

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 This is for our information and not for publication. Beferences 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 bis 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 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 ef-investigations have shown that the old theory fect upon him mentally or physically, such as 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 $\frac{1}{3}$ inch = 2 $\frac{7}{8}$ 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 $6 \ge 9$ 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. F'ar 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 in-stead 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

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? 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 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 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 But 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 sunlight reflected and softened by reflection from the cold polished surface of the moon. How 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. 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. Very 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.



The Franklin Gas Engine is an ideal motor for practical use, having one-half horse power. Complet: set of cashings for annateurs to ma-chine and put together, all necessary materials, detail blue prints, etc., \$16.50. either horizontal or vertical type. Send for illustrated booklet No. 9



Price, 834.40 Dynamo enly, for eight 16-cp. lamps, \$25.00; lamps, wire, fixtures, etc., \$8.00; just suit-able for residences, small fac-teries, yachts, etc. A strictly first_classguaranteed outfit. We wind for any special purpase to erier, usually without extra cost. Semi for Bulletm No.3. The Fibridae Flortrical The Elbridge Electrical Mfg. Co., Water Street, Elbridge, N. Y., U. S. A.

THE MIETZ & WEISS KEROSENE



and GAS ENGINE burns KEROSENE cheaper and safer than gasoline. Automatic, simple, reliable. No electric bat-tery on fame used. Perfect regula-tion. Beited or directly coupled to dynamo for electric highing, charge ing storage batteries, pumping and all power purposes. METZ, 198-183 MOTT ST., New YORK, ADOPTED BY U. S. GOVERNMENT, Highest Award, direct coupled Generator Set, Paris Exposition, 1900.

photomicrographs of granules and their de-

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

	_
Advertising blotter, N. L. Bassett Air brake, J. C. Clyde Air brake, compressed, G. E. Houplain Air brake coupling, automatic, H. O. Beale Alcohol and aldehyde, making, H. S. Black-	774, 999 775, 0 62
Air brake, compressed. G. E. Houplain	775 141
Air brake coupling, automatic, H. O. Beale	$775,141 \\ 775,286$
Alcohol and aldehyde, making, H. S. Black- more	774,824
more Alternator safety coupling device, Baker & Scott Aluminium, etc., reducing, H. S. Black- more	114,824
Scott	774,974
Aluminium, etc., reducing, H. S. Black-	
more	775,060 775 149
Amusement apparatus, J. H. Maguire	775,149 774,917 775,264
Animal trap, J. W. Collins	775,264
more jacket, J. W. Righton. Amusument apparatus, J. H. Maguire Animal trap, J. W. Cellins. Aseptic cartridge, etc., W. E. Ranz Auger or drill for boring rock, etc., E. Cachelin	774,779
Cachelin	774,933
Automatic brake, M. A. Fillmore	774,913 775,150 775,224 775,233 774,941
Automobile, S. C. Rockman	775,150
Automobile driving gear. G. C. Cannon	775,233
Awing roller chain box, S. M. Hauser	774,841
Backing sheet or filing paper, C. Q. C.	774 762
Rahy jumper. R. Gaines	775,133
Bag, W. P. Flowers	775,268
Band machine head, C. A. Cline	775,125
Wessels	775.058
Basin receiving head, catch, A. W. Kurz	774,846
Bearing, ball, A. Riebe	774,893
Bedelothing supporter. J. P. Buckley	775.263
Bedstead, folding, A. Allendy	775,121
Belt dressing, G. Schlebie	775,119
Bending machine. J. Arber	775,203
Beverage, E. M. Roberts	775,249
Bicycle holder or support, J. Speir	774,995
Binder. H. P. Jones	775.220
Binder, loose leaf, G. F. Watt	775,057
Binder, temporary, H. E. Wendland Binder transfer T B Eddy	775,055
Binding or trussing mechanism. sheaf. Rob-	1.0,101
erts & Lewson	774,894
erts & Lowson Bisulfite liquer, apparatus for preparing, Drewsen & Parent	774,8 9 4 774,869
erts & Lewson Bisulfate liquer, apparatus for preparing, Drewsen & Parent Block. See Building block.	774,8 9 4 774,869
erts & Lowson Bisulfite liquor, apparatus for preparing, Drewsen & Parent Block. See Building block. Block, T. R. Ferrall.	774,894 774,869 774,870 774,902
eris & Lowson Bisulfite liquor, apparatus for preparing, Drewsen & Parent Block. See Building block. Block, T. R. Ferrall. Bluing device, A. Acheson. Beiler, E. T. Coweland.	774,894 774,869 774,870 774,902 774,832
erfs & Lowsón Bisulfite liquer, apparatus for preparing, Drewsen & Parent Block. See Building block. Block, T. R. Ferrall. Buing device, A. Acheson. Boiler, E. T. Copeland. Beiler furnace, steam, A. Q. Nash	774,894 774,869 774,870 774,902 774,832 775,116
erts & Lowson Bisulfite liquor, apparatus for preparing, Drewsen & Parent Block. See Building block. Block, T. R. Ferrall Buing device, A. Acheson Beiler, E. T. Copeland Beiler furnace, steem, A. Q. Nash Book finishing machine, Steel & Kalaba Book finishing machine, Steel & Kalaba	774,894 774,869 774,870 774,902 774,832 775,116 775,257
erfs & Lowson Bisulfite Liquor, apparatus for preparing, Drewsen & Parent Block. See Building block. Block, T. R. Ferrall Buing device, A. Acheson. Beiler, E. T. Copeland Beiler furnace, steam, A. Q. Nash Book, fnishing machine, Steel & Kalaba Book, posting proof and balance, Moeser & Reot	774,894 774,869 774,870 774,902 774,832 775,116 775,257 775,044
erfs & Lowson Bisulfite liquor, apparatus for preparing, Drewsen & Parent Block, See Building block. Block, T. R. Ferrall. Builar, E. T. Copeland. Beiler, E. T. Copeland. Beiler furnace, steam, A. Q. Nash. Book finishing machine. Steel & Kalaba Book, posting proof and balance, Mooser & Root Book support, B. R. Green.	774,894 774,869 774,870 774,902 774,832 775,116 775,257 775,044 774,984
eris & Lowson Bisulfite liquer, apparatus for preparing, Drewsen & Parent Block, See Building block. Block, T. R. Ferrall. Builar, E. T. Copeland. Beiler, E. T. Copeland. Beiler furnace, steam, A. Q. Nash. Book, posting procent and balance, Moeser & Rook, posting procent and balance, Moeser & Rook apport, B. R. Green. Books a	774,894 774,869 774,870 774,902 774,832 775,116 775,257 775,044 774,984 774,984 775,040
erfs & Lowsón Bisulfite liquer, apparatus for preparing, Drewsen & Parent Block, See Building block. Block, T. R. Ferrall. Buing device, A. Acheson. Beiler furnace, steam, A. Q. Nash. Beiler furnace, steam, A. Q. Nash. Book, pesting procef and balance, Mosser & Book, pesting procef and balance, Mosser & Book support, B. R. Green. Beoks support, B. R. Green. Beoks bar teol, adjustable, J. Johnson Bettle, C. King. Bettle, G. King.	774,894 774,869 774,800 774,902 774,832 775,116 775,257 775,044 774,984 774,756 775,040 775,059
erfs & Lowson Bisulfite liquor, apparatus for preparing, Drewsen & Parent Block. See Building block. Block, T. R. Ferrall Buing device, A. Acheson. Beiler, E. T. Copeland Beiler, E. T. Copeland Boiler, furnace, steam, A. Q. Nash Book, fnishing machine, Steel & Kalaba Book, posting proof and balance, Moeser & Root Book support. B. R. Green. Boring bar tool, adjustable, J. Johnson Sottle, forming implement, Coale & Greens- Bottle filling machine, Ted. Wise	774,894 774,869 774,800 774,902 774,832 775,116 775,257 775,044 774,984 774,984 774,756 775,040 775,059
erfs & Lowson Bisulfite liquor, apparatus for preparing, Drewsen & Parent Block, See Building block. Block, T. R. Ferrall Buing device, A. Acheson. Beiler, E. T. Copeland Boiler, B. T. Copeland Boiler, B. T. Copeland Book, posting proof and balance, Mosser & Root Book support, B. R. Green Book support, B. R. Green Boring bar tool, adjustable, J. Johnson Bottle, forming implement, Coale & Greens- fielder	774,894 774,869 774,870 774,902 774,832 775,116 775,257 775,044 774,756 775,040 775,059 775,206 775,206
eris & Lowson Bisulfite liquer, apparatus for preparing, Drewsen & Parent Block, See Building block. Block, T. R. Ferrall. Buing device, A. Acheson. Beiler, E. T. Copeland. Beiler, E. T. Copeland. Beiler, E. T. Copeland. Boiler, furnace, steam, A. Q. Nash. Beiler, furnace, steam, A. Q. Nash. Beiler, E. T. Copeland. Book support, B. R. Green. Book supp	774,894 774,869 774,869 774,902 774,902 774,932 775,116 775,257 775,044 774,984 774,984 775,040 775,040 775,040 775,040 775,040 775,040 775,040 774,834
eris & Lowson Bisulfite liquer, apparatus for preparing, Drewsen & Parent Block, See Building block. Block, T. R. Ferrall. Buing device, A. Acheson. Beiler, E. T. Copeland. Beiler furnace, steam, A. Q. Nash. Book, posting proof and balance, Mosser & Book, posting proof and balance, Mosser & Rook, posting proof and balance, Mosser & Book support, B. R. Green. Boring bar tool, adjustable, J. Johnson. Settle filing machine, P. M. Wise. Bottle forming implement, Coale & Greens- felder Sottle, non-refiliable, B. T. Delafield. Bottle, non-refiliable, J. S. Miller.	774,894 774,869 774,869 774,902 774,802 775,116 775,257 775,044 775,059 775,065 775,206 774,830 774,830 774,834 774,839
erfs & Lowson Bisulfite liquor, apparatus for preparing, Drewsen & Parent Block, See Building block. Block, T. R. Ferral Buing device, A. Acheson. Beiler, E. T. Copeland. Boiler, E. T. Copeland. Boiler, furnace, steam, A. Q. Nash. Book, posting proof and balance, Moeser & Rook support. B. R. Green Book support. B. R. Green Borthe fuling machine, J. Johnson. Sottle, C. King Bottle filling machine, P. M. Wise Bottle forming implement, Coale & Greens- felder Sottle, non-refillable, D. S. Miller Bottle, non-refillable, J. S. Miller Bottle, non-refillable, J. Miller Bottle, non-refillable, C. H. Conlan	774,894 774,869 774,902 774,902 775,116 775,257 775,044 774,984 775,059 775,206 774,830 774,830 774,834 774,834 774,834 774,834 775,111
erfs & Lowson Bisulfite liquor, apparatus for preparing, Drewsen & Parent Block, See Building block. Block, T. R. Ferrall Buing device, A. Acheson. Beiler, E. T. Copeland Boiler, E. T. Copeland Boiler, E. T. Copeland Boiler, E. T. Copeland Boiler, furnace, steam, A. Q. Nash. Book, posting proof and balance, Mooser & Root support, B. R. Green Book support, B. R. Green Book support, B. R. Green Book support, B. R. Green Book support, B. R. Green Boot and balance, Mooser & Root support, B. R. Green Boot support, B. R. Gre	774,894 774,869 774,869 774,802 774,802 775,116 775,126 775,257 775,044 774,756 775,040 775,040 775,040 775,040 775,206 774,834 774,936 775,116 775,166
Bottle, non-refillable, L. Lecompte Bottle, non-refillable, C. H. Conlon Bottle, non-refillable, P. Schmolck	775,111 775,166 775,1 9 5
Bottle, non-refillable, L. Lecompte Bottle, non-refillable, C. H. Conlon Bottle, non-refillable, P. Schmolck	775,111 775,166 775,1 9 5
Bottle, non-refillable, L. Lecompte Bottle, non-refillable, C. H. Conlon Bottle, non-refillable, P. Schmolck	775,111 775,166 775,195 775,214 775,246
Bottle, non-refillable, L. Lecompte Bottle, non-refillable, C. H. Conlon Bottle, non-refillable, P. Schmolck	775,111 775,166 775,195 775,214 775,246
Bottle, non-refillable, L. Lecompte Bottle, non-refillable, C. H. Conlon Bottle, non-refillable, P. Schmolck	775,111 775,166 775,1 9 5
Bottle, non-refillable, L. Lecompte Bottle, non-refillable, C. H. Conlon Bottle, non-refillable, P. Schmolck	775,111 775,166 775,195 775,214 775,246 774,906 775,285
Bottle, non-refillable, L. Lecompte Bottle, non-refillable, C. H. Conlon Bottle, non-refillable, P. Schmolck	775,111 775,166 775,195 775,214 775,246 774,906 775,285
Bottle, non-refillable, L. Lecompte Bottle, non-refillable, C. H. Conlon Bottle, non-refillable, P. Schmolck	775,111 775,166 775,195 775,214 775,246 774,906 775,285
Bottle, non-refillable, L. Lecompte Bottle, non-refillable, C. H. Conlon Bottle, non-refillable, P. Schmolck	775,111 775,166 775,195 775,214 775,246
 Bottle, non-refillable, L. Lecompte Bottle, non-refillable, C. H. Conlon Bottle or pad, flexible water, W. A. Gallo-way Bowling alley, parler, R. E. Philipp Bowling alley, source sheet, G. W. Bennethum Box and wallet, combined, E. McDonald Boxes from paper and for filling same with cigarettes, etc., machine for making, E. T. Pollard	775,111 775,166 775,195 775,214 775,24 6 775,24 6 775,285 775,148 775,148 774,950 775,280 775,047
 Bottle, non-refillable, L. Lecompte Bottle, non-refillable, C. H. Conlon Bottle or pad, flexible water, W. A. Gallo-way Bowling alley, parler, R. E. Philipp Bowling alley, source sheet, G. W. Bennethum Box and wallet, combined, E. McDonald Boxes from paper and for filling same with cigarettes, etc., machine for making, E. T. Pollard	775,111 775,166 775,195 775,214 775,246 775,285 775,148 775,148 775,148 775,280 775,280 775,047 775,222
 Bottle, non-refillable, L. Lecompte Bottle, non-refillable, C. H. Conlon Bottle or pad, flexible water, W. A. Gallo-way Bowling alley, parler, R. E. Philipp Bowling alley, source sheet, G. W. Bennethum Box and wallet, combined, E. McDonald Boxes from paper and for filling same with cigarettes, etc., machine for making, E. T. Pollard	775,111 775,166 775,195 775,214 775,24 6 775,24 6 775,285 775,148 775,148 774,950 775,280 775,047
 Bottle, non-refillable, L. Lecompte Bottle, non-refillable, C. H. Conlon Bottle or pad, flexible water, W. A. Gallo-way Bowling alley, parler, R. E. Philipp Bowling alley, source sheet, G. W. Bennethum Box and wallet, combined, E. McDonald Boxes from paper and for filling same with cigarettes, etc., machine for making, E. T. Pollard	775,111 775,136 775,214 775,224 774,906 775,228 775,138 774,950 775,285 775,138 774,950 775,280 775,047 775,222 775,176 774,835 774,835
 Bottle, non-refillable, L. Lecompte Bottle, non-refillable, C. H. Conlon Bottle or pad, flexible water, W. A. Gallo-way Bowling alley, parler, R. E. Philipp Bowling alley, source sheet, G. W. Bennethum Box and wallet, combined, E. McDonald Boxes from paper and for filling same with cigarettes, etc., machine for making, E. T. Pollard	775,111 775,106 775,106 775,214 775,244 775,246 775,235 775,138 775,236 775,237 775,237 775,237 775,247 775,246 775,247 774,250 774,835 774,835
 Bottle, non-refillable, L. Lecompte Bottle, non-refillable, C. H. Conlon Bottle or pad, flexible water, W. A. Gallo-way Bowling alley, parler, R. E. Philipp Bowling alley, source sheet, G. W. Bennethum Box and wallet, combined, E. McDonald Boxes from paper and for filling same with cigarettes, etc., machine for making, E. T. Pollard	775,111 775,106 775,106 775,214 775,244 775,246 775,235 775,138 775,236 775,237 775,237 775,237 775,247 775,246 775,247 774,250 774,835 774,835
Automobile attachment, J. B. Mott. Automobile driving gear, G. C. Cannon Awing roller chain box, S. M. Hauser Backing sheet or filing paper, C. Q. C. Leigh Baby W. P. Flowers Bank and clock, combined savings, R. P. Wessels Basin receiving head, catch, A. W. Kurz. Beasin receiving head, catch, A. W. Kurz. Beasing, Ball, A. Riebe. Beasing, G. Schlebie Bedief or supporter, J. P. Buckley. Beasing G. Schlebie Bending machine, J. Arbert. Bergele helder or support, J. Speir. Binder, H. P. Jones Binder, the porary, H. E. Wendland Binder, transfer, T. R. Eddy Binder, transfer, T. R. Eddy Bisulfie liquer, apparatus for preparing, Drevsen & Parent Bisok, See Building block. Biock, T. R. Ferrall Biong device, A. Acheson. Beiler, E. T. Copeland. Beiler, E. T. Copeland. Beiler, E. T. Copeland. Beiler, G. T. Gpeland. Book support, B. R. Green Book support, B. R. Green Book support, B. R. Green Bottle, non-refilable, C. Coleman Bettle, non-refilable, J. Johnson felder Bottle, non-refilable, J. S. Miller Bottle non-refilable, B. T. Delafeld Bottle non-refilable, B. T. Delafeld Bottle non-refilable, B. T. Delafeld Bottle, non-refilable, J. Somiler Bottle, non-refilable, B. T. Delafeld Bottle, non-refilable, B. T. Delafeld Bottle, non-refilable, C. Coleman Bettle, non-refilable, B. S. Miller Bottle, non-refilable, C. King Brake mechanism, C. K. Pickles Brake mechanism,	775,111 775,195 775,214 775,224 774,906 775,225 775,138 774,950 775,285 775,138 774,950 775,280 775,280 775,047 775,222 775,174,835 774,835 774,831

between spark length and distance required in wireless telegraphy. I mean by this the distance between stations and the length of maxi-mum 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. The construction of a coll is described in Norrie's "In-duction Colls," which we send for \$1. So far as we know, the relation between spark length and distance is not a matter of calculation,

me of some rule for calculating the relation ise on some of the little-known and often mis-

