

FACTS ABOUT THE ELECTRIC CURRENT

Surprising How Little the Ordinary Person Knows About It—What a Kilo Watt Hour is, and Other Terms.

Editor Sussex Record:—Now that hydro-electric current seems to be an established fact will you permit me to make a few remarks that may be of some use?

It is surprising how little many people know about the current which they use every day. Some indeed are even ignorant as to what a kilo watt hour (k.w.h.) really is.

It is true that a great deal has been written on this subject lately, but much of it has been couched in technical terms which only confuse those who have never studied the subject.

My idea is to try to explain a few matters in such plain language that any one may readily estimate for themselves the amount of current that they would need, and what it will cost them.

It is also very desirable that all should be able to estimate the sizes of wire, fuses, etc., that are necessary for different loads of current.

In the first place, the ampere is the unit of electrical quantity and may be likened to water flowing through a pipe. The volt is the unit of electrical pressure, and may be compared to the heat or pressure that may be given to such water by a pump or elevated reservoir.

The watt is the unit of electrical measurement. It is the product of volts times amperes. Thus: one ampere at a pressure of one volt is one watt. Ten amperes at ten volts would be one hundred watts, or 1/10 ampere at 110 volts would be fifty-five watts.

Now, as one watt is a very small quantity, the kilo watt, which is simply 1,000 watts, is usually taken, and this quantity flowing for one hour constitutes the k.w.h., which is the basis of charge.

Now, if it is desired to light say six twenty-five watt lamps and three fifty watt lamps the total will be 300 watts used per hour and a very simple question in proportion will show the cost.

We will assume that the cost of current is six cents per k.w.h. Thus: at 1,000 (one k.w.) is to six (cost in cents) so is 300 (watts used) to the answer. This equals 1.8 or a little less than two cents as the cost of operating this number of lamps for one hour.

If domestic appliances, such as and

COULDN'T DO HOUSEWORK HEART WAS SO BAD

Many women get weak and run down and unable to look after their household duties owing to the heart action becoming impaired or the nervous system unstrung.

Nature intended women to be strong, healthy and happy instead of sick and wretched. But how can a woman be strong and healthy when day in and day out she has to go through the same routine of work, sweeping, dusting, cooking, washing, etc. Is it any wonder that the heart becomes affected and she gets irritable and nervous, has hot flashes, faint and dizzy spells, smothering and choking spells and can't sleep at night?

To all women whose heart is weak and whose nerves are unstrung we would recommend

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irons, toasters, etc., are used their ratings in watts will be found stamped upon them, such as 300, 400 or 500 as the case may be. This makes it equally easy to ascertain the cost of operating them.

If the current is used for power purposes it will be near enough correct to estimate one kilo watt as equaling 1 1/2 horse power. Thus a five h. p. motor would draw about four k.w., and with current at four cents, would cost sixteen cents to operate per hour.

In wiring for current for any purpose it is very necessary to remember that while a wire of any size will carry current at any pressure (voltage) it will only carry a quantity (ampere) proportionate to its size. For instance, it is necessary to serve a number of lamps, domestic appliances, etc., drawing combined one k.w. (1,000 watts) it will be necessary to know the ampere in order to select a wire of the proper size. As before stated, watts are the sum of volts times amperes. Thus, inversely, it is only necessary to divide the watts by the volts and we have 9.1 as the ampere that will be necessary.

The size of the wire necessary for any particular purpose is easily ascertained, as its carrying capacity is based upon its cross sectional area in circular mils, or thousands of an inch. Thus a 14 gauge wire will be found to have a diameter of .084 and this squared, or multiplied by itself gives an area of 4,006 circular mils.

The average householder will not need to go beyond this as 14 gauge wire is the smallest that is permitted by the fire underwriters, and they rate it as safely carrying 15 amperes. Now 15 amperes multiplied by 110 volts is 1,650 watt lamps.

If any domestic appliances for heat or power are to be installed, larger wiring will be necessary as their demand upon current is much heavier than lamps. A No. 10 wire can carry 25 amperes (2,750 watts), and a No. 8 will carry 35 amperes (3,850 watts).

This will make it necessary for much of the house wiring in Sussex to be changed as it was originally installed for lighting only and will not be heavy enough to carry the large amount of current that will be used when low charges prevail.

Fusing is just as important as wiring. If an attempt is made to force too much matter through a pipe, the pipe will burst. The same holds true with electric current, the only difference being that the wire instead of bursting becomes heated, burns off its insulation, and if carried far enough becomes red hot, or even melts. Not only is there great danger in this but there is a tremendous waste of current in the attempt to force it through a wire which is too

small to accommodate it, and the resistance of which converts it into heat. It is exactly upon this principle that all heating devices are based—the forcing of current through resistance.

The fuse is a safety valve designed to prevent an undue amount of current reaching the line. Should the two wires of the inside system accidentally come in contact (short circuit) or direct connection be established between them in any way, the full load of the main line would immediately rush across, with very grave results. The fuse prevents this. Its connecting element is composed of a small wire made of an alloy that melts at a comparatively low temperature and will destroy itself before any excessive load has passed it. As this fuse is intended solely to protect the system, the folly of over-fusing is at once apparent. It simply defeats its own object. Before a fuse is installed an estimate should be made of the maximum number of amperes that will be used at one time and a corresponding fuse selected. All fuses are designed to carry a small over load so there will be no danger of a blow-out under normal conditions.

Should this article be of service to any one it will be followed by others on the reading and testing of meters, installing of heating and power appliances, etc.

C. F. GIVAN.

BROWN COAL'S VALUE

Deposits of Tremendous Importance to Canada and Australia.

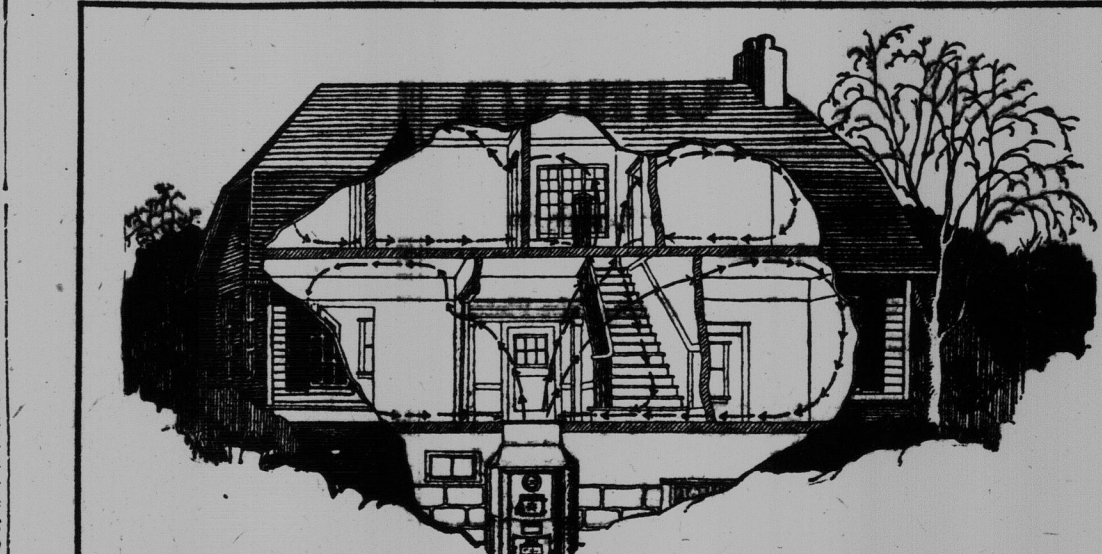
Professor Bone of the Imperial College of Science, lecturing recently on brown coals and lignites at the Royal Society of Arts in London, emphasized their importance to the British Empire.

He dealt especially with Morwell (Australia), German, Canadian and Malayan deposits. He said the coal from Morwell was not very different from dried Irish peat, although it possessed somewhat higher carbon contents and greater caloric value. While brown coal was a matter of indifference to Britain, it was of the highest importance to Canada and Australia.

Recognizing this, had appointed a lignite utilization board to carry on investigations. The results would be vitally important to Western Canada, where it was proposed to organize a great scheme for exploiting the immense territory containing cretaceous coal resources in Alberta and Saskatchewan.

The professor said that great as were the Canadian deposits, those of Australia were simply astounding, notably those at Morwell, Gippsland and Cape Otway. These deposits were of phenomenal thickness and without parallel in the world, he is quoted as having said in The Adelaide Observer. They were a wonderful store of energy awaiting the service of man, and he anticipated that in a few years not only would Melbourne derive the whole of its electric power from Morwell, but the state railways would be electrically worked from the same deposits.

Mr. McWise, the Agent-General for Victoria, welcomed the lecturer's tribute to the Morwell coal as coming from an expert. Cheap power and cheap fuel would bring population and prosperity to Victoria, which would become another Belgium, he said. Not only would Victoria's lands be peopled, but industries would be established there capable of employing tens of thousands through the development of this brown coal deposit.



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WARMS LIKE THE SUN

GIRL SCOUTS LOSE \$5,000 TO BURGLARS

Watches, Rings and Uniform Taken from National Headquarters in Lexington Ave.

New York, May 20.—Burglars obtained girl scout watches, rings, medals, uniforms and other equipment worth from \$8,000 to \$10,000 from the national headquarters of the Girl Scouts at 159 Lexington avenue, near Thirtieth street, the other morning, which had been entered from the rear.

They were still carrying away goods from the \$20,000 stock in the building when apparently they were frightened off by a shooting in the neighborhood caused by other criminals working at cross purposes. A bale of uniforms and other equipment was found in the back yard, where, in the opinion of the girl scout executive, it was dropped when the shots were fired, about 2 o'clock in the morning.

In addition to the loss occasioned by the plundering of the place, the National Girl Scout organization lost heavily because of the confusion into which its affairs were thrown. Just before Memorial Day and vacation time girl scout activity is at its greatest, and orders have been pouring in from troops all over the country seeking uniforms, watches, medals, girl scout watches and scout accessories. The carefully arranged stock was scattered and mixed, goods packed for shipment were thrown about and orders were lost, so that it may be impossible to supply many of the troops within the time limit.

Scout executives complained that the police of the East Twenty-fifth street station advised them to leave things as they were until the detectives arrived, but that they did not arrive until noon, after repeated calls for them. It was explained at the station that all the detectives had been engaged in court.

Part of the lost consisted of between 180 and 200 scout watches worth \$7.50 apiece. A number of sundial watches, an instrument with a miniature sundial and compass, were missing. Several hundred gold rings worth \$4 apiece were stolen. A safe in the office of Albert Haskin, controller of the organization was scratched and marred, but was not opened.

MORNING NEWS

OVER THE WIRES

Among the arrivals on the steamer Melita at Quebec yesterday morning was a party of fifty. Bernardo boys and girls brought out in charge of Mr. and Mrs. J. W. Hobbs. The girls were taken to the Bernardo home at Peterboro and the boys to Toronto. Mr. Hobbs said that this party was all spoken for and that many applications had been received from people in the west, which

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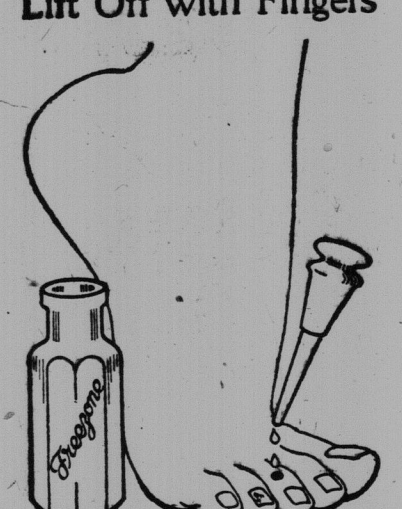
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