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ing Metals, etc. The Stiles \& Parker Press Co., Middleing Metals,
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vertical engines and boilers. E. E. Roberts, 107 Liberty St., N. Y. The Cameron Steam Pump mounted in Phosphor
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ries. for $\$ 1$ each, to be sent by express. Address John
Edwards, P. O. Box 773 , New York.

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ment. Address Union Iron Mills, Pittsburgh, Pa., for ment. Address
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The Scientific American Export Edition is pub ished monthly, about the 15 th of each month. Every number comprises most of the plates of the four preced
ing weekly numbers of the ScIENTIFIC AMERICAN, with other appropriate contents, business announcements,
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one hundred quarto pages, each number illustrated with one hundred quarto pages, each number illustrated with
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of American progress in the arts.
We make steel castings from $1 / 4$ to $10,000 \mathrm{lbs}$. weight, 3 times as strong as cast iron. 12.000 Crank Shafts of this Circulars and price list free. Address Chester Steel Castings Co., Evelina St., Philadelphia, Pa.
Special Planers for Jointing and Surfacing, Band and
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tured by Bentel, Margedant \& Co., Hamilton, Ohio.
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Holly System of Water Supply and Fire Protection for Cities and Villages. S.
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The only Engine in the market attached to boiler

Self-feeding Upright Drilling Machine of superior construction; drills, holes from 76 to $\%$ inch d
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Caution,-Our name is stamped in full on all our bes. Standard Belting, Packing, and Hose. Buy that only.
The best is the cheapest. New York Belting and PackHydraulic 3 and 38 Park Row, N. Y.
Hydraulic Cylinders, Wheels, and Pinions, Machinery Castings; all kinds; strong and durable; and easily
worked. Tensile strength not less than 65,000 lbs. to worked. Tensile strength not less than 65,000 lbs. to
square in. Pittsburgh Steel Casting Co., Pittsburgh, Pa The Turbine Wheel made by Risdon \& Co., Mt. Holly, .. gave the best res For Shafts, Pulleys, or Hangers, call and see stock Wm. Sellers \& Co., Phila, have intro

## injector, worked by a single motion of a lever.

## NEW BOOKS AND PUBLICATIONS,

Woodward's National Architect. Vol.
II. By George E. Woodward. Pub. II. By George E. Woodward. Pub Price $\$ 7.50$.
This is another volume by an architect who has prepared a number of similar works, containing original designs, plans, and details on working scale for city and
country houses. The designs are tasteful, and with the details extend over 100 large plates. There are several good plans for city houses; also of country villas, the last being quite.handsome as well as moderate in price. Works of this character are always useful to the
profession for which they are intended, and not merely profession for which they are intended, and not merely
the architects but the public generally are indebted to Mr. Woodward for the establishment of better stand to
Mr. ards of taste than those which commonly prevail in our rural architecture. It is almost always as cheap to con struct a house that is pleasing to the eye as one which is not so, the question of interior planning aside, and the showing of how to do this is not the least of the many good qualities of Mr. Woodward's work.
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as applied to the Arts and ManU
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factures. Illustrated. Philadelphia
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New Encyclopedia of Chemistry" through opium, New Encyclopedia of Chemistry" through opium,
paper, perfumery petroleum, phosphorus photography, pigment, platinum, and potassium. Of the gen ready been made.

## 

(1) H. C. B. asks: Is it dangerous to use water from a cooler lined with zinc§ Cistern water and ice, some say, in a cooler lined with zinc, is poison. A. See article on
Ambrican.
(2) F. \& Co.-See reply to J. H. K. in No. (3) H. P. B. asks: I want to know how to silver the inside of a glass globe. I wish to use crys-
tals of silver or nitrate of silver.
A. See pp. 1670, 921 , and 1928, SCIENTIFIC American SUPPLEMENT,
(4) E. R. J. asks for a good recipe for a head wash or shampoo, something that is effective and not injurious to head or hair. A. You may use a rather dilute solution of good glycerin soap in alcohol, to which a little cologne water has been added. Wash it
out with plenty of water, and rub the scalp with a clean out with plenty of water,
and not too wiry brush.
(5) D. H. B. asks: What is about the average frequency of each letter of the alphabet in ordinary
printing? A. Taking 110,000 letters ${ }_{2}$ which gives round printing? A. Taking 110,000 letters, which gives round
numbers for every letter, the alphabet is usea in printing in the English language in the followingproportion a, 8,600; b, 1,600; c, 3,000; d, 4,400; e, 12,100; f, 4,500;
$\mathrm{g}, 1,700 ; \mathrm{h}, 6,400 \mathrm{i}, 8,600 ; \mathrm{j}, 400 ; \mathrm{k}, \quad 800 ; \mathrm{l}, 4,300 ;$
$\mathrm{m}, 3,000 ; \mathrm{n}, 8,000 ; \mathrm{o}, 8,000 ; \mathrm{p}, 1,700 ; \mathrm{q}$.
$500 ; \mathrm{r}, 6,200 ;$
 , 2,000 ; $\mathrm{z}, 200$.
(6) G. C. writes: I wish to build a steam much horse power as can be had in so small a launch I do not care so much for convenience as I do for speed.
I have the facilities for building the engines, and would I have the facilities for building the engines, and would
undertake to build the hull (if advantageous for speed) undertake to build the hull (if advantageous for speed)
of steel. A. We think you will get the information in the Scientific American Supplement, Nos. 14,69, 75, and 81
(7) I. B. C. asks how the most improved telephonic alarm is made. A. There are several in ex-
istence. We believe they are substantially alike. They consist of a small magneto-electric machine and a call bell.
(8) J. B. asks how to make a japan to use on paper or leather. A. Burnt umber, 8 ozs.; true as-
phaltum, 3 or 4 ozs.; boiled linseed oil, 1 gallon; grind the umber with a little of the oil, add it to the asphalt um, previously dissolved in a small quantity of the oil
by heat, mix, add the remainder of the oil, boil, cool, by heat, mix. add the remainder of the oil,
and thin with a sufficient quantity of oil of turpèntine. What is the simplest method of making an oven, 3 ) feet long, 3 feet wide, $\begin{aligned} & \text { feet deep, to get a regular heat } \\ & \text { of } 180^{\circ} \text { Fah.? I have no steam. A. Make it like a com }\end{aligned}$, mon stove oven. Any sheet iron worker can make
(9) J. R. asks: What kind of revolver is approved by the United States for army and navy? Are
the self cocking kind approved of? A. The self-cockthe self cocking kind approved of? A. The self-cock-
ing revolvers are not adopted as the standard in either branch of the service. We believe the Remingtonsingle barrel pistol is used almost exclusively in the navy, and that in the army, up to a late date, no positive recom-
mendation had been made for the exclusive adoption of mendation had been made for the exclusive adoption of
a single pistol. We shall be glad to receive corrections a single pist
if in error.
(10) Young Engineer writes: I want to get a book that will teach me all the principal points about can recommend Bourne's "Catechism" and "Handbook of the S
Handbook."
(11) G. W. asks whether it is necessary to procure a license for a small boat, 20 feet long, 8 feet
beam, run by steam and intended for pleasure purposes beam, run by steam and intended for pleasure purposes entirely. If so, please give me the necessary instruc-
tions in order to secure one, and the price of same? A. tions in order to secure one, and the price of same?
Yes. Apply to the local inspector in your district.
(12) J. L. B. writes: 1. We have a steam tubular boiler (locomotive type) which when cold will whistle water at the gauge cocks unless we open the whistle valve, which is accompanied by a peculiar
noise. Would you please tell us the cause? A. We noise. Would you please tell us the cause? A. We having condensed. It is well to prevent this by openpeller? A. Make it about $11 / 2$ time the diameter. 3 Could you give me the address of any firm selling gal "Business and Personal" column,
(13) C. B. F: asks where to get a good caoric engine. A. Insert a notice in the "Business and Personal columnif what you want is not noticed in our nachines in this department of the paper.
(14) W. T. N. writes: Suppose it were necessary to make a man insensible for a short time, how form would to him in that condition? A. If applied to the exclusion of air ordinarily aboutthree minutes, but this depends in a great measure upon the person's temperament and state of health. The administration of coloroform by inexperienced persons is a dangerous proceeding. See p. 395, Scientifio American, and p.
(15) P. C. writes: I have a brass dial with oil painting ona portion of its surface. I nowdesire to
ijver plate the unpainted part only, and I wish to now if there is any method by which $\mathbf{I}$ can so protec the pannting that when it is dipped in the bath it
will not be affected? A. Paraffin applied warm will diln not be affected? A. Para
oubtless answer the purpose.
(16) W. A. writes, in vol. 39, p. 75, query No. 20 , that he is running an 18 inch saw, and has rouble with boxes heating. 1 had same trouble, and overcame it by using raw hide nicely fitted by cutting
out a portion of Babbitt, softening raw hide in water, out a portion of Babbitt, softening raw hide in water,
putting mandrel in place, screwing d̈Own caps. Let remain until dry. Then a few drops of oil two or three times a day were sufficient. The pieces lasted eigh
(17) A. L. K. asks: What are the uses of non-conducting material for packing the walls of ice houses, etc., and the manufacture of gunpowder and freworks; in metallurgy for deozidizing and carburet ing metals; to decolorize saccharine and other liquids; for the purification of potable water, etc., and the pre-
servation of meat; in medicine, externally, as an antiservation of meat; in medicine, externally, as an anti-
septic and disinfectant; internally sometimes in dysseptic and disinfectant; internally sometimes in dys-
pepsia, diarrhea, dysentery, and heartburn. It is also pepsia, diarrhea, dysentery, and heartburn. It is also nd for crayons, tooth powder, etc.
(18) W. J. H. asks: Does the practice of whistling prove detrimental to the singing properties of
the voice? A. We think not. How can photograph proofs be made permanent, and now reproduce the glossy surface of a new photograph
upon old ones? A. Soak them for a few minutes in strong aqueous solution of sodium hyposulphite, rinse with clean water, and pass through three separate por ions of water, containing about $1 / 2$ of 1 per cent of sodium hypochlorite, allowing 3 or 4 minutes for each immersion; then wash in clear water and dry.
How can gutta percha be best repaired? A. You can iric A cment recommended on p.250, tIFIC American.
Can you give m
Can you give me the best professional time for a 1 walked 1 mile in 6 m . 23 sec .
Can you give mea recipe for making gold and silver Can you give me a recipe for making gold and silver 250 (2) and (4), and 251 (60), vol. 38.
(19) J. R. asks (1) how to braze brass to getherwith a blowpipe? A. You will find directions for oldering in Scientific American Sopplement No. 20
2. gun stocks? A. Dissolve gum shellac in alcohol. 3 .
Is a shaft of 10 feet in length as liable to twist as on that is 20 feet long, both shafts to be of the same diam eter and subjected to the same torsional strain? A
(20) S. K. S. writes: " Natural Philosophy" says; "Like poles neutralize each other's attraction for
unmagnetic iron." Then by way of explanation says: unmagnetic iron." Then by way of explanation says:
"Immerse the positive poles of two magnets separately in iron filings. On withdrawing them, both will be covred with large tufts. Now bring them together, and the filings will immediately drop off from both. The result will be the same if the experiment he tried with the negative poles of two magnets." I have tried the experiment with a couple of bar magnets $4 \times 1 \times 1 / 4$. Each would support a piece of iron $4 \times 1 / 4 \times 1 / 4$, and not particle would fall off. Then I tried it with small were taken only two or three would fall. The filing ter? A. The magnets should be of equal strength. We find no difficulty in performing an experiment successfully. Are you not mistaken as to the poles of your
(21) H. writes: A. buys a farm for $\$ 40,000$ nd sells it to B. for $\$ 45,000$. B. becoming tired of the
arm sells it back to A. for $\$ 35,000$. How much does A. clear? A. Atthe end of the transaction A. has his arm and $\$ 10,000$.
(22) J. V. B. asks: What are the propor
tion? A. It is requisite to boil the silicate with the water for some time to effect complete solution. The
commercial silicate usually contains more or less free commercial silicate usually contains more or less free silica, which is insoluble in water and of course remains as a residue after extracting the soluble glass.
You may dissolve about 3 ozs. of the silicate $m$ a pint of boiling of boiling water, taking
that lost by evaporation.
(23) D. M. asks: Has there been a lens or glass for a kind of spectacle that can be worn on the eye invented, which will enable one to see, on an ordi-
dary dark night, in a closed room, the time of night on dary dark night, in a closed room, the time of night on
a clock face, or the features of another person ten feet from him, without the aid of artificial light-solar light being admitted through two ordinary windows, unshaded? A. As we understand you, no.
How can I distill on a small, cheap scale a strong quality of oil of vitriol ( $\mathrm{H}_{2} \mathrm{~S}_{2} \mathrm{O}_{7}$ ) for experimental purposes from sulphate of iron, the green vitriol beprived of the A. Heat the ferrous sulphate until deprived of the greater part of its water of crystalliza-
tion; place it in a suitable earthenware retort, expose the retort to a strong red heart, and as soon as the acid begins to distill over, adapt and lute the beak of the retort to a capacious earthen receiver containing a very small quantity of water, or, better, of ordinary sulphuric acid. During the distillation the receiver must
kept cool in running water. Can tool in running water.
Can I get sufficient heat from a gas burner to fuse the copperas? A. No.

1. Can vegetable ivory, manufactured from India rubber and magnesia, be used for handles which require a
nice polish? Also can it be carved? A. According to the nice polish? Also can it be carved? A. According to the
inventor, yes. 2. Is it of a clear white color? A. We believe not. 3. What is the formula for making it? A. It has not been published.
What is the best saw blade for cutting steel and iron, and how can I temper a thin saw blade for that purpose? Stubs'; harden the blade in oil; temper by eating the blade until the oil blazes.
(24) O. F. L. asks: Which is the best way o make gas carbon, and how to solidify, that is, make it into buttons? A. They may be cut from the dense
plates of carbon used in galvanic batteries. Or press plates of carbon used in galvanic batteries. Or press the dust of gas carbon or coke, made adhesive by gas tar, into suitable iron moulds, and subject it in the muffle to a heat gradually approaching low redness.
Then repeatedly saturate it with a thick sirup of gas Then repeatedly saturate it with a thick sirup of gas
tar and heat in the muffle as before. See pp. 187 (2) and 213 (2), vol. 37, Scientific American.
Pleasegive a good method of cleaning plate glass windows thoroughly. A. Use a little fine whiting moistened with lime water, rinse with clean water, and ary with soft, unsized paper.
(25) H. M. A. asks: 1. Is there any telephone thatcan be heard several feet from diaphragm?
Not distinctly. 2. If so, will a larger spool of wire . Not distinctly. 2. If so, will a larger spool of wire $21 / 9$ inches by 1 inch and 8 inches long be glued together: If so, how? A. Use gas tar, and after joining heat lowly to low redness in a muffe.
2. What chemicals are used in a barometer? A. Pure
mercury only is used. 2. Can one be made frem tube 8 inches long, sealed airtight? A. No. The tube must be at least 33 inches long.
(26) J. H. writes: 1. By boiling peach seed kernels in distilled water to a strong solution, will it peaches whenboiled with water yield a liquid distillate containing hydrocyanic (prussic) acid, which is extremely poisonous, and the wash or undistilled portion usually retains a trace of the substance. 2. Would it be safe to take inwardly? A. No.
(27) J. B., Jr., asks how to manufacture a You may prepare machine oil, that will not gum. A. olive oil for about 30 days with a quantity ows: Digest turnings (sufflient to nearly fill the vessel); thenfilter the clear oil through 24 inches or more of clean (free from dust) granular charcoal, Or agitate good sperm reducing its temperature to about $40^{\circ}$. Fah, and after fluid portion through several thicknesses of fine linen cloth, warm, and filter as before.
(28) E. C. D. asks if there is any truth in the popular superstition that splitting a crow's tongue
(29) C. J. C. writes: I hold horizontally between my two hands a small spring scale. I exert
power enough with both hands to cause the scale to register 24 lbs. How much power do I exert with each nd? A. 24 lbs .
(30) E. A. H.
(30) E. A. H. writes: Suppose an ordinary hickory bow of same cross section throughout strung outer edge? Is it a true circle? After the bow has been distended by drawing the arrow,what is the curve then? If neither of these curves is a circle, can a bow in the
first position be made to take a circular form by any change in the cross sections at different points, and if so, what change will affect it? A. It would be impossible to give a general answer to the above questions, since the curve will probably vary a little in the case of every bow, rendering it necessary to
curve experimentally for each example.
(31) C. W. C. asks how the extra fine finish is given to microscopic and telescopic lenses. A. Rouge or putty powder is applied in the form of paste
to the finely ground surface by means of a rotating to the finely ground surface by mea
tool covered with pitch or with silk.
(32) C. J. B. would like to know how to set the valves of double engine with slide valves scien-
tifically, say a locomotive. A. You will find full information in Auchincloss' treatise on "Link and Valve Motions," also many rules in back numbers of the ScrEntific American. We could not treat the subject
(33) A. G. W. asks: Is it an accepted theory by physiologists that each individual at birth is endowed with a certain amount of " life power," vital
force, which is or maybe expended, butnever regained? force, No.
