

HINTS TO CORRESPONDENTS.

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 This is for our information and not for publication.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.

Buyers wishing to purchase any article not adver-tised in our columns will be furnished with addresses of houses manufacturing or carrying the same.

the same.

Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.

Scientific American Supplements referred to may be had at the office. Price 10 cents each.

Books referred to promptly supplied on receipt of price.

(9482) E. C. I. asks: A man recently that dew is deposited or precipitated on ob jects colder than the surrounding air, is wrong. He will accept only the statement of the Scientific American. Will you be good enough to state briefly the latest theory (accepted) 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 ground. Grass and other vegetation cools more rapidly than the air above it. The air in contact 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 is thus deposited from the air upon surfaces with which the air is in contact, and it is formed right where it appears. It cannot be said to fall, in any exact use of term, nor have there been any new facts or theories on this subject in recent years. When the chilling of the air proceeds further, the moisture may be precipitated to a considerable height above the earth's surface, and it is then called "fog."

(9483) W. P. Y. asks: Will you please answer the following questions concerning storage batteries described in Supple MENT No. 845? 1. There are sixteen plates 1.16 inch thick, separated $\frac{1}{8}$ inch = $2\frac{1}{8}$ inches, plus the outside wood strip $\frac{1}{2}$ inch = 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 x 9 and $7\frac{1}{2}$ deep. Just why Mr. Hopkins selected that size we do not know. It is a size usually kept in stock. It will contain a good quantity of the electrolyte in addition to 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 available 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 each other. 2. Description says when forming batteries discharge through a resistance of 20 or 30 ohms. Can I use incandescent lamps for this, and how many will I require to use? A. You can use lamps for a resistance 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. . 16-candle-power 110-volt lamp, hot, has about 220 ohms resistance, and ten such lamps will have about 20 ohms resistance. 3. I have 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 making another, and using oiled paper instead of mica. What would you advise? A. The most efficient remedy for the rapid wear 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 ise on some of the little-known and often misbetween 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 SUP-PLEMENT, No. 1363, price 10 cents, a full description of a wireless telegraph apparatus intended for amateurs' use. If you get this, you will find the details you ask. struction of a coil is described in Norrie's 'Induction Coils,' which we send for \$1. So far as we know, the relation between spark length of ore basins and mines. The various formaand distance is not a matter of calculation, tions are separately dealt with, and there are J. H. Bunnell & Co., Inc. 20 Park Place New York

but of experience. Under good conditions a spark of one inch will be detected at a distance of about a mile. If you wish to send three miles you should have a spark of three inches, although a somewhat shorter spark would transmit to that distance over water in favorable conditions.

(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 instruction in physics? \bar{I} should like to find something in the nature of a graded course, starting with the simplest lessons. A. A good book for beginning the study of physics is Carhart and Chute's "High School Physics," which we can send for \$1.40 mailed. Following this, you can take up the study of any special part of physics, such as electricity, for which we can furnish you any books you may require. A most excellent general work is "Experimental Science,' a book which covers in a most excellent way the several portions of physics, with practical work, which must give one who follows it out a very com-Minerals sent for examination should be distinctly prehensive view of the whole field. This we marked or labeled. can send you for \$5 mailed. We call your attention to the inclosed circular of this book. 2. Will you please tell me whether it is true made the statement that dew "falls" as rain that the moon's rays, shining upon the face does. When challenged, he said that recent of a sleeping person, have any detrimental efinvestigations have shown that the old theory fect upon him mentally or physically, such as causing partial blindness, 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.

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NEW BOOKS, ETC.

LLOYD'S REGISTER OF AMERICAN YACHTS Published by Lloyd's Register of Shipping, 15 Whitehall Street, New York. 12mo.; pp. 500. Price, \$7.50.

The second volume of the American Yacht Register, published by Lloyd's Register of Shipping, fully justifies the promise of the first volume, issued last year, and gives to yachtsmen what has long been needed, a thoroughly comprehensive directory of yachting. Much has been done during the year to correct and amplify the original information, and in particular to keep pace with the great change which is now taking place in the sailing fleet through the installation of gasoline engines. The list of power yachts, which includes 1,019 vessels, shows a very large number of old sailing yachts, once well known as cruisers or racers, which are now auxiliaries. full details of the engines of these and of other types of gasoline vessels are given. The 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 British Columbia to Nova Scotia, and from Southern California 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 designed or built by them. The official signal letters of all yachts are given in a separate 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 fifty-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 Bureau signals, the American and Canadian yacht club flags, of which there are nineteen colored plates and thirty-three plates of private signals of yacht owners, with forty flags to the page.

FIRESIDE ASTRONOMY. By D. W. Horner, London: F.R. Met. Soc., M.B.A.A. Witherby & Co., 1904. 32mo.; pp. 105. Price, 60 cents.

This pamphlet forms a simply-worded treatunderstood facts in the science of astronomy. It was written for "the man in the street," who simply wishes to learn the reason of certain things that happen in the heavens, but who has not the time or means to investigate such matters for himself. The book is very simple in character and language, and should give the tyro a fair knowledge of the main principles of astronomy. It is illustrated with a number of sketches and diagrams.

MINNESOTA. With an Atlas. By J. New York Office, 34 W. 28th St. Morgan Clements. Charles Richard Van Hise, Geologist in Charge THE VERMILION IRON-BEARING DISTRICT OF ington: Government Printing Office. 1903." Pp. 462.

This is Volume XLV. of the Monographs of the United States Geological Survey. large, well printed upon fine paper, and illustrated by maps, plates, and panoramic views



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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. 8vo.; pp. 105; 13 fullpage plates. Price, \$1.

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 lettering, of large to small letters, and of letters 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 of stroking gives the student a grounding in first principles that should serve him in good stead.

INDEX OF INVENTIONS

For which Letters Patent of the

United States were Issued

for the Week Ending

November 15, 1904

AND EACH BEARING THAT DATE

[See note at end of list about copies of these patents.]

1	Advertising blotter, N. L. Bassett	774,999
	Air brake, J. C. Clyde	775,€ 62
3.	'Air brake, compressed, G. E. Houplain 'Air brake coupling, automatic, H. O. Beale	775,141 775,286
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	More Alternator Safety coupling device. Baker &	774,824
),	mere Alternator safety coupling device, Baker & Scott Aluminium, etc., reducing, H. S. Black-	774,974
-	Mere Hallminium, etc., reducing, H. S. Black-	775,060
S	more Ammunition jacket, J. W. Righton Amusement apparatus, J. H. Maguire Animal trap, J. W. Collins Aaeptic cartridge, etc., W. E. Ranz. Auger or drill for boring rock, etc., E. Cachelin	775,149
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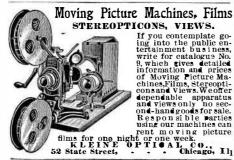


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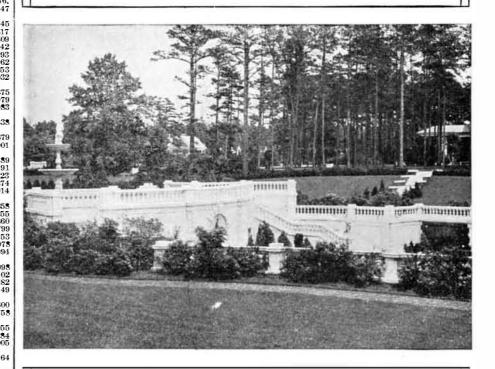
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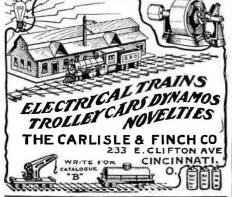
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