-central States.

The group controls approximately forty stations developing 2,000,000 horse power which tap the principal cities and towns of Ohio, Pennsylvania, Virginia, West Virginia and Maryland, serving a population of 7,250,000.

The companies entering into this comprehensive agreement for inter-connection are the Duquesne Light company, Penn Public Service Corporation, Potomac Edison company, American Gas & Electric company (which controls several operating companies in the region affected), Cleveland Electric Illuminating company, Northern Ohio Traction and Light company, Penn Central Power & Light company, Keystone Power Corporation, and West Penn Power company. Among the cities and towns served are Cleveland, Akron, Canton and Warren, Ohio; Erie, Pittsburgh, Johnstown, Connellsville, Altoona, Butler, Washington, Greensburg, McKeesport, Wilkensburg, Bellefonte, Ridgway, Kane, DuBois, Warren, Johnstown and St. Marys, Pa. Charleston, Wheeling, Fairmont, Clarksburg, Parkersburg, West Virginia. Cumberland, Hagerstown, and

Frederick, Maryland, and Winchester, Virginia.

Among the large steam plants thus linked together are Springdale, Ridgway, Colfax, Connellsville, Seward, Saxton and Bronots Island in Pennsylvania; Windsor and Hivesville in West Virginia; Williamsport, in Maryland, and Shilo in Ohio.

In addition there is considerable

water power within the territory. A great deal of work has been done on a 40,000 h. p. hydro-electric plant on the Cheat river, at the Pennsylvania-West Virginia line, and future developments may cause the production of about 500,000 h. p. on this river. There is also potential water power in the area of 130,000 h. p. from the Youghiogheny river and 400,000 h. p.

from the Clarion river, on both of which development work has begun. This vast inter-connection plan will tie the Keystone Power lines in with a great network of transmission systems of the companies mentioned in the paragraph above.

—If it really happened you will find it in the "Watchman."

Why?

Why are we asking for higher rates at a time when everyone is hoping and looking for lower prices generally?

When we adopted our present rates we had some 600,000 telephones in Pennsylvania. Most of the plant for their operation was installed at prices averaging those of 1912 and 1913 for labor and materials, and these rates were calculated to allow a fair return on that investment.

Since May, 1920, we have put in

half a million telephones (for a net gain of 200,000), and all of them, including the additional new plant required for their operation, at the new cost levels.

Telephone plant wears out. All replacements, too, have been made at these higher prices.

In the next five years we must put in 925,000 new telephones, gross, to meet the demands of the people of Pennsylvania for service.

Here is the point!

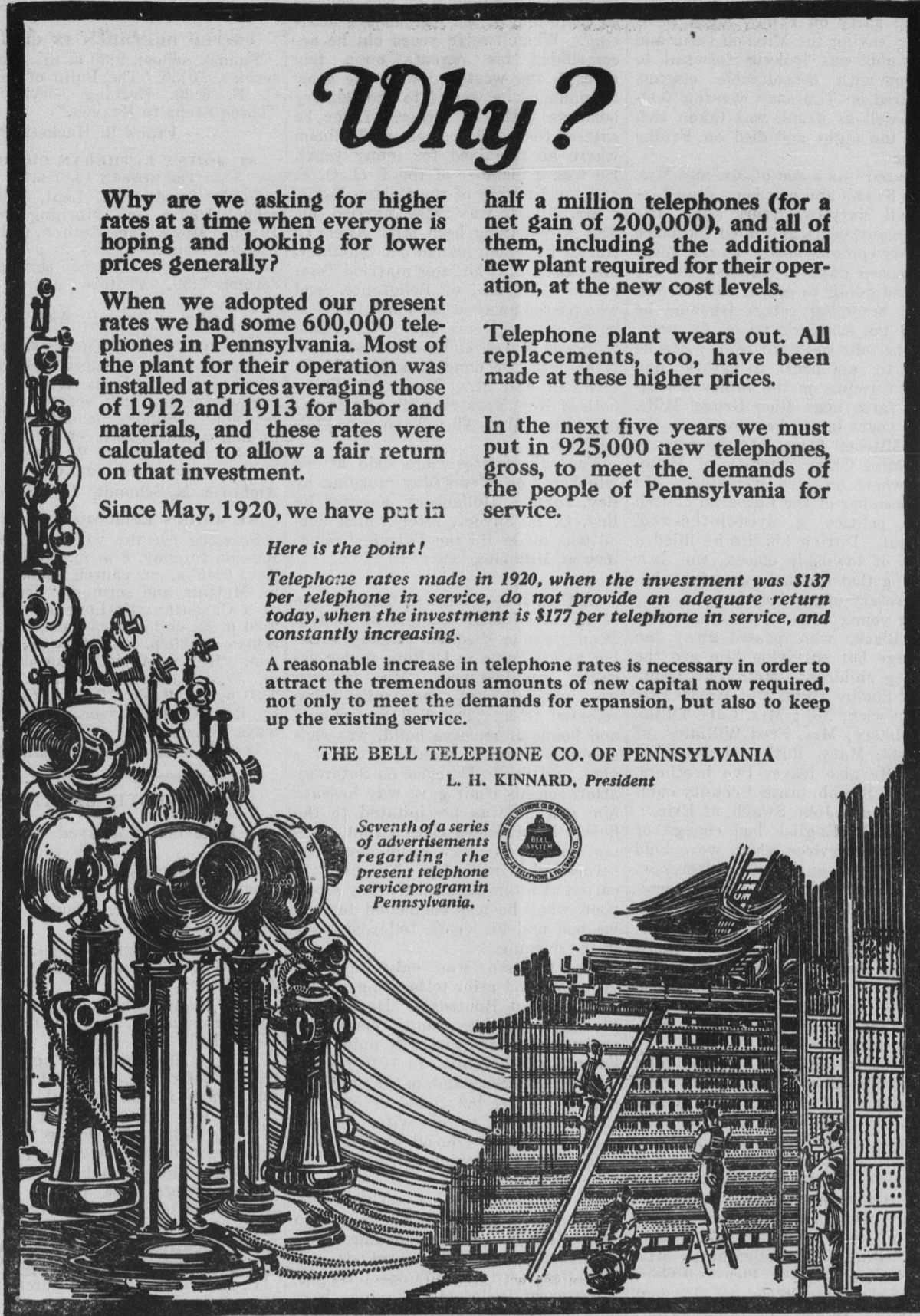
Telephone rates made in 1920, when the investment was \$137 per telephone in service, do not provide an adequate return today, when the investment is \$177 per telephone in service, and constantly increasing.

A reasonable increase in telephone rates is necessary in order to attract the tremendous amounts of new capital now required, not only to meet the demands for expansion, but also to keep up the existing service.

THE BELL TELEPHONE CO. OF PENNSYLVANIA

L. H. KINNARD, President

Seventh of a series of advertisements regarding the present telephone service program in Pennsylvania.



NR TONIGHT TOMORROW A'RRIGHT

Be Well And Happy

—and you have Nature's greatest gift, Nature's (NR Tablets) a vegetable laxative, to ease the organs and relieve

Constipation, Biliousness, Sick Headaches.

renewing that vigor and good feeling so necessary to being well and happy.

Used for Over 30 Years

Get a 25c. Box.

Chips off the Old Block

NR JUNIORS—Little NRs
The same NR—in one-third doses, candy-coated. For children and adults.

Sold By Your Druggist

C. M. PARRISH
BELLEVILLE, PA.

Have Your Will Drawn Now

AND NAME therein the First National Bank as your Executor—one that is faithful to every duty.

You are invited to consult freely with our officers.

THE FIRST NATIONAL BANK
STATE COLLEGE, PA.
MEMBER FEDERAL RESERVE SYSTEM

A Little Group of Senators, representing in large measure the forces of disorder, are dominating the United States Senate. They are bent on changing the structure of our government and our economic system. We have followed with more or less care the investigation in progress.

We think it is largely "bunk."
It has produced some evidence of wrong-doing.
A general feeling of distrust.
A great mass of unconfirmed gossip.
But how few hard, cold, facts!

We do not believe that there is widespread dishonesty among our public officials.

But are not Both the Great Political Parties Lacking in Courage?

The First National Bank
Belleville, Pa.



The Big Surprise

Fauble Suits and Top Coats

And the Price

See Them---a Real Surprise

Store open all day Thursday through April and May

A. Fauble