

## gints to correspondents.


(9482) E. C. I. asks: A man recently made the statement that dew "falls" as rain
does. When challenged, he said that recenr
investigations have shown that the old theory that dew is deposited or precipitatad on oot ob-
jects colder than the surrounding air, is jects colder than the surrounding air,
wrong. He will accept only the statement the Scientific American. Will you be good
enough to state briefly the latest theory (acenough to state briefly the latest theory (ac-
cepted) of the formation of dew? A. The condensation of water vapor in the air into
water takes place upon chilling the air. This is seen as the earth cools toward night. The
chilling takes place most rapidly near the rapidly than the air above it. The air in con
tact with plants is thus cooled, and deposits its moisture upon the leaves of the plants.
This is dew. The same thing takes place also upon rocks at times and upon fences. Dew with which the air is in contact, and it is cormed right where it appears. It cannot be there been any new facts or theories on this subject in recent years. When the chilling of precipitated to a considerable height above the arth's surface, and it is then called "fog."
(9483) W. P. Y. asks: Will you please answer the following questions con-
cerning storage batteries described in Supple ment No. 845? 1. There are sixteen plates inches, plus the outside wood strip $1 / 2$ inch $=2$ $3 \%$ inches. Why does the jar need to be 7 inches wide? A. The glass jars for the storage cells in Supplement No. 845 are stated to be
$6 \times 9$ and $71 / 2$ deep. Just why Mr. Hopkins selected that size we do not know. It is a
size usually kept in stock. It will contain a goo quantity of the electrolyte in addition to
the bunch of plates, and seems to be a good the bunch of plates, and seems to be a good
size for that number and size of plates. If a size not far different from this is more a a ailable for you, there is no reason why you may
not take it. You cannot probably make the bundle of plates as small as you calculate it to be. They will not fit with mathematical
exactness. Far from it; they must not touch exactness. Far from it; they must not touch
each other. 2. Description says when forming batteries discharge through a resistance lamps for this, and how many will I require to in discharging the cells. To obtain 20 ohms,
if you have cells enough to light the lamps, you will require about ten lamps in multiple. about 220 ohms resistance, and ten such lamps will have about 20 ohms resistance. 3. I have
built a dynamo as described in Supplement built a dynamo as described in Supplement
No. 600. It works all right except the commutator. The bronze wears down faster than
the mica, making it spark. I have thought of the mica, making it spark. I have thought of The most of the commutator bars is to use harder material, brass or copper, for the bars. The
brushes will wear less if made of carbon than if made of copper.
(9484) J. B. G. asks: Kindly inform me of some rule for calculating the relation
between spark length and distance required in wireless telegraphy. I mean by this the distance between stations and the length of maximum spark which the coil can produce. In
case there is no such law, could you give us approximately the spark length required to operate over three miles? Also, please state what coherer is best adapted to amateurs' use,
and how much additional spark is necessary, as I suppose it would not be as sensitive as those used to obtain data on the subject. We
intend making as much of the apparatus as possible, and would appreciate any information or references you could give us on the
subject. A. We have published in our Supplement, No. 1363, price 10 cents, a full description of a wireless telegraph apparatus you will find the details you ask. The construction of a coil is described in Norrie's 'In. as we know, the relation between spark length
and distance is not a matter of calculation,

(9485) L. E. B.. asks: 1. Can you recommend to me any books which would be
of service to one taking up a course of in-
struction in physics? struction in physics? I should like to find
something in the nature of a graded course, something in the nature of a graded course,
starting with the simplest lessons. A. A good
book for beginning Carhart and Chute's "High School Physics," which we can send for $\$ 1.40$ mailed. Fol-
lowing this, you can take up the study of any
special part of physics, such as electricity special part of physics, such as electricity,
for which we can furnish you any books you may require. A most excellent general wor
is "Experimental Science,' a book which co ers in a most excellent way the several por-
tions of physics, with practical work, which must give one who follows it out a very comprehensive view of the whole field. This we
can send you for $\$ 5$ mailed. We call your at
2. Will you please tell me whether it is true
that the moon's rays, shining upon the face
of a sleeping person, have any detrimental ef-
fect upon him mentally or physically, such as
causing partial bllndness, double vision, etc. ?
A. We have not the slightest belief that the
light of the moon can do any of the things
which you mention and which "old wives'
fables" have charged it with doing. The word
"lunatic" means one affected by the moon.
Cut there is no scientific proof that anyone was
ever made crazy by the rays of the queen of
night. The light of the moon is simply sun-
light reflected and softened by reflection from
the cold polished surface of the moon. Inow
can any occult effect be produced in such a
way? The imagination must vividly affect one
to produce such results from such means.

## NEW BOOKS, ETC

Lloyd's Register of American Yachts Published by Lloyd's Register of
Shipping, 15 Whitehall Street, New York. $12 \mathrm{mo} . ; \mathrm{pp} .500$. Price, $\$ 7.50$ Register, published by Lloyd's Register of Ship ping, fully justifies the promise of the first
volume, issued last year, and gives to yacht comprehensive directory of yachting. Much has been done during the year to correct and
amplify the original information, and in par amplify the original information, and in par
ticular to keep pace with the great change which is now taking place in the sailing fleet The list of power yachts, which includes 1,019 vessels, shows a very large number of old or racers, which are now auxiliaries. Very other types of gasoline vessels are given. Th list of sailing yachts includes 2,099 vessels,
making a total of 3,118 yachts of over 25 feet over-all length in use in the United States and Canada. In this list every section of the two
countries is represented, from Eritish Columbia to Nova Scotia, and from Southern Califo nia to Maine and Florida. The list of clubs
includes 159, and the list of yacht owners includes nearly 3,000 names. A list is given
of the yacht designers and builders of the United States, with the various yachts de
signed or built by them. The official signa letters of all yachts are given in a separat list, and also a list of former names of yachts.
The letterpress and the illustrations are of a very high order, and the colored plates of flags, of which there are no less than ifty-seven, are
among the most complete that have come to our notice. They include the national flag, the
international code of signaling, the United States Weather Eureau signals, the American and Canadian yacht club flags, of which there
are nineteen colored plates and thirty-three plates of private signals
forty flags to the page.
Fireside Astronomy. By D. W. Horner F.R. Met. Soc., M.B.A.A. London: 105. Price, 60 cents.

This pamphlet forms a simply-worded treat ise on some of the little-known and often mis
understood facts in the science of astronome It was written for "the man in the street,'
who simply wishes to learn the reason of cer tain things that happen in the heavens, but who has not the time or means to investigat
such matters for himself. The book is ver

## simple in character and language, and should give the tyro a fair knowledge of the main

 give the tyro a fair knowledge of the mainprinciples of astronomy. It is illustrated with number of sketches and din
The Vermilion Iron-Bearing District o Morgan Cla. With an Atlas. By J Van Hise, Geologist in Charge. Washington: Government Printing Office 1903." Pp. 462.

This is Volume XLV. of the Monographs of large, well printed upon fine paper, and illustrated by maps, plates, and panoramic view tions are separately dealt with, and there are


TAKE THE NYCKELOPLATEROAD FOR
 cation to local ARents, or
291 Man St. Buffat N. Y,
385 Broadway, New York.

Every Hairbreadth of Surface Pollohed Perfectly by
this Poishing Lathe. GOODELL=PRATT COIPAANY, Greenfield, Mass.


MAKE YOUR OWN GAS ENGINE


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tails.
Free-Hand Lettering. Being a Treatise on Plain Lettering from the Practical Standpoint for Use in Engineering Schools and Colleges. By Victor T. Wilson, M.E. New York: John Wiley \& Sons, 1903 . 8 vo.; pp. 105; 13 full-
page plates. Price, $\$ 1$. page ples. Price
To begin with, great stress is laid upon the fact that good lettering is good design, and is
an art not to be acquired by the assimilation of a few simple mechanical principles. The proper proportions of the various styles of ters to spaces, are discussed from the artistic point of view. Many helpful examples are
given of lettering suited to different purposes. The chapter on "The Use of the Pen" contains much common sense advice; its analysis stroking gives the student a grounding in first

INDEX OF INVENTIONS
For which Letters Patent of the United States were Issued for the Week Ending

November 15, 1904
ANDEACHBEARINGTHATDATE




