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HINTS TO CORRESPONDEN'IS.

Names and Address must accompany all letters or no attention will be paid thereto. This is for our information and not for publication.

References to former articles or answers should give date of paper and page or number of question.

Inquiries not answered in reasonable time should be repeated: correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.

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Plinerals sent for examination should be distinctly marked or labeled.

(7738) A. M. D. asks: 1. In the electrolysis of water about what per cent of the energy of the current is lost in producing heat in the solution? A. The heat developed in any circuit by the passage of an electric current through that circuit is expressed by Joule's law

Heat=0.24 C2Rt.

in which C is the number of amperes, R is the number of ohms, and ℓ is the time in seconds. The heat is found in calories. 'This equation is derived from the fact proved by experiment that one ampere flowing through a conductor having a resistance of one ohm will develop in that conductor 0.24 calories for each second it flows. It makes no difference whether the current is decomposing water or doing any other work. The heat produced is the same. 'This is the lost energy of an electric current. 2. How does the heat developed by burning the oxygen and hydrogen combined, compare with the original energy of the current? A. The doctrine of the conservation of energy requires that the heat produced by recom bining the oxygen and hydrogen into water shall exactly equal the energy in any other form which may be required to decompose the same quantity of water into its constituent oxygen and hydrogen again. This heat has no connection with the beat of the first query.

(7739) W. P. asks: I have a 4-ohm telegraph instrument. What number of wire (by A. W. G.) and how much must be used to wind it for 20 ohms? To change your 4 ohm sounder to make it have 20 ohms, you can unwind the wire on it at present and get 4 times as much of the same size to be put on together with that which was on the sounder before. If you know the number of the wire now on the sounder you can find from a wire table the length needed to make 16 ohms. This is the quantity you need to add to the sounder

(7740) A. B. T. asks how the slit is cut in the nibs of a steel pen. A. Theslit in steel pens is cut in a shear press with very sharp cutters.

(7741) A. B. S. asks: 1. Will small hand-power dynamo, as described in "Experimental Science," furnish power enough for spark, to ignite qua in gas engine? A. The hand-power dynamo will give a spark which will ignite gas. It will probably serve your purpose if driven at a high speed. We have recently advertised a dynamo especially designed for this work. 2. What is a jump spark? A. A jump spark is a spark produced by the breaking of an electric circuit, and which jumps between two metallic points. 3. Is it necessary to have iron jar for caustic potash cell as described in "Experimental Science"? A. The iron jar is one of the electrodes in the potash cell. If you use a glass cell you will require an iron plate in the liquid asan electrode. Since an old iron pot will answer every purpose it is the cheapeat method of putting up the battery.

(7742) S. C. asks: 1. How is electricity transmitted through the air as is thusdone by the wireless telegraphy? A. The waves produced by an impulse of electricity through a wire, fly off from the wire in all diessary to have iron jar for caustic potash cell as de-

rections. If the wires are properly arranged the wave may be perceived by a properly constructed apparatus at long distance from their source. 2. How is the record of the gramophone made? A. The record of the gramo phone is at first traced upon zinc, and afterwards etched into the zinc. This is transferred to hard rubber disks such as are used for the instrument. From the zinc disks a large number of impressions may be taken. 3: Of what are the diaphragms of talking machines made? A. The diaphragms of talking machines are made of thin glass, celluloid or iron.

(7743) H. W. C. writes: I have a small range boiler, galvanized iron, which I use for oxygen tank for lantern use. Now the tank is badly corroded inside and I wish to know what kind of paint or varnish would be suitable to use that the gas or any dampness carried over from wash bottle, would not affect. A. If your oxygen tank is badly corroded, you should not use it, since it is in danger of bursting under pressure. Asphalt varnish is the best substance to use to coat the inside of such a tank as a preventative of rust but we do not think it would be safe to use paint or varnish of any kind on the inner surface of the tank. The better way is to dry the oxygen before it enters the tank, since oxygen in presence of water will rust iron or steel very rapidly. If the gas were passed through calcium chloride after it eaves the wash bottle it would enter the tank dry.

TO INVENTORS

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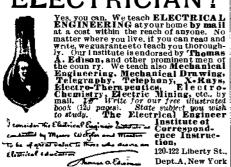


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ı	Ale and porter, Robinson Brewing Company Animal wash, F. O. L. Walpole	33,595 33,586
ĺ	Boots, shoes, gaiters, and slippers, Monarch Shoe	100,000
Į		33,577
F	Catsup, H. M. Spuhler Corsets, Worcester Corset Company	33,597 33,573
Ì	Detergent compound for laundry purposes, M. E.	ക്കാര
l	Butler	33,601
ļ	Food for domestic use, cereal, Farwell & Rhines	
į	Harmonicas, mouth, F. Scribner Hats, felt, Harrop, Gist & Company33,571,	33,568
į	Insecticides and disinfectants, W. L. Eaton	33,585
l	Liquors, certain named malt, Christian Feigen-	00
ı	span Lumber, certain named, G. Bell & Sons	33,593 33,645
1	Lumber, certain named, L. E. Moore & Company	
ı	Malt extract H. Bartels	33.592
ı	Meats, cured, John Morrell & Company33,598,	
ı	Metal, antifriction and Babbitt, Findlay & Battle. Musical instruments, automatically operated,	33.608
ı	American Automusic Company	33,569
ı	Overshirts, E. Rosenfeld & Company	33,574
ı	Paper and envelops, writing, G. B. Hurd & Com-	33,582
l	pany Paper bags, certain named, S. Nusbaum	33,583
ł	Powdered or pulverized material, dry, W. M. New-	
ı	rints, art, Curtis & Cameron	33,607
l	Remedy, hair, Newbro Drug Company	33.587
ļ	Rings, A. A. Caille	33,567
į	Rubber boots, Goodyear Rubber Company	33,575
:	Shoes, men's, G. L. Snow	33,600
i	Soap, L. J. Maloney	33,602
i	Soap, L. J. Maloney. Soap, laundry, N. K. Fairbank Company33,603 to	33,605
į	Sweat pads, E. L. McClain	33,610
١	Tablets, writing, G. E. St. John	33.581
١	Tobacco, scrap. Bendixen Tobacco Company Tonic, nerve and nutritive, George A. Newman &	33,606
١	Tonic, nerve and nutritive, George A. Newman &	22 500
ŀ	Company	33,588
ļ	mer, Clogg & Company	33,570
	mer, Clogg & Company Vehicles, automobile, Waltham Manufacturing	
1	Company	33.613 33.566
	Watches and watches ses, Camm Watchese Com-	001100
Ĩ	none	22 564

LABELS. 'Capsule Bluing." for bluing, F. J. Godov....... 7.17

waxes and oils, certain named, Vacuum Oil Company 33
Whips. carriage, Pomeroy & Van Deusen 33
Whisky, John Dewar & Sons 33,589 to 33
Yarns, Sacus Brothers & Company 33

"Formopilol," for hair tonic, Lincoln Chemical	*,
Company. "H. F's Hair Renewer," for a hair renewer, Ferrill	7.178
"H. F's Hair Renewer." for a hair renewer. Ferrill	.,
& Company	7.179
"Natural Red Raspberries," for canned goods,	
United States Printing Company	7,171
"Natural Strawberries." for canned goods, United	
States Printing Company	7,172
"Natural Whole Apricots," for canned goods,	~ 1=0
United States Printing Company	7,170
"Natural White Cherries." for canned goods,	~ 100
United States Printing Company	7,173
"Old Homestead," for popcorn, J. Breck & Sons "Phonograph Record," for phonograph records,	7,176
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"Anheuser-Busch," for beer, Gray Lithograph Company. 175
"New York Gone Wild," for harmonicas, F. Strauss 173
"No. 39. Tropby Whist," for playing cards, United States Playing Card Company. 174

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