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## Notes and Queries.

### 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our information and not for publication.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.  
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.  
Minerals sent for examination should be distinctly  
marked or labeled.

(9640) W. G. says: I have for some  
time been trying to find out if kerosene oil en-  
gines, marine type, will work satisfactorily  
when installed in a boat and handled by a  
novice. No one to whom I have applied, except  
the manufacturers, seems able to state whether  
they will or not; while some gasoline engine  
builders ridicule them, so the only solution  
that occurred to me was to write to you. A.  
Kerosene oil engines are more difficult to suc-  
cessfully operate under all conditions than  
gasoline engines, and in the hands of inex-  
perienced persons give more trouble, we be-  
lieve; but, on the other hand, they are much  
less expensive to run. We think you would  
be safer with the gasoline engine, but we  
know of instances where such kerosene engines  
as you mention have given most satisfactory  
service.

(9641) M. L. S. says: Would like to  
know how to repair tortoise shell where it is  
broken. A. 1. Bring the edges of the pieces  
of shell to fit each other, observing to give  
the same inclination of grain to each; then  
secure them in a piece of paper, and place  
them between hot iron or pincers; apply pres-  
sure, and let them cool. The heat must not  
be so great as to burn the shell; therefore try  
it first on a white piece of paper. 2. Small  
pieces of good tortoise shell may be joined so as  
to form one large apparently seamless piece  
in the following manner: Slope off the mar-  
gins of the shells for a distance of about  
one-quarter of an inch from the edge. Then  
place them so that the margins overlap one  
another; and thus arranged put them in an  
iron press and immerse in boiling water for  
some time. The pieces by this means become  
so perfectly united that the joint cannot be  
seen. The filings and very small scraps may  
be often softened in hot water and consolidated  
by hydraulic pressure in metal molds. Pro-  
tracted pressing of tortoise shell darkens it,  
and greatly lessens its beauty.

(9642) F. says: In latitude 40 deg.,  
when it is exactly ten hours from sunrise to  
sunset, a ship starting at sunrise, and point-  
ed always toward the sun, travels ten miles  
an hour. What sort of a curve will she have  
described, and how far, at sunset, will she be,  
in a straight line, from her starting point?  
In consequence of the absence of centrifugal  
force, is not an object at the poles appreciably  
heavier than it would be at the equator? A.  
A body is 1-259 part heavier at the poles, by  
reason of the absence of centrifugal force at  
the poles. Any good textbook of higher physics  
will give you the demonstration of this fact.  
Your curious inquiry about sailing a vessel  
pointing all the time toward the sun is entire-  
ly impracticable. Why should any one want  
to sail a ship in that way? The exact theo-  
retical solution involves the calculus, giving  
an equation which can only be solved with  
great difficulty. We cannot spend time for  
such purposes. Practically, the solution is  
the same as if the earth were a plane, flat,  
and so large that the ship would nearly follow  
the arc of a circle during the day. The days  
when the sun is above the horizon ten hours  
in latitude 40 deg. are a few days on each  
side of the winter solstice. It rises nearly  
60 deg. east of south. The place of sunrise is  
calculated by spherical trigonometry, to which  
we would refer you. Your ship would make a  
harmonic curve from morning to noon, which  
could hardly be distinguished from an arc  
of a circle on a plane of the earth's surface,  
and from noon to sunset the curve would be  
turned to the west, reversing its morning half.  
As we said above, we do not care to work out  
so useless a problem. It can benefit no one,  
nor add to the world's stock of useful knowl-  
edge. Some mathematical society or mathe-  
matical journal which delights in pure mathe-  
matics may be glad to solve it for you, if  
you do not succeed in solving it for yourself.

(9643) S. C. B. asks: Why is it that  
a gravity battery will not run a battery motor?  
Will a Daniell cell run a battery motor? A.  
A gravity battery of a sufficient number of cells  
will run a motor, so also will a Daniell's bat-  
tery. A single cell of either will run a motor  
which only requires one cell. One horse will  
draw a certain carriage. Two will be re-  
quired for a larger carriage. Forty may be re-

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#### NEW BOOKS, ETC.

**MARINE ENGINES AND BOILERS. THEIR DESIGN AND CONSTRUCTION.** By Dr. G. Bauer and Leslie S. Robertson. New York: The Norman W. Henley Publishing Company, 1905. Medium 8vo., pp. 772; 550 illustrations; numerous tables. Price, \$9 net.

This valuable work is a translation of the original book compiled by Dr. G. Bauer, the Engineer-in-Chief of the Vulcan Works, Stettin. It was translated from the second German edition by E. M. Donkin and S. Bryan Donkin, associate members of the Institute of Civil Engineers, and is edited by Leslie S. Robertson, member of the Institute of Civil Engineers and secretary to the Engineering Standards Committee. The fact that the original German work was written by the chief engineer of the famous Vulcan Works, Stettin, is in itself a guarantee that this book is in all respects thoroughly up-to-date, and that it embodies all the information which is necessary for the design and construction of the highest types of marine engines and boilers. It may be said without fear of contradiction, that the motive power which Dr. Bauer has placed in the fast German liners that have been turned out of late years from the Stettin Works, represents the very best practice in marine engineering of the present day. German textbooks have a well-earned reputation. They are clearly written; thoroughly systematic; theoretically sound; and they all have a characteristic breadth, thoroughness, and detail; while the character of their plans, drawings, tables, and statistics is almost invariably above reproach. The present work embodies, in a marked form, all of these characteristics. The illustrations are careful reproductions from actual working drawings, with some well-executed photographic views of completed engines and boilers. Among the latter we note the engines of the Japanese armored cruiser "Yakumo," the quadruple-expansion engines of the "Deutschland," and of the "Kaiser Wilhelm II.," and many other specimens of high-class marine work. Part I. is devoted to Main Engines, and in Section V. of this part, relating to details of main engines, there are no less than 178 illustrations. Part II. is devoted to pumps; Part III. to shafting, resistance of ships, and propellers, in Section III. of which, devoted to the screw propeller, there are 35 illustrations; Part IV. treats exhaustively of pipes and their connections; Part V. of steam boilers; Part VI. of measuring instruments; Part VII. is devoted to various details; and Part VIII. contains a very complete arrangement of various tables. Among the many text-books that come to the Editor's desk for review, we have rarely seen one that calls for such unqualified commendation as this.

**OFFICIAL CATALOGUE OF THE EXHIBITION OF THE GERMAN EMPIRE AT THE INTERNATIONAL EXPOSITION, ST. LOUIS, 1904.** Edited by the Imperial Commissioner. Berlin: George Stilke. 8vo.; pp. 538.

This handsome volume is at once a characteristic memento of the St. Louis Exposition and a forcible object lesson on the aesthetic side of the printer's art. Incidentally, in its embellishments, it calls to mind that "new art," which received such striking illustration throughout the whole of the German exposition at St. Louis. The letterpress throughout is strikingly bold and wonderfully harmonious, and on every page of it there is evidence of the most careful consideration of the composition. The work is no mere bald catalogue of exhibits; for under each department there is given an amount of information as to the history and practice of each art that renders this work almost a cyclopedia of the modern German industries.

**PLANK-FRAME BARN CONSTRUCTION.** By John L. Shawver. New York: David Williams Company, 1904. 12mo.; pp. 35. Price, 50 cents.

This book is the compilation of articles that appeared in "Carpentry and Building." Its author has had a great deal of experience in the construction of plank-frame barns—barns which have been growing in popularity in various sections of the country, particularly in the West. In the present small volume he points out the advantages of this form of barn construction, and shows that a saving of time, labor, and material may be had by employing it.

**THE AUTOMOBILE HANDBOOK.** By L. Elliott Brookes. Chicago: Frederick J. Drake & Co., 1905. 16mo.; pp. 320. Price, \$1.50.

This is one of the most practical handbooks for the motor-car user which we have yet seen. The subjects described are arranged in alphabetical order, and are very concise. Information concerning all types of automobiles is contained in its pages, and this information is supplemented with very good line drawings of a simple character. The book also contains a considerable number of useful tables, and formulas for calculating horse-power and for making brake tests of motors are included in the book. The work will be found a very handy pocket volume by every automobilist.

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**TYPE STUDIES FROM UNITED STATES GEOGRAPHY.** By Charles A. McMurray, Ph.D. New York: The Macmillan Company, 1904. 8vo.; pp. 288; 99 illustrations. Price, 50 cents.

This book contains a series of simple type studies of the United States, intended to introduce children to the geography of our country. The book can be used as auxiliary to the regular textbook, in the fourth, fifth, and sixth grades. It describes various interesting geographical and engineering features of the United States, such as the large rivers, the highest mountains, the great lakes, the prairies, the pine forests and lumbering, coal mines, irrigation, salmon fisheries, etc.; and all these descriptions are photographically illustrated.

**THE TIMBERS OF COMMERCE AND THEIR IDENTIFICATION.** By Herbert Stone, F.L.S., F.R.C.I. London: William Rider & Sons, Ltd., 1904. 8vo.; pp. 311; 186 photo-micrographs. Price, \$3.

This book describes briefly all the commercial timbers met with in England and her colonies, as well as a few others which are likely to be heard of in the future. All the genera mentioned are illustrated by photomicrographs, showing a cross section three times the actual size, or as it would be seen by an ordinary hand magnifying glass. In some cases a single illustration serves for more than one genus; but wherever two or more distinct types of the same genus are described, separate illustrations have been provided, and the specific name is then quoted. Wherever possible, the photographs have been so taken that the medullary rays run in the same direction, the pith side downward. The photographs are actual silver prints from the negatives, and hence are much sharper and display considerably more detail than were they reproduced from half-tone cuts. The book should be very useful to all who have to do with woods for any purpose.

**AUSTRALIAN MINING AND METALLURGY.** By Donald Clark, B.C.E. Melbourne: Critchley Parker, 1904. 8vo.; pp. 620. Price, \$8.50.

This book is the first exhaustive work on the subject to be published in Australia. The information contained in it is thoroughly up-to-date and reliable. All the great Australian mines are dealt with in detail, besides being fully descriptive of geological conformation, general resources, the methods employed in mining, and the metallurgical process adopted in treatment and extraction. The text embraces a critical examination and commentary upon working detail and means to ends, which cannot fail to be highly instructive to the most advanced mining men, and of special value to students. The work is divided into sections according to the different States, and western Australia, because of its importance, is described with great detail; but the mines of Tasmania, Queensland, Victoria, and New South Wales are also discussed very thoroughly. The book is illustrated with numerous photographs and drawings.

## INDEX OF INVENTIONS

For which Letters Patent of the  
United States were Issued  
for the Week Ending  
May 16, 1905

AND EACH BEARING THAT DATE

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

Acetylene generator, F. Holly	789,856
Acid, making dialkyl barbituric, M. Engelmann	789,802
Acids, making C-C-dialkylbarbituric, E. Preiswerk	790,263
Acids, making diethyl-barbituric, A. Elnhorn	790,116
Advertising coat and hat rack, W. J. Cooper	790,190
Air brake automatic setter, W. H. Brooks	790,102
Air brake lock, D. L. Mabry	790,144
Amalgamator, J. J. Peacock	790,000
Amusement apparatus, A. F. Turpin	789,946
Anchor, folding earth, G. H. Miller	789,990
Antiseptic mouthpiece for telephones or the like, W. Wright	790,241
Apple cutting machinery, J. A. Warner	789,825
Arch, hollow tile, H. L. Hinton	789,729
Auger, earth, G. H. Miller	789,991
Awning, J. A. Charlton	789,899
Baggage, J. J. Smith	789,764
Balance, P. H. Wynne	789,781
Baling machine, R. F. McKaig	790,071
Baling press, W. A. Bookout	790,249
Barrel ventilator and cooler, T. Pulman	790,153
Basin, wash, P. Hoey	789,736
Basket, fruit, F. Benoit	789,834
Bath tub, E. H. Sloman	790,229
Battery relief valve, storage, D. P. Perry	789,877
Bearing for axle journals, lubricating, Monroe & Hallinan	790,220
Bed and couch, combination, C. L. Fenner	789,903
Bed corner fastening, J. Nelsen	789,869
Bed spring, A. Anderson	789,896
Bed spring, adjustable, Hhrichs & Chada	789,728
Bedstead, W. Charlton	789,963
Bedstead table attachment, H. A. Mason	790,217
Belt, J. M. Walton	789,893
Belts, roller guide for drive, H. J. McMurray	790,222
Bench clamp, W. W. Cook	790,188
Bicycle for looping the loop, double, K. Lange	790,063
Bird cage, A. B. Hendryx	790,053
Bit. See Bridge bit.	
Bit brace, folding, C. W. Stites	790,086
Blasting cartridge packing, T. F. Durham	789,967
Boiler fire box, steam, Kirkland & Allan	789,919
Boiler furnace, E. C. Fisher	789,722
Boiler tube cutter, C. F. Laufer	790,212
Book, account, J. H. Rand	790,002
Bottle disk extractor and holder, J. F. Curtis	790,192
Bottle, non-refillable, B. Prouty	789,757
Bottle, non-refillable, H. J. Gumbinsky	790,049