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HINTS TO CORRESPONDENTS No attention will be paid to communications unless writer.
Names and addresses of correspondents will not be We renew our
We renew our request that correspondents, in referring former answers or articles, will be kind enough of the question. Corresponden
reasonable time should repeat them.
Persons desiring special information which is purely of a personal character, and not of general interest,
should remit from $\$ 1$ to $\$ 5$, according to the subject, is we cannot be expected to spend time and labor to btain such information without remuneration.
(1) S. Q.-The speed of a circular saw a the periphery should be from 6,000 to 7,000 feet pe
minute. The number of revolutions per minute will of course vary with the diameter of the saw.
(2) T. J. F. asks (1) for the best way $t$ asten emery on a wooden wheel, to be used in place of
solid emery wheel. A. Cover the wheel with leather devoid of grease, and coat the leather surface, a portion at a time, with good glue; immediately roll the glued surface in emery spread out on a board. 2. How can I
fasten small pieces of looking glass on iron? A. Use qual parts of pitch and gutta percha melted together (3) W. C. asks: 1 . What is the power of the simple electric light described in Supplement No 149? A. When supplied with a strong current it is equal to 5 or 65 -foot gas burners. It is designed for tempo-
rary use only. 2. What is the cost of manufacturing the dynamo-electric machine in Suprlement No. 1618
A. The one shown in the article referred to cost about
(4) L. D. asks: 1. Which is the better conductor, silver or copper? A. Silver. 2. And the com-
parative resistance offered to the electric current by water and the above? A. Taking pure silver $100,000,000$, the conductivity of distilled water would be 01.
(5) H. J. F. writes: In Supplement 162 a simple electric light is described. I wish to light oom 20x20x10 feet. 1. How large is the bell glass? A
$2 / 2$ inches. 2. Can I use battery carbon? A. Use a bon pencil made for electric lamps. 3. How can ray water tight after putting wire through? A. With gutta percha. 4. Thave one large cell Bunsen and one Smee. How many more and of what kind shall I get? A. One of the batteries described in Supplements 157.
158,159 , will do probably 8 or 10 Bunsen elements would 158,159 , will
be the best.
(6) W. B. F. writes: I tried to make an electric pen, like the one described in your Scientific American, of February 22d, 1879, using a Smee's battery, a circuit breaker, and an induction coil, but it did ifferent from an induction coil? A. A condenser consists of a number of sheets of tin foil scparated from each other by larger sheets of paper. One half of the
tin foil sheets are connected with one terminal of the tin foil shects are connected with one terminal of the
primary coil, the other half with the other terminal; the primary coil, the other half with the other terminal; the
tin foil sheets connected with one terminal alternate with those of the other terminal. The condenser is ssential to the working of the coil. For complete diamerican Suppleagent No. 160.
(7) J. De F. asks: 1. Knowing the resist nce of a wire of given conductivity, length, and diame an the resistance of any other wire be in propo oped in the secondary coil of an induction coil to pr vent the use of paraffine as an insulating materials A.
With proper battery power, no. 3. How high in the list of non-conductors does paraffine stand? A. It i paraffine answer as well as silk? A. No, because it renders the covering of the wire too thick, 5. Can you recommend any insulating material for making induc ion coils which will dry rapidly? A. Alcoholic shel ac varnish. Rosin to which a little beeswax has been added is an excellent insulator; it must be applied in a
melted state. 6. What is the composition of the black melted state. 6. What is the composition of the black in the Sc To which do you refer? Most, if not all of them are pat nted.
(8) B. V. F. writes: With reference to item 8, on page 139, of Scientific American, March 1
1879, I think there is somie mistake about the coal you hink required to heat 1,000 cubic feet space. I burn
his ome 8 tons coal to heat, in the whole year, such part of my house as must exceed $25 \mathrm{x} 20 \mathrm{x} 18=9,000$ cubic feet We keep up a moderate heat at night. Ventilate more
han most families do; take part only of the cool air, and only in part of the coldest weather, from the cellar, which at such times is opened into the main entries House wood, back plastered, and stands alone. If 100 lbs coal would heat 1,000 feet one day, I ought to burn 90 ibs. a day, or nearly 14 tons in December and 14 more correspond quite closely with some obtained by recent ccurate experiments. The estimate given in the Sc on the use of hot air heaters for very small buildings rooms. Of course, the larger the space to be heate the more economically it can generally be done.
(9) W. M. S. asks: Will the coil described in Supplement No. 160 do for the electric pen d if not how must it be changed? A. It is too large; mak one half the size given.
(10) B. G.-In reply to your inquiry as to Mr. Stroh's telephone experiment, we give the follow-
ing, which we clip from the English Mechanic: A singular experimental effect, of special interest just no rom its possible bearing on the theory of the sourc of sound in the Bell telephone, has just been ob-
served by Mr. Stroh, the well known mechanician. If a elephone, $T$, with the circuit of its coil left open, b

held to the ear, and a powerful magnet, M , be moved
gently up and down along the length of the magnet, a ently up and down along the length of the magnet, as shown by the arrow, and at a distance of an inch or two curring pulses of sound keeping time with the up and own motion of the magnet. The sound may be aptly is a striking resemblance between it and the micro phonic sounds of gases diffusing through a porou eptum as heard by Mr. Chandler Roberts. We under stand that Professor Hughes is investigating the
(11) "Enterprise" asks: What part of it volume will iron expand in passing from a temperatur of $60^{\circ}$ to melting temperature? A. The cubical expan $10 n$ of iron for each degree (C.) between $0^{\circ}$ and $100^{\circ}$ 00003546 of its volume, its volume being 1. This ratio since the mean coefficient of expansion for each degre
between $0^{\circ} \mathrm{C}$. and $300^{\circ} \mathrm{C}$. is $0 \cdot 00004405$. The question you ask has probably never been settled. You may form ing the melting point of the iron.
(12) P. L. O. asks for a good chemistry or a beginner to study without a teacher. A. Fownes"
"Chemistry"" Gorup-Besanez, "Inorganic, Organic and Physiological Chemistry." Inorganc, Organic
(13) L. E. M. asks: What is the best method of keeping fine guns from rusting, and what oil should be used \& A. For the outside, clear gum copal 1
part, oil of rosemary 1 part, absolute alcohol 3 parts Clean and heat the metal and apply a flowing coat of the liquid by means of a camel's hair brush. Do not handle until the coat becomes dry and hard. For the inside of the barrel a trace of refined sperm oil is as good as anything, but an excess should be avoided
(14) A. H. B. asks how much weight, falling 10 feet, will be reqmired to produce one horse power for five hours? A. One horse power for 5 hours $=33,000$
$\times 300=9,900,000$ foot pounds - so that the weight required $\times 300=9,900,000$ foot pounds - so that the weight required
(15) A. D. R. asks: 1. In renewing a Leclanche battery, do the zincs have to be amalgamated?
A. They A. They are usually amalgamated. 2. Will two cells large size Leclanche battery give any light, using the
simple lamp described in Suprlement No. 162? A. No.
(16) H. L. J. writes: In a recent issue of the Scientific American you state that the floating of the floating melted iron is on the same principle as he floating of ice in water. Ido not quite understand elevated temperature, floats upon molten iron for the same reason that ice floats upon molten ice-water-be-
cause it is specifically lighter. You will find the subject discussed at length in Tyndall's "Heat as a Mode of Motion.'
(17) J. W. will find full directions for canning corn, etc., on p. 394 (4), vol. 39, Scientific Ameri-
(18) "Amateur" writes: I wish to make some small bells that have a clear ring. What metal alloy of tin and antimony. See Scientific American polement No. 17.
(19) H.-A nutritious mixed diet is unques tionably the best, care being taken to a aoid an excess of
(20; W. F. writes: I have made an engine and would like to find out what size of boiler it will require. The cylinder has $21 / 4$ inch bore and 3 inches stroke. A. It depends upon pressure and speed to be maintater and 32 to 36 inches high, would suityou
(21) R. G. (Salt Lake).-Please send full (22)
(22) J. M. G. asks: If two persons each pull one hundred pounds on opposite ends of a rope,
what will be the strain on the rope? A. The strain on he rope will be 100 lbs .
(23) W. M. M. asks: In laying off a mill of the space of a stone is given to furrows and what to rinding surface? A. There is considerable difference in the practice of various millers, and we
would be glad to receive communications from those experienced in the art of dressing millstones.
Minerals, etc.-Sipecimens have been re eived from the following correspondents, and examined, with the results stated:
S. (New Orleans.)-The powder consists of a mixure of zinc ozide and finely powdered resin. A quan-
titative analysis would be necessary to determine the proportions.
Any numbers of the Scientific American Supple. IENT referred to in these columns may be had at this COMMUNICATIONS RECEIVED.

## Life Preserving Stone. By J. D. W

On Ventilation. By D. W.
What is Mental Action? By N. K.
What is Mental Action? By N. K.
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Panama Railroad or Canal. By G. R.P
A Problem. By K.
A Problem. By K
Magnetic Motor. By G. W. W., W. A. A., G. H. F House Warrning. By H. B. F
The Injector. By M. A. B.
Columbus' Problem; Cure for Diphtheria; The Mul lein Cure for Consumption.
A Visit to Twa. By L. R.
On Vacuum in Pumps and the Atwood Machine. By P. J. D.
P. J. D.
On the Patent Bill. By R.

## [OFFICIAL.]

INDEX OF INVENTIONS
Letters Patent of the United States were Granted in the Week Ending February 18,1879 ,
AND EACH BEARING THAT DATE [Those marked (r) are reissued patents.]
A complete copy of any patent in the annexed list urnished from this office for one dollar. In ordering the patent desire


Axle, carriage, C. H. Kendall ...................... 212,387
Axle for wagons. trussed, J. Herby ... ....... 212,378
Axle, vehicle, C. H. Kendall.
Barrel cover, C. Rrinton
Bed bottom, J. Flinn....

