Business and Personal.

The Charge for Insertion under this head is One Dollar a line for each insertion. If the Notice exceeds four lines, One Dollar and a Half per line will be charged.

Notes & Queries

C. H. B. is referred to reply to W. G. F. (No. 25) in No. 3 present volume. About etching, see reply to C. H. B.—I. F. R. asks for a recipe for a depilatory, and is referred to Cooley's "Cyclopedia of Practical Receipts," p. 400.—W. H. T. had better correspond with some of the officers of the expedition to which he refers.—C. C. N.—For directions for preserving insects write to the Smithsonian Institute, Washington, D. C.—A. is informed that the power of a man is considered about one fifth of a horse power.—J. H. von H.—It would be better for you to obtain some article by advertising in our "Business and Personal" column.—J. H. W. will find the manipulation of nickel very much like working brass. He must learn by his own experience the adaptability of the metal to his wants.—R. W. S. can learn how to regulate heat by addressing J. N. Adams, Olathe, Kansas.—W. E. is answered thus: 1. Any earthen jar will do. 2. By burnishing with steel or bloodstone burnishers. 3. Leather called seahorse hide. —F. H. is informed that we see no particular objection to the present mode of making the wheels he refers to.—J. C. H. is referred to reply to L. O. B.—P. C. is informed that he is probably correct, as we understand his question.—J. G. R.—We can give no other information about the "new process" than that described in the newspaper articles that you enclosed.—P. N. is informed that the U. S. Government has made no such offer as he mentions.—H. R. had better consult works on astronomy for replies to his questions concerning the rotation of the earth, etc.—P. S. is informed that the publisher's price of Forney's work on the locomotive is $2.50.

(1) W. W. asks: How can I purify a whisky cask, so as to use the same for ice water and not have the water taste of the former contents? A. Wash with a strong solution of carbonate of soda in hot water mixed with some clean sand, and then with plenty of clean water. Or, after washing, fill with water and allow to stand for some time, and finally rinse thoroughly with clean water.

(2) G. H. W. asks: 1. Is manganese magnetic? A. When pure, no. 2. What is its value? A. Pyrolusite of good quality is quoted at ten dollars per ton in New York. 3. Does it pay to mine it when in large quantities? A. When of good quality, and the mines are so situated as to admit of cheap transportation, yes. 4. For what is it used? A. It is extensively used with salt for the production of chlorine for bleaching purposes, in the manufacture of glass, in paints, and dyes, as a source of oxygen, in some metallurgical operations, in the chemical laboratory, etc.

(3) T. J., of Toronto, asks: How long should wood require to be steamed before it will bend? What are the best kinds of hard wood for bending? A. The time depends upon the quality and form of the wood. No general rules can be given. Wood of recent growth is most readily bent. Hickory and ash are best.

(4) B. F. H. asks: 1. How large an engine, (oscillating) should I make for a boat 10 feet keel, 3 feet beam, 15 inch propellers, with a boiler 15 inches in diameter and 20 inches high? A. Cylinder 1½ by 2 inches. 2. How thick should sheet iron be for the boiler? How thick if made of copper? How much pressure will it stand? A. Iron $\frac{5}{32}$, copper $\frac{7}{32}$, pressure 75 lbs. 3. Do you think these dimensions are suitable for a boat of this size? A. They will answer very well.

(5) G. L. W. asks: What can be used for the purpose of making coal dust in block shape, and at the same time not destroy its burning qualities? A. There are numerous patented processes. You should apply to the inventors for information.

(6) S. H. M. asks: How large an engine and boiler do I need to run a boat 25 feet long and 6 feet beam? I want her for speed. How many will she carry? How large an oscillating engine must I have? A. Cylinder 4x6, boiler 3 feet diameter, 4 feet high. Such a boat can be made to carry 10 or 12 persons very comfortably, or more if desired.

(7) B. S. asks: What is the relative unity of resistance of an electric battery responding in a wire (Ohm's law) you refer to in your articles on telegraphy; is it the resistance in a copper wire or in a column of Hg of 1 yard in length? A. If we get your idea, the ohm or unit of electrical resistance is equal to the resistance of a prism of pure mercury, 41·7 inches in length, and ·001549 square inches section at 0° C. (= 32° Fah.) The internal resistance of batteries varies considerably. The resistance of conductors varies with their dimensions and temperature.

(8) M. P. asks: How much will a 20 horse power steam engine and boiler weigh, built of the best material? A. It will vary, according to the construction. A fair average will be about 8,000 lbs.

(9) N. P. M. asks: Will you tell me how to straighten two small, seasoned red cedar poles, of which I wish to make two canes? These sticks are valuable as souvenirs, and I wish to make them useful. A. It will probably be necessary to soften them by degrees, securing them in the successive positions.

(10) A. B. asks: Can you give me a description of how to make a good, cheap, sluice or rocker for washing gold out of gravel and surface dirt? A. We could not do the subject justice in this limited space. You should consult some standard work. The method practiced in Japan, which seems to be cheap and efficient, is described by Henry S. Munroe, E.M., in a pamphlet entitled "The Gold Fields of Yesso."

(11) C. R. B. says: A combined barometer and thermometer is now sold, the barometer tube containing a fluid which, when rain approaches, hardens and resembles ice. Are such barometers reliable weather indicators? What is the fluid used? A. They are not very reliable. Sometimes a solution of camphor is used, we believe.

(12) E. S. Y. says: We have two shafts parallel with each other. We wish to make the driver shaft do more work. A friend says increase the diameter of the pulleys. I say increase the width of the belt. He says it will convey more power with the same belt by increasing the pulleys ⅓. Which is right? A. You are both right.

(13) W. W. H. asks: What power does a reflector add to light? A. It concentrates the light.

(14) S. W. M. asks: What is best to paint a steam boiler and smokestack with, so that it will stand heat? A. Black varnish made from petroleum answers very well.

(15) G. F. says: A person seems to be under mesmeristic influence of a person they have not seen for two years. Can they be freed from such influence? A. We are not sufficiently familiar with the facts to enable us to answer the question.

Will a pulley covered with leather pull more than one of cast iron, perfectly smooth? If so, why? A. Generally, yes; because the co-efficient of friction is greater.

(16) G. M. D. asks: Will a boiler steam as fast (with the same fuel) with the water at the upper cock as it will with water at first cock, and why? A. In the majority of cases there will be no great difference, other things being equal.

Is the sting of a locust poisonous? A. Troublesome, but not fatal, we believe.

(17) J. W. F. S. asks: 1. If the stamps upon letters passing through the post were canceled, in the same way or with the same material as the stamps themselves are printed with, would it not be impossible to remove the cancelling without so far destroying the stamp itself as to remove all danger of its being used again? A. This method has been suggested before, but there is a difficulty in the way of properly using these inks with hand stamps.

Would the addition of salt to the water used for watering streets render it more effectual? A. Yes, but it is claimed to be unhealthy, and is injurious to the feet of horses.

(18) N. S. B. & Co., Ottawa, asks: What are the proper dimensions of a steam yacht between 35 and 40 feet long? And what size engine would be required to run her? A. You will find the required information in Nos. 69 and 81 of the SCIENTIFIC AMERICAN SUPPLEMENT.

(19) C. G. H. asks: What will remove the stain of nitric acid from black woolen goods? A. Wash with a strong hot solution (in water) of carbonate of ammonia. If this does not remove the stain it may be concluded that the acid has destroyed the coloring matter. This is usually the case. If the yellow stain remains, the only remedy will be to re-dye the material.

(20) I. E. R. says: I would like the latest and best books describing the diamond fields of the world? A. See article on the subject in SCIENCE RECORD for 1874. The works of Castellani and Emanuel on gems, diamonds, and precious stones may be of value. The American News Company of New York city, in 1872 published a work on "The Diamond Fields of South Africa."

(21) E. C. H. asks how to cast a box on a bearing, and is answered by a correspondent thus: My plan is to give the journal a heavy coat of smoke, by holding it over fire of bituminous coal. While being smoked it is also becoming hot. I have filled a box on a inch and a quarter screw, square thread, four to the inch, four inches long, and had no difficulty in running it off from the screw after being cast.

(22) C. P. says: Where can I obtain information for building a machine for making ice? A. See reply to F. A. R. (No. 47) in No. 3 present volume SCIENTIFIC AMERICAN.

(23) F. S. C. says: Can you give me an analysis of the water of the Atlantic Ocean? A. The following is an analysis of sea water from the British coast: Potassium chloride ·766, sodium chloride 27·959, ammonium chloride, trace; calcium chloride, 3·666; sodium bromide, ·029; sodium iodide, trace; calcium sulphate, 1·406; magnesium sulphate, 2·296; calcium carbonate, ·033. Your second question, concerning a discrepancy in an analysis of water from Richfield Springs, we do not understand. We cannot give you the address of the professor mentioned.

(24) W. D. S. is informed that, provided the metals are brought into proper contact, it matters little whether the amalgamation takes place in the presence of water or not. Where the auriferous sand or dust from the quartz mill is emptied directly into the mercury, the amalgamation at best is very incomplete, and the mercury adhering to the dust occasions a great waste. Under such conditions the mercury becomes grossly contaminated, and is likely to yield an impure product in the retort.

(25) G. S. says: I cannot succeed in covering Smee battery plates (silver) with an equal coat of black oxide of platinum. I tried several ways, but fail to get an equal color. Also whether the platinum coating must be very dark, or if a grayish looking coat is sufficient? A. Dissolve chloride of platinum in about 100 parts of cold water. In this immerse the silver plate, and connect it by means of a wire with the zinc pole of a small battery. Then connect the positive pole of a battery with a small rod of clean carbon, also immersed in the platinum solution. Or a small porous cup containing a rod of zinc and water very slightly acidulated with muriatic acid may be used in place of the carbon anode; then, on joining the zinc and silver with a copper wire the platinum will be deposited on the silver as a black or grayish-black rough coating. The silver plate must be perfectly clean to secure a good deposit.

(26) A. P. H. says, in reply to casting box for shaft: Take the mandril out, wipe off all the grease, and then smoke the bearing in the blaze of a candle or lamp till it is covered with lampblack, then lay it in the boxes in the way it wants to run, and fit a piece of thin wood or board to the shaft on each side of the boxes, to keep the metal from running out, then moisten some bread to a paste and paste it in the cracks between the mandril and wood on outside of box. Put some paper between the upper and lower box tight to the shaft, to keep the two halves of the casting separate. Pour the metal through the oil hole.

(27) C. C. asks: How is nitro-benzole made? A. Nitro-benzole is commonly prepared by adding benzole carefully to a cooled mixture of equal parts of strong sulphuric and nitric acids. This solution, when largely diluted with water, yields a precipitate of the nitro-benzole. It is used to some extent by perfumers as a substitute for the more costly oil of bitter almonds, which it closely resembles in odor. It is also used for the preparation of anilin. It can be obtained from almost any large chemical establishment. The price of the purest preparation is about a dollar per ounce. In unskillful hands its preparation is somewhat hazardous.

(28) G. W. asks: 1. What will be the result if a tight vessel is filled with steam at 4 lbs. pressure to the square inch, and a gauge mounted thereon, then surround this vessel by another one, and let steam at 60 lbs. pressure into it, and around first-named vessel. Will the pressure in first-named vessel rise, and if so, to what height of gauge? A. The pressure will be slightly increased. 2. Will steam absorb heat as freely as it absorbs cold, or is it capable of absorbing heat with more rapidity than the water of the boiler in which it was generated? A. We think not, as we understand the question.

(29) L. O'B. writes: We have a well situated 650 feet from an outlet, the connection is a siphon of ¾ gallon pipe. From the surface of the water to the highest point it is 15 feet; then the pipe runs nearly level, a distance of 500 feet, when it makes a steep descent to the outlet, which is 10 feet lower than the level of water in the well. After laying the pipe, we pumped out the air, and the water ran for about 8 or 10 hours (going slower all the time) until the stream was only about ¼ inch, which would run for two days or more. Thinking there might be a leakage, we tested the pipe to 60 lbs. hydraulic, but found none. Then after starting the water nicely, we stopped the outlet for 14 hours; on opening, the water ran as before (a good stream at first) the same as when we first pumped it through. Now the questions are: What is the disease? and what is the remedy? A. The trouble is probably caused by the accumulation of air at the highest point, and the remedy is to attach a cock or valve for removing it.

(30) G. W. B. says: I am desirous of attempting to hatch eggs artificially, on a small scale. Can you describe an apparatus with which I can hatch say 100 or 200 at a time? At what temperature must the eggs be kept? In what position, and how often turned over? A. There are many details required for a successful apparatus, which we could not describe in this limited space. Now as you are willing to incur considerable expense in experiments, it will be better for you to inspect some establishment that is in successful operation.

(31) G. W. W. says: Given the plane of view, or delineating plane, perpendicular to the plane of the equator. Required to draw a map of the earth, showing parallels of latitude and meridian lines, the point of sight being outside of the earth and on a line passing through the center of the earth and perpendicular to the plane of delineation. The equator and the meridian line in the plane perpendicular to the plane of view will be represented as straight lines. How are all the other circles of longitude and latitude to be drawn, as arcs of circles or ellipses? If either, why, and how are they determined? A. You should consult a treatise on map projection.

What is the highest horse power to which the force of electricity has been made to work? A. There is scarcely any limit in the modern machines.

(32) H. F. L. says: I bored a well for a steamship company, some 2 miles out in Humboldt Bay. We struck a vein of burning gas at 86 feet. At 114 feet struck good fresh water for drinking and cooking, which is used by the vessels; but they say they cannot make steam of it. When heated it rises in white foam. Can you tell how it can be used for steam, or what is the cause of it? A. We need some more particulars to enable us to explain this. Possibly others who are familiar with the matter will send communications.

(33) C. R., Appingedam, asks: I have a smoke stack of 65 feet, and use as fuel wood waste from the planing mill: the sparks, or rather the burning wood chips cause accidentally fire in the yard or the neighborhood. What is the remedy? A. We imagine you can stop this in a great measure by the use of a spark arrester made of wire cloth, such as is made for a wood-burning locomotive. The number to which you refer is out of print.

(34) E. D. E. asks: 1. At what temper (by color) will steel bear the greatest tensile strain? A. Generally at a low temper. 2. Is iron tempered after it has been case-hardened? A. No.

I have a 3″ x 4″ vertical engine, cutting off at about ¾ stroke. What size of boat, and what diameter and pitch of a three-bladed propeller will it run with 80 lbs. of steam? What size of boiler will it require, and will a ¾″ plunger with a 1½″ stroke, attached to main shaft of engine, feed it? If not, what size will? A. Boat 22 feet long, propeller 2 feet in diameter 3 feet pitch. Boiler 26 inches in diameter 3½ feet high. It would be better to use a pump of twice the above capacity.

(35) W. E. B. says: Our house is overrun with cockroaches. We have tried two kinds of poison and have done no good. A. Mix fine plaster of Paris with double its weight of oatmeal and a little sugar. Strew this on the floor or in the chinks where they frequent. This is less objectionable than Paris green, and accomplishes its purpose nearly as well. Sumac leaves dried, ground to a fine powder, and, with a little blow-gun, driven into the crevices is certain and speedy in its work. Tannic acid mixed with a little lime may be used in a similar manner. A mixture of one part oxalic acid, one of sugar of lead, three of finely ground oak-bark, and a little flour, is also recommended. Kerosene, petroleum, turpentine, etc., are also fatal to these animals.

(36) J. V. R. asks: What is the essential difference between a magneto-electric machine for light

giving purposes, and one for electro-plating? A. Ordinarily there is little or no difference. In some of the Ladd and Gramme machines used for plating, arrangements are made so as to alter the quantity of the current and to admit the use of only a fraction, or all of it, as desired.

(37) A. P. F. says: I wish a recipe that will thoroughly water and mildew proof cotton canvas, and which will not injure the fabric when exposed to 280° of heat for 30 minutes. A. We think it will be difficult to devise a method that will, with any degree of satisfaction, answer all your requirements. Strong, hot solutions of alum or pyrolignate of iron (iron liquor) may be used to render such material mildew proof, and, if subsequently boiled in a strong solution of rosin soap, the cloth will be made reasonably waterproof, by the formation of insoluble alum soap or iron soap in the fiber.

(38) J. D. W. asks: How can I prepare sulpho-carbonate of potassium? A. It may be prepared by digesting for a few hours potassium sulphide with a slight excess of carbon disulphide, then adding a little water, and evaporating the whole dearly to dryness over a water bath.

(39) H. L. B. asks for a recipe for crystalizing tin plate. A. Wash the surface of the plate, previously warmed, with dilute nitric acid (1 of acid to 2 of water). As soon as the crystalline appearance is fully developed, wash it thoroughly in running water, dry, and varnish. 2. Please give me a recipe for turning tin blue and other colors? A. Tin cannot be stained or colored other than by paints or colored varnishes, etc. Use a filtered alcoholic solution of bleached shellac, colored to suit with any of the aniline colors. Very beautiful effects may thus be produced, as these colors are very real and transparent.

(40) H. E. W. asks: 1. Where can electric pile referred to in SCIENTIFIC AMERICAN of January 22, 1876, on p. 55, be found? A. The battery, we believe, is in the market. See our advertising columns of addresses of electricians. 2. Is it patented? A. Yes. 3. What effect does the peroxide of manganesc in porous cell of Leclanché have on the carbon? A. It has no effect on the carbon—it serves to oxidize into water the hydrogen liberated at that pile. 4, What is the object of pounded carbon in the cell, and how much oxide is there in it? A. The carbon serves to decrease the internal resistance of the battery. The proportion of carbon and manganic oxide is variable, but may be about 1 part of the former to 3 of the latter. 5. Does the ammonium chloride in outer cell unite with the manganese and form an acid? If so, why? A. No; when circuit is closed the zinc dissolves in the ammonium chloride, forming ammonio-chloride of zinc. 6. What compound will unite with chloride sodium and form an acid? A. There can be no such reaction.

(41) C. L. P. asks: How does the fly walk on the ceiling? A. The flies' feet are provided with small, hairy, inverted cup-shaped cavities, capable of distending when pressed on a smooth surface, so as to form a slight vacuum, after the manner of the sucker. See "Hogg on the Microscope."

(42) G. C. asks: Is there a process for coating the fibers of cotton with silk? A. We know of none.

(43) W. E. asks: 1. What kind of a brush or buff do they use in the silver plating factories to put on the high finish on plated ware? A. It is done by burnishing. 2. Is there any other way to clean goods for plating besides scouring them with pumicestone and brush? A. Yes, by filing, scraping, and pickling in acids. 3. I would like to know about the patent on nickel plating? A. We refer you to the patentees.

1. What is the best way to clean brass bird cages? A. Wash with soap and water or a weak alkali. 2. What kind of varnish is put on to make them look so well? A. Shellac varnish can be used.

(44) T. A. P. asks: It is claimed that certain base-ball pitchers are able to throw a ball so that it will describe a horizontal curve in the air. Is such a thing possible, with a perfectly spherical ball and in a still atmosphere? A. We have never seen it done.

(45) H. D. E. asks: How is paper powder made? A. You will find information in No. 21, vol. 36. The proportions of the ingredients we cannot give.

(46) O. G. B. asks: What are roller skates, and are they patented? A. They are made something like a pair of sandals, but with rollers in place of skate irons. There have been some patents granted on them.

Could a copyright be obtained for a plan for organizing a society so that no society could make use of it without the consent of the owner of the copyright? A. Yes.

How much force could a spring, similar to the spring in a spring clock, be made to overcome? For instance, could one be made to wind up like the spring of a clock that would exert a force of 1,000 lbs., or 500 lbs., or any given number of lbs.? A. Yes.

Could a patent be obtained on a new plan for a lottery wheel or other contrivance for the purpose of lottery drawing? A. Yes.

Will any regularly organized order, having by-laws and officers, have to be chartered by the State? A. Consult your State statutes.

Is a raw cowhide, as it is taken from the brute, impenetrable to water? A. Yes.

(47) A. C. S. asks: What compound is used for making patent leather? Also how is it applied to get such a perfectly smooth surface? How long should it be boiled to give it the drying quality that boiled oil possesses? A. Patent or enamelled leather is prepared from hides that have passed through two operations; the first to render the leather impermeable to the varnish, and the latter to lay on the varnish. The hides are rubbed on the grain side with three coatings of boiled linseed oil mixed with ocher or ground chalk, and dried after each coating. The surface is then pumiced, and treated with general applications of the same material of a thinner quality. Over the surface so prepared are laid successive layers of boiled linseed oil, and of the oil mixed with lamp black and turpentine spread on with a brush. The surface, which has become black and shining, is then varnished with copal and linseed oil with coloring matters. The following is recommended: Boiled linseed oil and turpentine 20 lbs. each, thick copal varnish 10 lbs. and 1 lb. each of asphaltum, Prussian blue, or ivory black. Five coats of varnish are successively applied, and the colors are varied at will. Oil should be boiled until all the moisture is expelled.

(48) F. H. D. & Co. ask: Will you give me recipe for making a marking pencil for lumbermen, or marking packages? A. A perusal of the article on "Pencils" in Knight's "Mechanical Dictionary" (part 25), will probably give you the information.

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined, with the result stated:

W. W.—If minerals in slate pencil box are yours, they are: No. 1, mispickle, sulphide, and arsenide of iron. No. 2 is limonite—an iron ore. No. 4 is tennantite, or sulphide of iron, copper, and arsenic. The green piece is a hydrous arsenate of copper—tyrolite. No 5 contains antimony, iron, and silver.—E. A. S.—It is magnetic iron pyrites—pyrrhotine. It may contain more valuable metals.—J. E.—(Minerals in tin box). They contain silicates of alumina, magnesia, potash, and soda, sulphate of lime, and carbonate of lime. They do not necessarily indicate the proximity of coal or oil. Limestones are very common in oil regions.—M. S.—No. 2 is calcite. No. 5 contains galena—sulphide of lead. No. 6, the irridiated brassy-colored piece is chalcopyrite—sulphide of copper and iron. No. 7 contains iron and copper pyrites, oxide of iron, and a little carbonate of copper. No. 9 is amianthus. No. 10 is quartzose rock with pyrites. No. 11 is magnetic oxide of iron. No. 12 is clay slate with oxides of iron. No. 13 contains galena and probably silver. No. 14 is augite. No. 16 is galena. No. 17 is mica-schist. No. 18 crystals of carbonate of lime. No. 21 is a clay with much oxide of iron. Nos. 1, 3, 4, 8, 19 and 20, are missing.—F., of Curaçao, South America.—The sample of pitchyma terial sent was probably formed by the evaporation of the more volatile constituents of a petroleum. It contains a large percentage of earthy impurities. It is probable that higher up the ravine referred to a more valuable oil may be obtained. Its commercial value could be definitely determined by an analysis. Its destructive distillation will yield a very rich illuminating gas. It probably contains some paraffin.

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges, with much pleasure, the receipt of original papers and contributions upon the following subjects:

On Boiler Joints. By F. G. W.
On Snakes Catching Fish. By E. A. P.
On Hog Cholera. By ——.
On Submarine Torpedoes. By ——.
On an Apparatus for Analyzing Polarized Light. By W. L.
On the Brown Bat. By C. F. S.
On the Seventeen Year Locust. By R. K. S.
On a Telephone. By N. T. McK.
On a Tidal Motor. By A. S.

Also inquiries and answers from the following:

S. A. S.—F. P.—C. F. M.—P. N.—E. A. S.—D. B.—M. H. M.—A. I. F.—C. B. L.

HINTS TO CORRESPONDENTS.

Correspondents whose inquiries fail to appear should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them. The address of the writer should always be given.

Inquiries relating to patents, or to the patentability of inventions, assignments, etc., will not be published here. All such questions, when initials only are given, are thrown into the waste basket, as it would fill half of our paper to print them all; but we generally take pleasure in answering briefly by mail, if the writer's address is given.

Hundreds of inquiries analogous to the following are sent: "Who makes paper balloons? Who makes assays of minerals? Who deals in canary birds?" All such personal inquiries are printed, as will be observed, in the column of "Business and Personal," which is specially set apart for that purpose, subject to the charge mentioned at the head of that column. Almost any desired information can in this way be expeditiously obtained.

OFFICIAL.

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were Granted in the Week Ending

June 19, 1877,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A complete copy of any patent in the annexed list, including both the specifications and drawings, will be furnished from this office for one dollar. In ordering, please state the number and date of the patent desired, and remit to Munn & Co., 37 Park Row, New York city.

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