

(50) V. C.—Coal tar is a good preservative for wood of any kind, and contains the antiseptic principle of creosote. If applied hot by dipping the ends of the posts in a kettle of hot tar, you will accomplish all that may be desired. The creosote costs more, and both can generally be obtained where there are gas works.

(51) D. H. E.—The great trouble with cams in stamp mills arises from bad construction, in allowing the shape of the cam to cause a concussion with the stamp catch. The point of the cam should not strike, but some part of the curve nearer the shaft should first lift the stamp. Much also depends upon the relative position of the shaft and stamp bar. A true spiral from a center is considered the best.

(52) N. A. W. asks the exact number of English feet in a nautical mile, and how it is figured. A. 6086.44 feet according to some authors, and 6085.889568 according to some other authors. A nautical mile is one-sixtieth of a degree on the equator, and is obtained by dividing the earth's circumference by 360° and then dividing the dividend so obtained by 60.

(53) A. S. G. asks a receipt for preserving the hair, and prevent it from falling out. A. The following is frequently used for strengthening the hair: Castor oil..... ½ pint. Alcohol 95 per cent..... ¼ " Tincture cantharides..... ½ oz. Oil of bergamot..... 2 drachms. Color a pale pink with alkanet root. Tincture of cantharides and glycerine mixed together is a more active compound, and is frequently used to prevent baldness.

(54) L.—A good black varnish for leather belts may be made with boiled linseed oil, litharge, and lampblack. A spirit varnish may be made with shellac varnish and lampblack.

(55) J. O. S. asks for a corn remedy.

A. Corn cure. Take of—Salicylic acid..... gr. xxx. Ext. cannabis indic..... gr. x. Collodion..... 5 ss. M. 2. A remedy for squeaky shoes. A. There is no satisfactory cure for a squeaky shoe. It will sometimes cure itself, from getting wet, or as it gets older and the parts better set together. The squeak generally comes from the inner sole not fitting well in its place, but may also come from the shank piece, or counter, or other parts.

(56) A. P. F. asks how opodeldoc soap is made. A. White Castile soap, cut small, 2 pounds; camphor, 5 ounces; oil of rosemary, 1 ounce; oil of origanum, 2 ounces; rectified spirit, 1 gallon; dissolve in a corked bottle by the heat of a water bath; and when considerably cool, strain, then add aqua ammonia 11 ounces; immediately put it in bottles, cork close, and tie over with bladder. It will be very fine, solid, and transparent when cold.

(57) W. J. H. asks how to prepare the various articles for the gelatine pad, and if it is really necessary to use kaolin. A. First dissolve the glue in water, heat it, add then the glycerine. Leave the kaolin out if you prefer, or use finely powdered barium sulphate instead. 2. Also a recipe for making the purple ink used on the gelatine pad. A. Dissolve 1 part aniline blue violet in a mixture of 7 parts water and 1 part alcohol.

(58) S. P. B.—Frictional electricity is frequently generated in the process of buffing. It is more common in cold clear weather than in warm damp weather. Common glue is not a very good conductor; when perfectly dry, it is a fair insulator. To line nickel plating baths, melt together 1 part pitch, 1 part resin, and 1 part plaster of Paris, perfectly dry. A good asphalt varnish, if allowed to dry properly and completely, will also stand.

(59) J. L. G. asks if there is anything that will take off the hulls in making hulls. I am using Babbitt's concentrated lye, but before the hulls come it is liable to burn. A. Your experience shows the impossibility of using too concentrated a lye. It will not injure the corn to soak it in lye, provided too strong an article is not used, but the alkali must then be removed by repeated washings, using, if necessary, a little acid; hydrochloric would answer.

(60) L. D. V. L. asks how to prepare a green coloring for ice cream. A. Green ice cream is made with pistachio nuts. These closely resemble almonds, but are sweeter, and form a green emulsion with water. The cook books will give you the proportions to use.

(61) S. D. G. asks by what process it is that by the use of sulphuric acid potatoes are hardened so they can be used for pipes. A. Boiled (dry) potato mixed with zinc chloride and barytes has been used to form an imitation alabaster. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 333.

(62) J. J. K. asks: 1. Which is the most economical in feeding a boiler—the steam pump, the power pump, or an inspirator or injector, and why? A. A power pump with a heater is cheaper than a pump alone, but not always the most desirable, on account of the occasional necessity of feeding the boiler when the machinery is not running. The injector in connection with a heater is claimed to be the most economical, because it returns all of the heat used as power to the boiler. 2. What change is produced in hardening steel, that is, in molecular arrangement? A. This is too large a subject for discussion here. You will find interesting articles on the theory of hardening steel in SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 397, 375, 223, 224. 3. Is there any economy in heating the feed water when using an inspirator? A. Yes. Every degree of heat gained is economy.

(63) A. G.—We have no knowledge of paper floors for skating rinks, and believe that floors of that material, to be serviceable, would cost very high. We do not suppose there is anything better for skating rink floors than hard wood, preferably maple, well seasoned, narrow and thick strips, tightly driven together, carefully planed, and then waxed or oiled.

(64) W. W. P.—As the running parts of locomotives are balanced, and with nothing but gravity to hold them to the track, there is consequently no more pressure downward whether running or standing. The absolute traction or pull on the track is more when starting and moving slowly than when under full speed.

(65) W. H. P.—We have no knowledge of any water pitchers or urns for cooling water separate from the ice; but coils of block tin pipe placed in ice boxes, drawing water from the regular supply through the coil, are in common use. A refrigerator with a separate ice and water chamber is a subject of patent, and on the market. Any of our silversmiths would no doubt undertake to make the device in the form of pitcher or urn.

(66) F. L. B. asks: With 80 pounds pressure, 100 revolutions, and 200 horse power known, how many revolutions will 60 pounds, steam developing 135 horse power, give? A. Our computation gives 67½ revolutions, due to the other conditions you name. This is rather a crude way of deciding the fact as to whether a mill had been run to its full capacity. What speed the mill should run and what it did run should be matters of fact derived from observation.

(67) M. G. K.—The three largest equal circles that can be described in a square containing 160 acres will have a diameter of 1366.6 feet, according to our computation. A diagram and formula is too complex for Notes and Queries. Human fat resembles beef tallow. Kerosene does not pass through metal or glass, but crawls over the top by capillary attraction, and will thus accumulate on the outside of vessels so as to run down.

(68) W. A. E. asks what the preparation is made of that is put on canvas so it can be used just the same as a blackboard. A. 1 gallon 95 per cent alcohol, 1 pound shellac, 8 ounces best ivory black, 5 ounces finest flour emery, 4 ounces ultramarine blue. Make a perfect solution of the shellac in the alcohol before adding the other articles. To apply the slating, have the surface smooth and perfectly free from grease; well shake the bottle containing the preparation, and pour out a small quantity only into the dish, and apply it with a new flat varnish brush as rapidly as possible. Keep the bottle well corked, and shake it up each time before pouring out the liquid.

(69) H. W. F. says: I have had the pleasure of reading your valuable paper for the last fifteen years, and knowing your willingness to give your subscribers information, I take the liberty of asking you for the dimensions of the Washington monument that is now being completed. A. The dimensions of the Washington monument are:

Height of obelisk.....	500 feet.
" " pyramid top.....	55 "
" " total.....	555 "
Base, outside.....	50 ft. sq.
" inside.....	25 "
Outside of obelisk at 500 feet is.....	36¼ ft. "
Inside at 150 feet is.....	31¼ "
Original foundation.....	80 "
Sub or added foundation.....	146¼ "

(70) G. H. W. asks how to make a preparation that will be harmless in bleaching the human skin. A. In a general way, we should recommend that hydrogen peroxide be experimented with. A description of it and its uses will be found in SCIENTIFIC AMERICAN SUPPLEMENT, No. 339. There can be no directions given which will answer every case.

(71) M. N. B. desires an ink with which more than one copy can be obtained. A. Mix about 10 parts of jet black writing ink and 1 part of glycerine. This, if used on glazed paper, will not dry for hours, and will yield two fair, neat, dry copies by simple pressure of the hand in any good letter copy book. The writing should not be excessively fine nor the strokes uneven or heavy. To prevent setting off the leaves after copying, should be removed by blotting paper. By changing the quantity of glycerine you can get an ink which will give several copies.

(72) J. A. M.—There is no such thing as "agricultural ammonia" as distinguished from ordinary ammonia, composed of one volume of nitrogen and three of hydrogen, which condense to two volumes on combination. It is not used in agriculture except in nitrogenous manures, such as guano, fish manures, flesh, etc., and in stable manure. A teaspoonful in a quart or more of water is often used as a fertilizer for pot plants. It is also used, but not so extensively, in the salts, sulphate, and chloride of ammonia; but owing to the solubility of these salts, they are very liable to be washed out in drainage water if not promptly taken up by the plants. They should, when used, be applied as a top dressing in spring. Nitrogen is, more profitably, supplied in nitrates.

(73) H. J. D. asks (1) for a receipt for making mead. A. Mead wine consists of honey, 20 pounds; cider, 12 gallons; ferment, then add rum, ¼ gallon; brandy, ½ gallon; red or white tartar dissolved, 6 ounces; bitter almonds and cloves, of each, ¼ ounce. Then cleared and bottled. 2. Also one to make a good drinking bitters to give one an appetite. A. For bitters grind to a coarse powder ¼ pound cardamom seeds, ¼ pound nutmegs, ¼ pound grains of paradise, ¼ pound cinnamon, ¼ pound cloves, ¼ pound ginger, ¼ pound galanga, ¼ pound orange peel, ¼ pound lemon peel; then macerate with 4½ gallons 95 per cent alcohol, and add a sirup made of 4½ gallons water and 12 pounds sugar; then filter.

(74) B. R. T. asks: 1. What is used to form plumbago into a paste for stove blacking so that it needs no other preparation? A. Plumbago pulverized, 1 pound; turpentine, 1 gill; water, 1 gallon; sugar, 1 ounce, constitutes the liquid black lead polish. 2. What is the best for boots and shoes to keep snow water out, and make them pliable and not injure the leather? A. Beef tallow, 4 ounces; resin, 1 ounce; beeswax, 1 ounce; melt together. Add when cold a quantity of neatfoot oil equal to the mass. Apply with a rag, warming the boots, and rub in well with the hand.

(75) E. A. M. writes: I have a boat 36 feet long, 8 feet beam, with flat bottom and round sides and pointed bow; draws 1 foot of water without load, aside from keel. Now, is it possible to run this boat against a current running at the rate of 7 miles an hour with 30 inch screw, 4 blades, and driven by 4 horse power engine? And how far from end of boat should the wheel sit to get the best results? A. Very doubtful whether you can make headway against a seven mile current, unless the boat is of the best model. The screw should be placed close under the stern, and entirely submerged.

(76) C. W. M. asks: 1. How can I bleach shellac? I want to make a varnish as near transparent as possible. A. Dissolve the lac in a boiling lye of pearl ash or potassium hydroxide (caustic potash), filter it, and pass chlorine through the solution until all the lac is precipitated. Collect the precipitate; wash well in hot water, and finally twirl into sticks and throw them into cold water to harden. 2. How can I mix the aniline dyes, either soluble in water or alcohol, with an oil varnish? A. Use aniline dyes soluble in alcohol; and having made an alcoholic solution of them, they should readily mix with any varnish.

(77) T. P. L. asks how and what the laundries use to stiffen collars, cuffs, etc. A. Melt 2½ pounds of the very best paraffine wax over a slow fire. When liquefied, remove from the fire, and stir in 100 drops of oil of citronella. Have a number of round new pie tins, clean and nice; place them on a level table and coat them slightly with sweet oil, and pour about 6 tablespoonfuls of the mixture into each tin. The pan may be floated in water to cool the contents sufficiently to permit the mixture to be cut or stamped out with a tin cutter into small cakes about the size of a peppermint lozenge. Two of these cakes added to each pint of starch will cause the smoothing iron to impart the finest possible finish to muslin or linen, besides perfuming the clothes in first class style.

(78) V. C. T. writes: I am troubled with dandruff in my whiskers, and am rapidly losing them; have tried tonics, washings, oil, without any success. Can you recommend anything? A. A serviceable application is two drachms of borax dissolved in a pint of camphor water, washing with this lotion once or twice a week; or much benefit may also be derived by washing with tepid water, agitated with a piece of quill bark until a strong lather is produced; or with water containing salt of tartar in the proportion of two drachms of the salt to a pint of tepid water. See also Dr. J. V. Shoemaker's paper on "The Hair, its Use and its Care," in SCIENTIFIC AMERICAN SUPPLEMENT, No. 388.

(79) H. C. asks: 1. Will a continuous coil boiler containing 75 feet of 1½ inch pipe, heated by a blast spraying kerosene oil, generate sufficient steam at 100 pounds pressure to run a 2 inch by 3 inch engine at 500 revolutions per minute? If not, how many feet of pipe will it require? A. You have enough fire surface, but your boilers are not arranged for the greatest effect. If you could divide your pipe so as to make a shorter circulation, with two or more sections, you would have a better effect. It will require double the amount of pipe for the work required. 2. Which is better—to feed coil from the bottom, keeping it half full of water, or to feed from the top, allowing all the water to evaporate into steam? A. Feed at bottom. 3. Will steam, at the temperature consequent to 150 pounds per square inch pressure, injure Babbitt metal valves and fittings? A. Babbitt metal is too soft or tender for valves or fittings. Better use the regular trade stock for such work.

(80) W. X. H. asks how many horse power a 6 inch leather belt (single) will transmit running over 20 inch pulley at 80 revolutions per minute. A. ¾ horse power.

(81) H. M.—The best way of finishing floors is described in SCIENTIFIC AMERICAN, November 17, 1883. An oiled floor is generally considered more durable than carpet. Oiled floors are not generally washed, but are wiped up with coarse woolen cloths, or else washed with turpentine. It is always possible to oil a floor, but it must first go through a preliminary preparation. Floors are generally oiled first, and then polished. They require constant attention, and for a stone floor we think you would find it exceedingly difficult to keep it in proper condition. For an office it is well adapted, and when protected by rugs a very pleasant and cleanly flooring.

(82) J. J. K.—Water will filter through bricks, provided you make the filter well or cavity in proportion to the quantity of water to be drawn. Such a filter box two feet square in a cistern might do for the use of a small family, but its capacity would largely depend on the water pressure.

(83) A. H. P. writes: I wish to apply paraffine wax to a wood surface. Is there any way of dissolving it so that it may be applied with a brush, same as paint, and that when dry will have a smooth waxed surface? A. Paraffine may be dissolved in coal tar benzol, and then applied with a brush. The solution will be rather dilute, and several coats will be necessary before the proper thickness of surface is obtained. As a general thing, it is best to use melted paraffine. 2. Can you tell me a cheap way of preparing a wood stain from red sanders? A. An imitation rosewood is made by mixing ¼ pound of potash in 1 gallon of hot water, and ¼ pound of red sanders wood is added thereto; when the color of the wood is extracted, 2½ pounds of gum shellac are added and dissolved over a quick fire; the mixture is then ready to be used on a groundwork made with logwood stain.

(84) B. F. G. writes: After boiling the bones preparatory to grinding them, I find a good deal of grease, but it is very dirty, and I wish to know if there is anyway of clarifying or bleaching it, at a small cost, so as to make it marketable? A. Melt the grease with a small quantity of saltpeter; then add sufficient sulphuric acid to decompose the saltpeter. The mass, after the scum is removed, becomes a light yellow color, and is completely deprived of all offensive smell and animal impurities. The grease thus obtained can be used to advantage in making soap.

(85) W. M. C. writes: I am making a medical coil similar to that described in Sprague's latest edition. 1. What is the object in having the pasteboard tube tapering? A. In a small coil, tapering the tube would make but little difference. In a large coil, it is of some advantage, as it allows part of a secondary wire to be nearer the primary wire than it could be if the tube were as thick as is necessary to prevent the secondary current from leaping to the primary coil. 2. Does it not require more insulation between its several layers of wire than a coating of paraffine, also between the primary and secondary coils? A. If the wire is well covered, a coating of paraffine is sufficient. 3. Does it require a condenser? A. No condenser is required for a medical coil. 4. How many pounds of No. 18, 22, and 26 wire respectively will it require? A. It depends upon the size of your coil; you will not need more than two or three ounces of No. 18 wire, and but little more of the other sizes. 5. If the tube is tapering, how can a brass tube be made to fit it tightly? A. The taper of the tube should be all upon the outside.

(86) J. B. P. writes: In our work at this place, we use to a large extent the common Faber pencil, for ciphering and memo. writing. Do you know of any wash or other substance by which the sheets can be covered, so as to prevent the figures and writing from erasure, or blurring? A. To a solution of collodion of the consistency used by photographers, add two per cent of stearine. This solution is then spread over the paper in a similar way as in photography. It dries in from 10 to 20 minutes and thoroughly protects the pencil marks. This solution is used to preserve pencil and India ink sketches.

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Pipe. See Stove pipe	
Plane, bench, C. L. Mead	311,136
Planer feed roll, J. Connell	311,063
Plant protector, W. H. Brown	310,982
Plant protector, S. Garrard	311,116

Plastic compound suitable for moulding into various useful articles, such as screw stoppers for bottles, jars, etc., M. Mackay	310,899
Plow, side hill sulky, A. D. Sewell	311,041
Plow, sulky, R. E. Linham	311,016
Protector. See Plant protector	
Pulley, W. W. McChesney	311,023
Pulp beating engine, compound, S. L. Gould	310,940
Pump, ejector, H. Kleiman	310,896
Punch, J. S. Shannon	310,917
Punch, belt, B. M. Hair	311,121
Quartz mill, A. E. Redstone	311,032
Rack. See Sheep rack	
Radiator, hot water, W. H. Brown	310,981
Rail fastening device, B. Gallagher	311,162
Railway, J. T. Campbell	310,878
Railway, Tiers & Penleton	311,045
Railway and tramway, cable, F. De Vooght	310,991
Railway rails, device for connecting the ends of, E. S. Hovey	311,002
Railway signals, single rail circuit for electric, H. D. Winton	311,050
Railway switches, tie or connecting bar for, J. T. Richardson	311,148
Railway system and car, electric, M. H. Smith	310,962
Razor guard, H. Dufur	311,067
Refrigerating apparatus, Condict, Jr. & Rose	311,062
Refrigerating machine, A. Osenbruck	311,028
Refrigerator, W. S. G. Baker	310,975
Refrigerator for preserving oysters, clams, etc., L. Faber	310,886
Register. See Car register	
Register front, S. Tuttle, Jr.	311,154
Regulator. See Damper regulator. Electric machine regulator	
Rein supporter and protector, J. A. Cushwa	310,883
Roller. See Window screen roller	
Rolling mill feeding table, R. W. Hunt	310,893
Roving for spinning purposes, machinery for the manufacture of, A. T. Atherton	311,096
Rubber from rubber waste, recovering, C. J. McDermott	311,135
Sash fastener, O. Benson	310,930
Sash fastener, Weston & Frost	311,049
Sash holder, F. Burmeister	310,983
Scale, automatic weighing, H. C. Keeler	311,010
Screw head cap, ornamental, G. B. Hanks	311,122
Screws, bolts, and nuts, machine for threading, E. P. Paville	311,089
Secondary battery, S. Kalischer	311,007, 311,008
Sewing machine attachment for placing and ejecting bobbins, C. Miehling	310,954
Sewing machine attachment for placing and ejecting bobbins, C. & C. Miehling	310,955
Sewing machine buttonhole attachment, G. Rehuss	310,911
Sewing machine buttonhole attachment, W. Schott	310,915
Sewing machine ruffler, J. M. Griest	311,119
Sheep rack, E. J. Legate	310,897
Sheet metal tubes, machine for forming and seam-ing, E. Jordan	310,895
Shipping case, C. Mitruker	311,025
Shoe fastening, G. A. Colton	311,104
Shovel. See Fire shovel	
Skate, C. E. Wardwell	310,923
Skate, roller, A. L. Kitzelman	311,077
Sleigh, bob, S. M. Crites	310,881
Smoke consumer for locomotives, stationary boilers, furnaces, and stoves, Spear & Wight, Jr.	310,920
Spindle supporting bolster and step, J. Booth	310,871
Spring. See Carriage spring	
Steam boiler, M. W. Hazelton	310,891
Steam trap, J. Dimelow	310,885
Steam trap, W. A. Foskett	311,113
Steam trap, W. Vanderman	310,967
Steering wheels, becket clamp for, A. Dole	311,110
Stone and potato fork, W. O. Noyes	310,958
Stone compositions, manufacture of artificial, C. I. Walker	311,156
Stone drilling machine, L. McMurray	311,082
Stopper. See Bottle stopper	
Stove, gas, W. M. Jackson	310,946, 310,947
Stove, heating, P. K. McMinn	310,904
Stove, parlor heating, Orr & Seivard	311,139, 311,140
Stove pipe, H. M. Pickering	311,143
Stoves, producing heat in portable, W. M. Jackson	310,948
Straw stacker, A. Miller	311,137
Suspenders, M. Eisler	311,111
Switch board, F. W. Harrington	310,890
Telegraph wire, apparatus for manufacturing compound, M. G. Farmer	310,993
Telegraph wire, manufacturing compound, M. G. Farmer	310,995
Telephone, H. P. Pratt	310,961
Thermometer, H. Weinhausen	310,925
Thickness gauge, Morrison & Herron	310,908
Ticket holder, S. E. Cilley	310,988
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Tin can, canister, etc., hermetically sealed, Cooke & Seymour	310,989
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Tobacco cutter, T. H. Ashbury	311,053
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Toy spring gun, M. Bradley	310,873
Traction engine, F. W. Bohn	310,980
Tricycle, J. A. Enos	311,112
Traveling bags, satchels, etc., manufacturing, R. W. Chapman	311,059
Tricycle, R. H. Andrews	310,868
Tricycle, C. G. E. Hennig	310,998
Tricycle, T. H. Paessler	311,084
Trimming machine, E. Jordan	310,897
Trap. See Steam trap. Water trap	
Truck, car, C. E. Canale	310,986
Tube. See Well tube	
Tuyere iron, B. S. Logan	311,017
Umbrella runner and notch, F. Lecraft	311,015
Valve for steam engine cylinders, relief, T. M. Fell	310,935
Valve, multiplex safety, G. W. Richardson	311,147
Valve, steam engine relief, H. G. Robinson	310,912
Valve, steam engine rotary, J. L. Bogert	310,978
Valve stems, revolvable joint for screw, J. H. Blesing	310,870
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Vehicle gear iron, C. R. Wilson	311,094
Vehicle wheel, F. M. Priestley	311,144
Vehicles, power accumulator for, L. Montgillon	310,907
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Ventilator. See Boot and shoe ventilator	
Wagon circle post, N. L. Holmes	311,000
Wash boiler, B. J. Gagner	311,070
Washing machine, J. M. Lockhart	311,133
Watch movement box, F. Pitt	310,987
Watch, stop, F. Pitt	310,988
Water closet flushing valve, M. T. F. O'Donnell	311,026
Water gauge, R. L. Willis	311,063

Water closet valve, H. C. Apel	310,972
Water trap, J. P. Putnam	311,085 to 311,087
Well drilling machine, W. E. Brown	310,875
Well tube, F. W. Miller	311,024
Wheel. See Vehicle wheel	
Whiffletree hook, H. C. Bates	310,869
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Window screen roller, S. U. Tarney	311,044
Wire, making, T. Miegley	310,956
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Wood preserving apparatus, Collings & Pike	310,880
Wood steaming apparatus, V. Wheat	310,926
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Chenille ornament, J. Dreyfuss	15,738
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Pendant, B. Dreyfus	15,739
Satchel frame, B. Rice	15,744
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Premium Receipts in 1884	\$2,689,734.45
Interest Receipts in 1884	1,609,015.27
Total Receipts during the year	4,298,749.72
Disbursements to Policy-holders, and for expenses, taxes, &c.	3,574,660.65
Assets January 1, 1885	29,771,230.04
Total Liabilities	24,789,784.72
Surplus by Ct. and Mass. standard	4,981,445.32
Surplus by the standard of N. Y.	6,440,000.00
Policies in force January 1, 1885	60,286, insuring
Policies issued in 1884	4,470, insuring
	\$8,022,998.00

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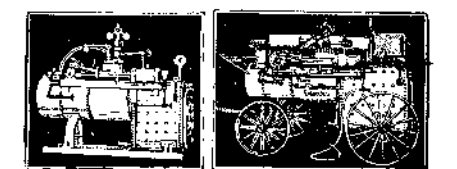
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