TO INVENTORS.

An experience of more than thirity years, and the pre-
paration of not less than one hundred tbousand applicaparation of not less than one hundred tbousand applica
tions for patents at home and abroad, enable us to un derstand the laws and practice on both continents, and to possess unequaled facilities for procuring patent
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his patent through the Scientifl American Patent his patent through the Scientiffc American Patent Agency, it insures a special notice of the invention in
the Scientific Amerionn. which publication often the Scientific American. Which pubication ofte facture of the article. A synopsis of the patent law in foreign countries may be found on another page,
and persons contemplating the securing of patents abroad are invited to write to this offce for prices and our perfeected facilities for conducting the buimes. Address MUNN \& CO., office ScIENTIFIO AMERICAN.

## Business ata eersonat

The Chargefor Insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be receved at publcation offic
as early as Thursday morning to appear in next issue.

National Steam Pump is now on exhibition at the
American Institute; also 46 Cortlandt St., N. 叉. illustrating every subject for public exhibitions. Proftable business for a man with a small capital. Also lan
terns for college and home amusement. 74 page cataterns for college and home amusement. 74 page cata-
logue free. McAllister, Mf. Optician, 49 Nassau St., N. $\mathbf{Y}$ Vertical Engines, 10 to 15 H. P., thoroughly well
John Hartrick \& Co., 47 Gold street, New York. ohn Hartrick \& Co., 47 Gold street, Nem York Northrop's Sheet Iron Roofing makes most durable freproof roof. Used ôn all kinds of buildings, Send fo
circular and prices. Northrop \& Co., Pittsburgh, Pa. Vertical \& Yacht Engines. N.w.Twiss, New Haven, Ct W.H. B."-Guy C. Hotchkiss, Field \& Co., 622 East 14th street, New York, have a Hydraulic Sheet Punob for sale. Capacity 72 holes at one time
acting steam cy, inder. Price 81,000 .
Wanted.-Light Motor, 2 or 3 horse power, to prope Aerial Car. Gas or oil engine preferred. Address R. W
Cowan, P. O. Box 409, Montreal, Canada. Engines, $1 / 2$ to 5 H. P. Geo. F. Shedd, Waltham, Mass Wanted.-Low priced, second hand Lewis, Oliver Scroll Saw Designs. L. H. Russell, Stratford, Conn. H. Prentiss \& Co., 14 Dey St., N. Y., Manufs. Tap Dies, Screw Plates, Reamers, etc. Send for list.
Extension of time.-Proposals for Jacksonville Water vertisement page 233, October 12, 1878.
Best Turbine Water Wheel, Alcott's, Mt. Holly, N. J Right to manufacture a salable patented article depurchase. G. Thomas, Box 23 , West Troy, N. Y.
Useful Books for Engineers and Mechanics. Cata
logues free. E. \& F. N. Spon, 446 Broome St.,New York Mannfacturers of Improved Goods who desire to build up a lucrative foreign trade, will do well to insert a well displayed advertisement in the SCI ENTIFIC Americas
Export Edition. This paper has a very large foreigi Export Edi
circulation.

The Lawrence Engine is the best. See ad. page 270 . For the most substantial Wood-Working Tools, ad Warranted best and cheapest Planers, Jointers, Uni factured by Bentel, Margedant \& Co., Hamilton, Ohio. Magneto Call Bells for Telephone Lines. The Best.
No battery required. Bunnell, 112 Liberty St., N. Y. Diamond Engineer, J. Dickinson, 61 Nassau St., N.Y Eagle Anvils 9 cents per pound. Fully warranted. Diamond Self-clamp Paper Cutter and Bookbinder Notice.-Charles N. Elliott, of N Y Notice--Charles N. Elliott, of N. Y., is no longer con and is not authorized to collect moneys or transact an business whatever for the same.
Kreider, Campbell \& Co., 1030 Germantown Ave
Phila., Pa., contractors for mills forall kinds of grinding Phila., Pa., contractors for mills forall kinds of grind
Alcott's Turbine received the Centennial Medal.
The only Engine in the market attached to boile Dead Pulleys, that stop the runnisg of Loose Pulley and Belts, taking the strain from Line Shaft when Ma-
chine is not in use. Taper Sleeve Pulley Works, Erte, Pa Pulverizing Mills for all hard substances and grinding Hydraulic Cylinders, Wheels, and Pinions, Machinery worked. Tensile strength not less than 65,000 lbs. to squarein. Pittsburgh Steel Casting Co., Pittsburgh, Pa Wheelbarrows.-Over 50 styles, with felloe-plated,
bolted wheels. Pugsley \& Chapman, 8 Liberty St., N. Y. North's Lathe Dog. 347 N. 4th St., Philadelphia, Pa Sheet Metal Presses, Ferracute Co., Bridgeton, N. J. Nickel Plating.-A white deposit guaranteed by using our material. Condit, Hanson\& Van Winkle,Ne
English Agency, 18 Caroline St., Birmingham,
Boilers ready for shipment, new and 2 d hand. For a
good boiler, send to Hilles \& Jones, wizmington, Del.
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E. Lyon \& Co., 470 Grand St., N. Y. Presses, Dies, and Tools for work
Fruit and other Can Tools. Bliss \& Wheet Metals, etc Fruit and other Can Tools. Bliss
N. Y., and Paris Exposition, 1878.
For Power\&Economy,Alcott's Turbine,Mt.Holly,N.J.

The Cameron Steam Pump monnted in Phosphor Solid Emery Vulcanite Wheels-The Solid Original Emery Wheel - other kinds imitations and inferior.
Caution.-Our name is stamped in full on all our best tandard Belting, Packing, and Hose. Buy that only. Thebest is the cheapest. New York
For Solid Wrought Iron Beam, et en ment. Address Union Iron Mills, Pittsburgh, Pa., for graph, etc.

## NEW BOOKS AND PUBLICATIONS

## Victorian Railways. Report of the Board

 of Land and Works, for the year ending lia, 1878.At the close of 1877 there were in the colony 931 miles of railway open for traffc, and 32 in courge of completion. The construction of 181 mlles more had been authorized by parlaament. The average number of mlles open for craffic the whole year was 787. The
total train mileage was $3,420,960$ miles; the number total train mileage was $3,420,960$ miles; the number of
passenger journeys, a aeraging 213 miles, was $3,395,709$. passenger journeys, averaging $21 \%$ miles, was $3,395,709$.
The average earnings per miie of road were $\$ 7,15$; the average expenses, $\$ 3,765$. The proportions of passenger and goods traffic to the total revenue were 40 and 00 per centrespectively. A colored map of the four rail.
way systems of the colony, and illustrations of the different types of locomotives and carriages used, accompany the report.
nUal Report of the Department of
Mines, New South Wales, for the year
Mines, New South Wales, for
1877. Sydney, Australia, 1878 .
The mineral resources of New South Wales include oold, coal, tin, copper, iron, silver, lead, and antimony. he aggregate value of all the mining products of the The yield for 1877 was $£ 2,233,161$. The report contain. The yield for 1877 was £2,233,161. The report contain minister of mines calls attention to the use of teleminister of mines calls attention to the use of tele-
phones in underground operations in this country; and expresses the hope that by the introdaction of better mechanical appliances a fresh stimulus would be given to mining research, and mining operations wo
Industrial Science Drawing: Elements of
Free-Hand Geometrical Drawing. By S.
Edward Warren, C.E. New Yo
Wiley \& Sons, 1878. Price $\$ 1$.
Though nominally a second edition, this is substantially a new work. Part I. treats of plane drawing;
Part II., on drawing from " the round," is largely new; Part II., on drawing from " the round," is largely new; and Part III, on t
most wholly new.
Ferns in their Homes and Ours. With ch rom-lithographs of rare ferns. By John Robinson. Salem, Mas
Cassino. 12 mo . Price $\$ 1.50$.
In this attractive little book Professor Robinson has
described the growth, described the growth, structure, and distribution of
ferns, and their cultivation ander glass, in ferneries, and out of doors. Dr. A. S. Packard furnishes 10 illusrations for a chapter on fern pests and means for their destruction.
A Manual of the Mechanics of EngineerING AND OF THE Constroction of Ma-
CHINEs. By Dr. Phil. Julius Wiesbach. Second volume. Part II. Translated
by A. Jay Du Bois, Ph. D., with additions by R. H. Buel, C.E. New York: John Wiley \& Sons, 1878.
This, the second half of the second volume of Wies bach's mechanics, is devoted to heat, steam, and steam well known to require comment here Mr. Buel ha undertaken to supply any deficiencies with regard to American steam engineering.
Electric Lighting. A Practical Treatise by Hippolyte Fontaine. Translatedfrom the French by Dr. Paget Higgs, Assoc.
Inst. C.E. With 48 illustrations. 8 vo.
pp. $194 . \quad \$ 3 . \quad$ E. $\&$ F. N. Spon, N. Y. This work is designed to show wh nt state of science, the judicious applications of elecric lighting, to record the servicesthat this new light is capable of rendering to a multitude of industries, and to combat false ideas founded on the possibility of its
universal use.

## (20

(1) T. F. V. asks: What is best for drinking water to run through, black, galvanized or lead
ipe? A. Lead and galvanized iron pipes should not be pipe? A. Lead and galvanized iron pipes should not be
used as conduits for drinking water. The black enamased as conduits for drinking water. The black enam-
eled pipe answers very well, but in many cases wood eled pipe answers very well, but in many cases
tubes are preferable where they can be employed.
(2) Reader asks: Can you give a method of making champagne cider? A. Good pale vinous cider, hogshead; proof spirit, 3 gallons; honey or sugar, 14 lbs.; mix, and let them remain together in a temperate
situation for a month; then add one quart of orange lower water, and fine it down with $/$ gallon of skimmed milk.
(3) "Scientific" asks: How can I melt rubber gam (as it comes from the rubber boot factory) so as to run into a mould such as is used in casting printers' rollers? A. Vulcanized rubber cannot be melted
in the way you propose, as it suffers partial decomposiin the way you propose, as it suffers partial decomposi-
tion in the operation, and does not again assume its original qualities on cooling.
(4) E. S. F. asks: What is the intrinsic value of gold A. Coin value: 24 carats fine $=$ pure gold. 1 grain=4\%\% cents. $23 \frac{1}{\delta}$.
$\$ 1.01 / 2.1$ ounce (roy) $=\$ 20.67$.
(5) M. S. asks: What is the proper composition for 18 carat gold? A. 18 dwts. fine gold, $2 \%$ dwts.
silver 19 dwts., copper 13\% dwts. For red 18 carat ring
gold the following proportions are nsed: fine gold 40 wts., silver 41/2 dwts., copper $8 \frac{8}{8}$ dwts.
(6) A. B. asks (1) for the ingredients and manner of mixing and making crucibles. A. There ar in common use two methods of making crucibles, on mould; the other by pouring the "slip," of the consis mould; the other by pouring the "slip," of the consisiIn the latter case a series of the moulds are placed upon a tableand filled with the semi-fuid composition. By the time this operation is finished on 50 or 60 moulds the Workman returns to the filled, and alternately pours
the slip out of them, leaving orly a smallquantity suff the slip out of them, leaving orly a smallquantity suffl-
cient to give the requisite thickness to the bottom. In each of the moulds so filled aperfect crucible is formed by the abstraction of the water of that portion of the
"slip" in immediate contact with the stucco, and th rucible will be either thicker or thinner in proportio to the time this absorbent action has been allowed to go on. 70 or 80 crucibles may thus be formed in 15 minntes The moulds and their contents are placed in a slow oven. In a short time from the contraction of the clay in drythoroughly and nsed again. As soon as the crucibles, pormed by either of the above methods, have become perfectly dry they are baked by subjecting them to th cibles are made differs according to the nees for which they are intended. The following may be taken as good specimens-(German), Stourbridge clay, 8 parts; cemen (old crucibles ground to fine powder), 3 parts; coke, parts; graphite, 4 parts. Or Stourbridge clay, 4 parts cement, 2 parts; coke powder and pipe clay, of each part. Suttable for brass founders. (Hessian)-Cla (containing about 10 per cent of silica), about 75 percent sand (containing a little alumina and lime), 25 per cent (Black lead)-Fine refractory clay, 1 part; graphite, crucibles are made of Paris clay with a small quantity of very fine sand. 2 Also tell me, is black lead and of very ine sand. 2. Also tell me,
plombago the same thing? A. Yes.
(7) T. A. Y.-You can get a patent on your for producing it.
(8) C. W. G. writes: I want to get two or three practicalbooks on yacht building. I cannot find any that suits me. I have those you published in th
SUPrement by Paddlefast, but I want something mor SUPFLEMENT by Paddlefast, but I want something mor
complete with numerous plans. A. We believe the in complete in the Supperest are the only practical work of the kind published.
Isiron when galvanized dipped in melted zinc?
(9) F. L. A. asks: 1. What preparation is ased in drawing on zinc plates, so that when acid is ap drawing? What acid is employed, and how? A
Coat the zinc, while warm, with an even film of Coat the zinc, while warm, with an even film of
was or a varnish of wax and asphaltum, and afte was or a varnish of wax and asphaltum, and a tuit
scratching the design through the coating with a suit abletool, place a rim of wax, or a putty of wax an pitch, around the edges, and cover the plate, while in a
horizontal position, with dilute nitric acid, See p. 219 (37), vol. 34, Scientifio American. 2. Will any other plate answer as well as zinc to electrotype from? A No. 3. How is the acid removed after it has eat
sumfcient depth? A. By washing with water.
(10) H. M. H. asks whether strychnine is ased to make the thick foam (or thin) on beer or other to our knowledse, in beer or other liquor. The only ef fectit would have on beer would be to increase its bitter taste.
(11) W. J. S. asks: How can paper be prepared so that the action of the atmosphere will chang it to several different colors in such a manner that it
can be used, like a barometer, forforetelling the weather A. Saturate the paper with a moderately concentrated aqueous solution of cobalt chloride; press and dry. and moist and moist air a pink tint. The arrangement does not
foretell the weather, but simply indicates the hygro scopic condtion of the surrounding air
How can ink powders be made so that by the addi-
tion of cold water they will produce first red, green, blue, and violet ink? A. See p. $315(15)$, vol ed, green, blue, and violet ink? A. See p. 315 (15), vol.
38, Scientific American. Soluble nigrosine (in 200 parts of water) also makes a good bluish-black ink. For red use "rubine extra" (dissolves in 150 parts of water); for violet, methyl-violet 5B, or BR, Hofmann's violet
3 B , gentiana-violet B (dissolve in 300 parts of water fo use); for blue, waterblue BR, 5 B , or 2 B (dissolve in 200 parts water); for green, methyl-green (dissolves in 100 parts water). These
Can you give a description of the geometrical lathe,

## Lathe and its Uses

(12) C. D. H.-In Supplements 30 and 32 complete directions for building a small rowboat were
given, which were not repeated in succeeding numbers. Those who wish to follow the instructions for buildin the family boat, the Whitehall boat, the canoe or the yacht, should first read the initial directions in SUPPLE
(13) W. F.asks: Have the actions of the
yroscope ever oeen explained, and if so, wnat is the explanation? Why does the north pole always poin persistency of a rotating body in maintaining its plane rotation against the force of gravitation.
(14) H. G. writes: I have been casting small wheels out of zinc in a brass mould. I have are always cracks in the outer ring of the wheel. What is the trouble? A. The zinc contracts in cooling, and
as the mould is rigid it must of necessity crack. Use a and mould or employ a tougher metal.
(15) B. B. S. writes: I have a small sail
amount of sail that I can carry. A. The size of small If your boat is stiff for its width it will carry a sail $61 / 2$ feet on the mast and $81 / 2$ feet on the boon.
(16) R. W. M. writes: A shaft 60 fect long. 40 feet of which is 3 inches in diameter, and the remain-
ing 20 feet only $21 / 9$ inchesin diameter, has been thrown out of line by unequal settlement of building. Can it be lined up true without being taken out of boxes to have the boses lined up? A. This is quite possible if
(17) R. C. K.-A thermometer will ndia lower temperature in the wind than out of it. (18) O. E. D. asks: How much power is ost in using the common treadle and crank motion $A$ A.
None, as we understand your meaning, if the mechanNone, as we understand your meaning, ir the mechan -
ism is properly constructed. In practice, however, there is usually a considerable loss on account of friction or from other causes.
(19) A. J. asks for the best and chcapest nd inegar. A. See pp 284 (50), and 86, vol. 37 , and 122 6), 218 (4), and 171 (47), vol. 34, Scientific American. Consult Dussauce's "Treatise on the Manufacture of
Vinegar." Wine vinegar is generally considered the
(20) X. asks: 1. How to construct a cheap nd effcient " call" for the telephone described on $p$. 75, Scientific American, No. 5, current volume? A.
Connect a small bell that will jingle easily, with the telephone cord, by means of a short piece of thread which should be slack when the telephone is used. 2. The telephones are separated by a distance of 5 blocks, he wind posplendid, except when the wind blows, whicl can be heard all humming noise in the telephones vent this? A. We do not know of a way to prevent the
(21) C.-You will find a good article on the ubject of testing oils in Normandy's "Commercial
(22) P. A. F. writes: I desire to know if uring an epidemic of diphtheria, scarlet fever, whoopchildren are subject, any injury will be done or benefit be obtained by keeping a teaspoonful of carbolic acid on a plate in sleeping rooms and all other rooms in the
house? Will the acid in a crystal or diluted state be ouse? Will the acid in a crystal or diluted state be best to use? I often see it recommended to be used in
time of epidemics, but they never tell how to use it. A. Carbolic acid is often used in this way. The odor of the substance is not pleasant, otherwise no bad efect need be apprehended. The acid need not be diInted. cases of contagious diseases the disinfectan
usually mixed with about 20 parts of water and prayed over the carpets, linen, and other fabrics in the infected apartments.
(23) P. R.-We do not understand your (24) S. H. C.-Energy of water in foot lbs. $\binom{$ pounds discharged }{ per second }$\times\binom{\text { velocity of discharge }}{\text { in feet per second }}^{2}$
(25) X. Y. Z. asks for a recipe for modling wax, such as is used by modelers of small fine
gures. A. Lead plaster, 8 ozs.; beeswax, 8 ozz.; Bur gures. A. Lead plaster, 8 oz8.; beeswax, 8 ozs.; Bur gundy pitch, 8 ozs. Melt together and stir in sufficient
prepared chalk to form a paste. Mould it in small prepared chalk
sticks for use.
(26) C. V. writes: I have a number of good wine casks that have become musty. I have tried to weeten them by washing and steaming, but have failed get them in a condition to put wine in. A. Burn a
bittle sulphnr in the empty casks, bung, and let them stand for a day.
(27) W. W. R. asks how to make a good white ink to write on black paper or cardboard. A. hate or "flake white" mixed with a little gum Where can I obtain stone bottles varying in size from one gill to one pint in size? A. These sizes are seldom met with in stores: they are made to order.
(28) J. M. G. writes: I have a problem to propose for solution which has puzzled me. It is this:
uppose a quart bottle of powder, sealed and sunk into uppose a quart bottle of powder, sealed and sunk into pressure all round is greater than the explosive force of the powder. fired by a wire and galvanic battery. Will the glassbe broken, or the bottle hold the gas of the exploded powder, or the powder burn without any exploion? A. If such conditions could be realized there would be no explosion. The powder would burn, and
the products of its combustion would remain in the the prod
(29) J. G. S. writes: I send two balls taken out of the piston head of my engine; there were quite
number of them. I would like to know how they number of them. I would like to know how they were formed and of what. I use pure tallow or beeswax
as a lubricant for my cylinder. A. The balls consist principally of metallic iron (dust) and partially charred or decomposed wax. They are formed by the friction of the head under imperfect lubrication.
(30) F. S. B.-To correct spherical aberation in your speculum use a small polishing tool fully from the pariphery inward, testing the speculum ccasionally.
(31) "A Reader" asks: 1. What is meant steam being cut off at the stroke of a steam enengine to be 4 feet, cut off at $1 / 2$ of the stroke, how many feet will the piston he driven, by expangion only, during the completion of one revolution of the engine? A.
Two feet. 2. Please glve the horse power, and the rule Two feet. 2. Please glve the horse power, and the rule
for working it, of a steam engine of the following dimensions: Diameter of cylinder, 10 inches; length of
troke 4 feet, cut off at $1 / 6$ of the stroke, revolutions stroke 4 feet, cut off at $1 / 2$ of the stroke, revolutions 45
per minute, pressure per steam gauge, 60 lbs. And
also of the same without the cut off. A. To find the
horse power, the mean pressure during the stroke must
be known, and this can only be determined by experi- be known, and this can only be determined by experiment.
What does squaring the circle mean in a mathematica sense? A. Fin
of the circle.
(32) J. R. D. asks: 1. Should a launch be built, 26 feet by 5 feet, with lines moulded after the Flitr (Scientific American Supplement No. 31), wha should be the increased dimensions of the boiler, en
gine, screw, etc., to speed 10 or 12 miles easily per hour
 what difference in cost of boiler between stee 200 lbs the latter to sustain a safe working pressure of not more than 20 per cent 3. What is the most suitable wood matcrial in all respects for such boat build steamed? A. The most suitable wood for small boat
(33) W. L.-To harden magnets beat them a dark cherry red, plunge them in cool water, then
draw to a straw color. You will find methods of mag. netizing given in No. 142 of Scientific American Sur libment in "How to make a Working Telephone." (34) C. T. A. asks: 1. What is the expanelive bulk of mercury per degree of heat in an open ves ature. Between $32^{\circ}$ and $212^{\circ}$ Fah. $1,000,000$ parts of mer cury become $1,018,153$. 2. What is the expansive bulk of mercury per degree of heat under a vacuum? A.
The same as in an open vessel. 3. If a bottle is half filled with m:rcury and half air, a glass tube, open a both ends, inserted through the cork and descending
into the mercury, will the mercury rise higher than if into the mercury, will the mercury rise higher than if
the bottle was flled to the cork? A. Yes. 4. Would he difference in those proportions vary the rise of mer cury in the tube? A. Yes. 5. If air is used in combi cury in the tube? A. Yes. 5. If air is used in combider the rise of the mercury in the column unreliable
(35) W. H. -Consult an advanced treatise
(36) A "music teacher" writes: Do you know of any device that will do away with pcn and ink to copy notes (in music) from the original, do it cheap, think a series of rubber stamps would facilitate the
(37) J. M. W. writes: I am building a small steam engine (horizontal), 3 inches bore and 5
inches stroke, to run 300 revolutions per minute, with from 50 to 90 lbs. of steam, cutting off at 34 stroke. Will steam ways 1 inch by $1 / 1 /$ inch be large enough Exhauet 1 inch $x 1$ inch, bridges $1 /$ in inch, steam pipe $_{1 / 4}$ inch, exhaust pipe $\$ 4$ inch. How will these proportions answer? A. Tbese proportions seem to be ampie.
(38) H. C. S. asks: 1. What is the differ ence between ferrocyanide of potassium and the yellow pruseiate of potash? A. They are the same. 2. What
is the difference between bichromate of potush and red prussiate of potash? A. Potassium bichromate $\left(\mathrm{K}_{2} \mathrm{Cr}_{2} \mathrm{O}_{7}\right)$ is a potassium salt of chromic acid $\left(\mathrm{H}_{2} \mathrm{CrO}_{4}\right)$. The red prussiate (potassium ferricyanide- $\mathrm{K}_{\mathrm{e}}\left(\mathrm{FeCy}_{\mathrm{o}}\right)$ -is the potassium salt of hydroferricyanic acid.
Can yoo give me a recipe for artifcial honeys A.
You may try the following: Glucose (grape or starch You may try the following: Glucose (grape or starch
sugar), 1 lb. ; cane sugar, 2 ozs.; water, i. s. To this sugar), $1 \mathrm{lb} . ;$ cane sugar, 2 ozs.; water, 4. 8. To this
add a guffleient quantity of potato or corn starch boiled add a guffleient quantity of potato or corn starch boiled
with water to a jelly, and about an ounce of gum arabic. with water to a jelly, and about an ounce of gum arabic.
Small amounts of molasses and flour are sometimes added.
What is used for strengthening essence of orange
(39) A. S., Jr., asks: What per cent of glycerin will prevent the congelation of water at $0^{\circ}$
Fah, at $-24^{\circ}$ and at $-32^{\circ}$, respectively, under ordinary conditions? A. An aqueous solution containing 10 per ent of glycerin, specific gravity $1 \cdot 024$, freezes at $30 \cdot 2^{\circ}$ Fah.; with 50 per cent of glycerin, specific gravity
$1 \cdot 127$ freezees at $-24 \cdot 2^{\circ}$ Fah.; with 60 per cent, freezes $1 \cdot 12 R$, freezes at
below $-31^{\circ}$ Fah.
(40) I. F. B. asks for the best way of freeing gas from aqua ammonia while passing through lime
drier after leaving the retort. A. If you refer to coal gas, the ammoniacal vapors are not removed in the lime
purifler, but in the hydraulic main, the condenser, and washer. See Scientific American Sopplement No.
(41) W. T. P. asks why a cannon ball when shot up perpendicular from the earth does not have the same velocity or Porce in coming down as in going up?
A. Because the force of gravitation which causes the ball todescend is less than the force of the ganpowde which sent it up.
(42) F. J. F.-For information on canning ee article on p. 122, current volume, Scientitio Amase

Minerals, etc.-Specimens have been received from the following correspondents, and examined, with the results stated:
Judham, Ontario.-No. 1 is chalcopyrite. No. 2 is amethystine quartz. No. 3, dark muscovite. No. 4
apatite in quartz. No. 4 , ferropyrite. The rock is apatite in quartz. No.4, ferropyrite. The rock is
probably auriferous. No. 6, pink orthoclase. No. 7, fluorite. No. 8, garnets in dolerite. No. 9, hematite and orthoclasc. No. 10, rich magnetite. No. 11, cyan-
ite.-W. G. S.-Quartz with iron sulphide-probably contains a trace of gold.-A. F. J.-It is a quartz pebble-sample returned.

## comidnications recerved.

The Editor of the Scientric Anrrican acknowledges ontributions on the following subjecta:
The Telephone. By J. H. R.
The Phonograph. By H.L., J

HINTS TO CORRESPONDENTS. We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.
Many of our
Manot properly cannot properly be answered in these columns. Such
inquiries, if signed by initials only, are liable to be cast into the waste basket.
Persons desiring special information which is purely of a personal character, and not of general interest,
hould remit from $\$ 1$ to $\$ 5$, according to the subject, we cannol be expected to according time and labor to obtain such information without remuneration.

## [OFFICIAL.]

INDEX OF INVENTIONS
Letters Patent of the United States were Granted in the Week Ending

August 27, 1878,
AND EACE BEARING THAT DATE [Those marked (r) are reissued patents.]
A complete copy of any patent in the annexed 11 st , Including both the specifcations and drawings, will be furnished from this office for one dollar. In ordering please state the number and date of the patent desired, Anchorfule supporter and tripper, E. Robbins nimal trap. J. Hg. King
Axles, sand band for vehicle, A. Keiser Bag holder, J. L. Frledriech.
Bale tie, J. Y. Bloomingdale Bale tie, J. Y. Bloomingda
Barb winder, B. F. Sellers Barrel cover. Hartley \& Little Barrel bead machine, C. Stout ............
Barrel trussing machine, H. R. Tyson. Barrels, drip basin for, E. F. Pflenge
Bed bottom. spring, J. N. Vallcy .. Bed canopy, R. Shepherd. Belting, machine, J. Smal Bench attachment, work, J. M. Combs.
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