## Pusiness and Personal.

 The charge for Insertion under this head is One Dollar a linefor each insertion; about eioht words to a line. Adver. for each insertion; about eioht words to a line. Advertisements must be received at publication office as early a H. W Knight \& 8 , Stow flexible shaft. Invented and manufactured by "C. s." metal polish. indianapolis. Samples free. Improvediron planers. W. A. Wilson, Rochester, N.Y. , B. M. York, Clev. Heading machinery. Trevor Mfg. Co Ly, Newark, N.J. Microbe Killer Water Filter, McConnell Filter Co. uffalo, $\mathbf{N}$.
For Sale-Patent No. 443,561, Dec. 30, 1890. Exxp
Pulley. Address John G. Avery, Spencer, Mass. Steam Hammers, Improved Hydraulic Jacks, and T Screw machines, milling machines, and Screw machines, milling machines, and drill presses Centrifugal Pumps. Capacity, 100 to 40,000 gals. per
minute. All sizes in stock. Irvin $\begin{aligned} & \text { an Wie, Syracuse, N.Y. }\end{aligned}$. Partner Wanted-Armstrong's Automatic Washer Patented Aug. 22, 1893. A. Armstrong, 817 Lucas Ave t. Louis, Mo.

Emerson, Smith \& Co., Ltd., Beaver Falls, Pa., will
send Sawyer's Hand Book on Circulars and Band Saws free to any address.
Guild \& Garrison, Brooklyn, N. Y., manufacture stean pumps, vacuum pumps, vacuum apparatus, air pumps.
acid blowers, filter press pumps, etc. ,
ricity is " brok for electricians and beginners in elec By mail. 94 ; Munn \& Co., publisbers, 361 Broadway, N. Y. For the original Bogardus Universal Eccentric Mill, .S. \& G. F. Simpson, 2 to 36 Rodney St., Brooklyn, N. Y Patent Electric Vise. What is claimed, is timesaving,
No turning cf handle to bring jaws to the work, simply one sliding movement. Capital Mach. Tool Co., A uburn TP Send for new and complete catalogue of scientifl and other Books for sale by Mun
New York. Free on application.

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HINTS TO CORRESPONDENTS.

## Names and Address must accompany all letters,






Minerals sent for examination should be distinctly
marked or labeled.
(5418) W. S. writes: 1. Is a motor with

 dient. 2. How are three-pole armatures wound and con-
nected $? \mathbf{A}$. They are connected to a three-piece commu ator, Gramme ring fashion. All poles are wound in same sense. 3. I see some electric batteries advertised to run
for 24 hours before the solution is exhausted; would like to have the recipe for such a solution? A. It is not so much a question of solution as of quantity in proportion to current taken. Use a good bichromate mixture. 4. Is the e lectromotive force the same in two ithromate
batteries, one the size of a thimble, the other the size of a barrel ? A. Yes. 5. Could a $1 / 8$ H. P. motor be run with small batteries Bize of a thimble, if armature was Wound with No. 25 cotton-covered wire? A. R y in
had enough. 6 . Would any ingredient be rendered in soluble if bichromate of potassium were added to it A. Bichromate of potassium renders glue insoluble after drying and expoosure to sunlight.
(5419) G. H., Jr., asks if paint can be it be. A. Yes. If oxidized, the color would be white.
manual
(5420) A. H. R. asks: Will the electro plating dynamo described in ". Experimental Science '"
run an 8 inch screw-cutting lathe (when the dynamo it used as a motor), with a current derived from the large plunge battery? Or would a motor with a drum or ring armature be better? Would like to make the motor my self, if you will kindly furnish the required information as to size of wire, etc., through the columns of the ScIEN
TIFIC American. A. The plating dynamo to which yo refer is too small to answer as a motor for driving you engine lathe. Better make the motor after the given in SUPPLEMENT 600 for the construction of an eightlight dynamo.
(5421) H. W. F. says : Dealers in photographers' supplies sell a a olution which they call "toning
solotion,"" and which they ase with a solution of bichloride gold and sodium for toning prints. Can you tell me what this solution ts ? A. The followmg bath is recon mended :


Boil the water and dissolve the hypo. while hot, then
is cooled down to normal temperature it should be de-
canted, or, still better, filtered from the precipitate of sul-
phur, and then the acetate of lead, dissolved in about one ounce of water, is added. For use, take the following
proportions : $3 / 4$ ounce solution II. to 8 ounces solution I The prints should be placed in this bath witbout previou for one or two minutes in a checking solution of one or two minutes in a checking Bolution composes and water 16 ounces, then washed in two changes of fresh water, and to insure fixing it is advise ble to immerse the prints for about two minutes in fixing bath of :

## Hypo Salt. <br> Water....................

(5422) M. N. O. writes: I send you a small bug found in yellow pine logs after they have bee
cut for the sawmill. It is also found in the lumber afte being sawed, this hug being taken out of a pine board the yard. They ruin unknown millions of feet of No. lumber every year, which has to be sold for No. 3 stock They cut the logs and boards full of small holes, which are known in the business as "pin holes." They generally follow in the soft part of the grain. It does not distur the pine until it is cut down. Can you tell me anything tinguish them ? Reply by Prof. C. V. Riley.-The insect sentis Platypus quadridentatus 01, belonging to the coleopterous family Scoytidae. The numerous species of this family live either under the bark of trees or enter the solid wood. The few North American species of the
genus Platypus belong to the latter class and infest many species of deciduous and coniferous trees. As correct observed by Mr. Overton, they are not known to attack healthy trees; nor do they live in perfectly dry wood, but
they develop in trees that are diseased or enfeebled from one cause or another, or in freshly felled trees and in the stumps of felled trees. Here the female beetles bore long galleries through the bark into the solid wood and deposit their eggs in short secondary galleries, which branch off rectangularly from the main gallery. When the trees ar sawed up into boards, a transverse section through this
network of galleries shows the dreaded "pin holes." There 18 no direct remedy for exterminating this and other species of scolytid beetles; but much may be done on the part of our lumbermen to prevent severe and continuous
injury. The trees should be felled in the fall and winter and should be sawed up, if possible, before the warmer season commences. Felled trees that are allowed to re main in the woods for weeks or months during spring or summer are sure to get thoroughly infested by the bee-
tles. Above all, the timely burning of the stumps branches, and other waste portions of felled trees, of
trees that are blown down by storms, etc., would greatly trees that are blown down by storms, etc., would greatly
(5423) F. H.-Reply by Professor Riley. The insect referred to by you is one of the most striking and singular insects of our fauna. The specimen in its very long and excessively narrow abdomen, giving somewhat the appearance of a very slender-bodied dragon fly, except for its short wings and general resem-
blance to a wasp. In point of fact, it belongs to the group of insects including the wasps, parasitic flies, etc. group of insects incluaing the wasps, parasitic nies, etc.
and the male, which has a very ovoid abdomen, closely
resembles the true wasp, but is very much more rare than the females, only a few specimens having been found, whereas the female sex is comparatively abundant. This anomalous insect is quite distinct from anything else in
the insect world, and for it a special genus and family the insect world, and for it a special genus and family
have been erected. It is known as Pelecinus polyturator, Drury, is closely allied to the parasitic ichneumon flies, and is undoubtedly parasitic on some other insect, probare entirely unknown.
(5424) D. L. R. writes : Please answer in SCIENTIFIC American the followingquestions: 1. How
many storage cells would it take to run a one-half horse many storage cells would it take to run a one-half hor
power motor six hours a day \& A. By taking alitle over the standard current, four cells would answer. It would taterter to use six cells. 2. Howmang six hours ? A Allow two and one-half gravity cells for each storage cell. For rapid charging, ten or twelve gravity cells for ne storage cell. 3. Would the same cell give me twelve hours' run on Monday if 1 did not use it on Sunday ? A. Rest over Sunday of a charged cell properly cared for would not perceptibly affectit. 4. How to temper small or heating on a piece of wire gauze held over Bunsen hyeating on a piece of wire gauze held over a Bunsen How to get a copy of the Patent Office Garette. Subscribe at Patent Office, Washington, D. C. It costa
55 per annum.
(5425). W. W., England, asks : 1. What is the quickest way to drill or pierce the stones used for watch jewels, what kind of drill, what made of, and what lubricant used for same 9 A. A revolving steel
wire charged with diamond dust and oil is used for drill ing watch jewels. 2. What is the best metal or material o use for frictional gearing ? Which will give the best results for the above $\%$ The edge of small or driven disk to run against the face of large or driver disks with
slow speed, reverse action, for very small tapping machine, to thread holes for watch screws. A. For a disk of the disk and pulley. Turn off the leather faces truly of the disk and pulley. Turn off the leather faces truly
for the light work of making watch screws.
(5426) G. A. L., South Dakota, says : I wave been told that ice frozen from artesian well water why ? A. There is probably only a very small margin why A. There is probably only a very small margin
of difference in the time of melting of artificial ice from artesian well water and ice frozen in the natural way, the differencebeing due to the method of freezing. This state ment applies to any artificial ice made from hard water as against natural ice. The method of freezing artificial ice
incloses all impurities and salte of lime within the mass, which may act to hasten its melting, whereasthe freezing in the natural way discharges the salty impurities. This making ice. Such ice is not only clear, but will last fully ang ise. Bich ice inder ulty cond, but

NEW BOOKS AND PUBLICATIONS
Resistance of PULSION. By D. W. Taylor. New 1893. All rights reserved. Pp. ix, 234 Price $\$ 3.75$.
The science of ship building has at last, after man centuries, passed out of the empiric region to one of ex actness. In the present work we find the modern calcuation applied to the most recent examples. The value are given wherever required. The absence of an indes is compensated for to some extent by a very full table o contents, the work possibly being of too mathematical character to lend itself to indexing
Decimal Calculation. By Louis
The First Four Voyages of Amerigo EspuccI. Reproduced in facsimile map, and a facsimile of a drawin. by Stradanus. London : Bernard Qua ritch. 1893. Pp. x, 45. Price 75 cents.
This work in facsimile reproduces the text in Italian navigator from whom America is supposed to have been named, and in addition thereto, the English translation of the letter is given. The work is a very interesting and attractive contribution to the Columbus year and is

Hariot's Narrative of the First Plantation of irginia in 1585, PRINTED in 1588 and 1590
This very curious publication, with facsimile illustra tions of the inhabitants of Virginia as found there by the English, is a companion piece to the work just noted
and will be found an exceedingly interesting contribu tion to the literature alluded to. It should be stated tha these two works form two out of a series of four work
The Spanish Letter of Columbus Written by Him on mebruary 15, 493, to Announce the Discovery of America.
This is one of the series of Columbian literature alluded to above. A transl
Report on the European Methods Dean. Washington: Government Printing Office. 1893

This excellent work in this country. It describes the rational cultivation of oysters as carried on in different countries of Europe It is made more interesting by the production of numer ous illustrations showing the plant and appliance dopted abroad forthe cultivation of the mollusks. A be feeling the effects of the great draughtmade upon the scientific harvesting, this work has a peculiar value
North American Fauna. No. 7. Pub lished by authority of the Secretary
of Agriculture. (Actual date of publication, May 31, 1893.) The Death vey of parts of California, Nevada,
Arizona, and Utah. PartII. Washington: Government Printing Office. 1893. Pp. 393.

The Infringement of Patents for INVENTIONS, NOT DESIGNS, WITH OF THE SUPREME COURT OF THE United STATEs. By Thomas B Co. 1893. Pp. 275. Price $\$ 5$
The keynote of this volume is found in a quotation from an opinion of the United States Supreme Court the effect that no decision in patents can be considered fixed and correct until it has been passed upon by the Su preme Court. The work therefore, it is stated, is written of the United States, and is restricted to inventions, and not designs. The work seems excellently and system atically arranged. It gives concrete examples, and a sam ple of its system of treating this topic may be deduce from its treatise on the validity of the patent. Here th author gives twenty-four different heads into which the different premises which may affect the validity of a pat ent may be resolved. A list of the references, 673 Songs in Spring Time : The Passing OF LILITH, AND OTHER POEMS, INCLUDING INTERCEPTED LETTERS
AND SAINT AUGUSTINE. By John Cameron Grant. Second edition rights reserved. Pp. xxi, 115. Price
The Handy Sketching Book for Ruled to Eighths of an Inch, with Useful Tables. New York: Spon \&. Chamberlain. London: E.
This sketch book is made up of cross-ruled paper for the entry of profiles and various diagrams in use by the engineer. It is evident tbat the same cross-ruled paper will
admit of real estate diagrams, so that not only the architect, engineer, and draughtman will be interested in it tect, engineer, and draughtsman will be interested in it,
but even the dealers in real estate. On the inside cover page
REPORT OF THE COMMISSIONER OF EdUCATION FOR THE YFAR 1889-90.
Volume I.
Containing Part I. Volume I. $\begin{aligned} & \text { Containing Part I. } \\ & \text { Washington }{ }^{\text {Government }} \text { Print- } \\ & \text { ing Office. 1893. Pp. xxvin, 601. }\end{aligned}$.
罗Any of theabove books may be purchased through lished. MUNN \& Co., 801 Brogdway, New York.

INDEX OF INVENTIONS

## Por which Lettere Patent of thomed United States were Granted

October 3, 1893,

## ND EACH BEARING THAT DATE.



