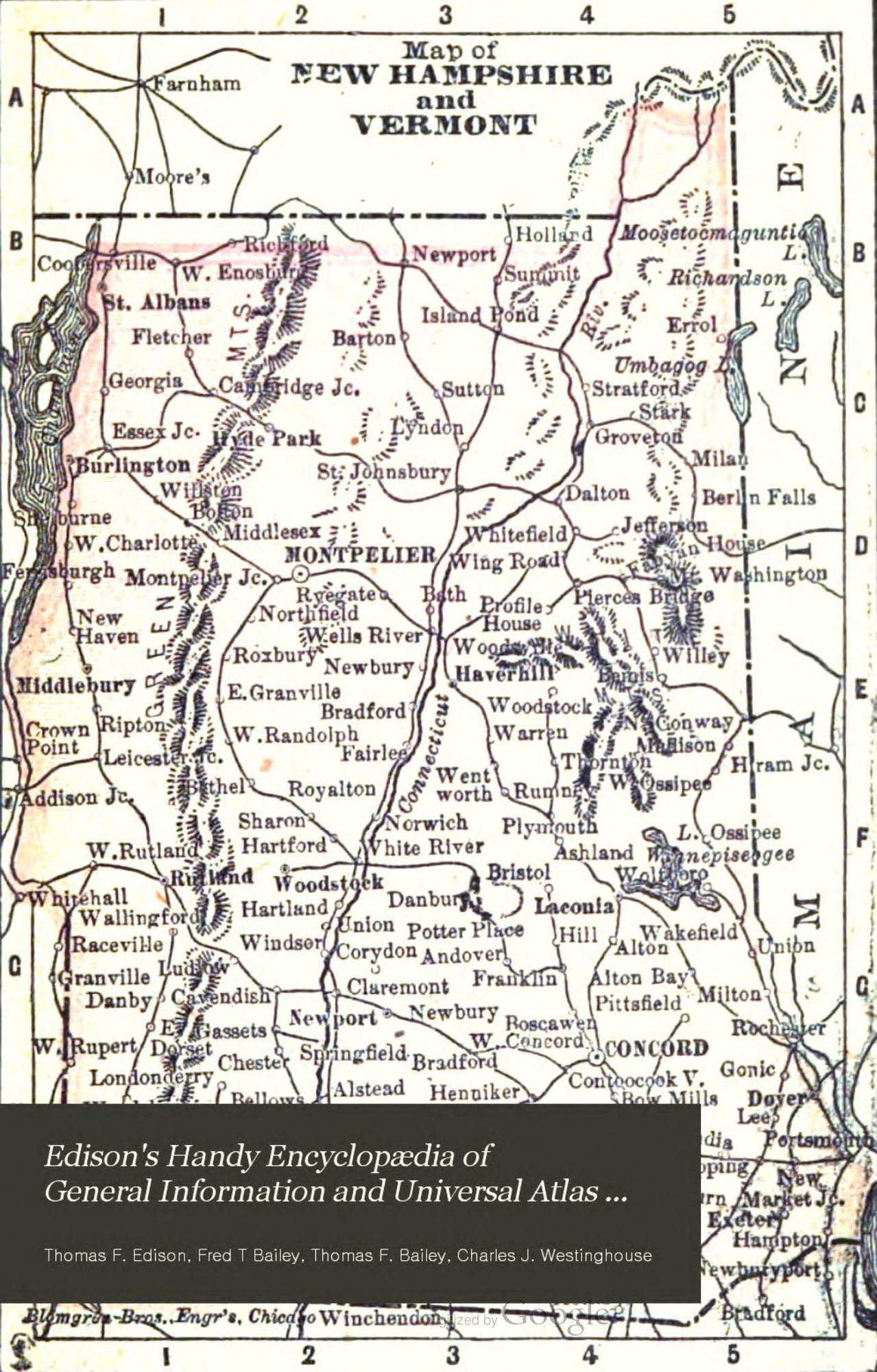
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THOS. F. EDISON, A. M.
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Useful Suggestions in Cases of Accident to Mechanics.

BY A. H. ROBINSON, M.D.

Bleeding.—If blood spurts from wound, an artery is divided; bind limb tightly above wound with India-rubber tubing, strap, handkerchief, or scarf, or bend the limb forcibly at next joint above wound; or press flat hand or stone where blood is flowing. If blood flows freely, but does not spurt, a vein is divided; then apply same measures as in case of wounded artery, but below the wound. If scalp wounded, make a pad of cloth or waste, and bandage very tightly over wound with folded pocket-handkerchief.

Burns and Scalds.—Apply lint, cotton wool, or waste, soaked in oil, or oil and lime water, and bind the same on with handkerchief. If necessary to remove clothes, cut them off by running knife or scissors along seams.

Broken Leg.—Pull on leg steadily and firmly until it is of same length as sound one. Roll up a coat or empty sack into form of a cushion; carefully place leg upon it; then bind the two together with scarfs or handkerchiefs. Do not lift patient from the ground until stretcher is close at hand. Take great pains, by careful lifting, to prevent broken bone coming through skin.

Broken Thigh.—Take hold of ankle, and, by steady traction, pull limb to same length as sound one; another person must then tie knees together, and afterward the ankles. Both limbs should then be laid over a sack of straw, or folded coat, so as to bend the knees. Patient should on no account be moved until stretcher or cart is close at hand.

Broken Arm.—Pull arm to length of sound one. Apply two splints, one outside, and the other inside, binding them firmly on with pocket-handkerchiefs. The best splints are made by folding newspapers to necessary length, binding them above and below seat of fracture; anything hard and light, of suitable size, would act equally well, for instance, wood, pasteboard, twigs, leather, etc.

Broken Ribs.—Cause intense pain when patient breathes; bind roller towel firmly round chest, fastening with pins, or sewing.

Broken Collar-bone.—Bend arm over front of chest; place it in a sling; bind it in that position by scarf going round chest, outside sling.

Dog Bites.—Tie a handkerchief or a cord tightly round limb above wound; suck the wound.

Flesh Wounds.—Uncover wound; wash it with clean water; wring out a clean handkerchief, or some lint, in cold water, and lay it over the wound. Then, bind in position with handkerchief.

Fainting.—From heat, exhaustion, or loss of blood. Keep head low; undo clothing about neck; plenty of fresh air; dash cold water on face and chest; smelling salts, carefully used; a little brandy, when sensibility has returned, ex-

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cepting in cases of sunstroke, and where means have not been taken to prevent further bleeding.

INSENSIBILITY.—From blows or wounds on head. Send at once for doctor or take patient to hospital, keeping him on his back, with head raised; undo clothing round neck; do not give brandy.

INSENSIBILITY.—From being buried in falls of earth, or breathing foul gas; proceed as in drowning.

FITS.—1. If snoring and face flushed, undo clothing round neck, keep head raised, and dash cold water on top of head; hot water bottles to feet. Send for doctor. Do not give brandy.

2. If foaming at mouth and convulsed, undo clothing, apply smelling salts, and prevent patient hurting himself until conscious again.

DROWNING.—Send for doctor, blankets, and dry clothing. Take off wet clothes from upper part of body. Lay patient on his back, with his head on a folded coat for cushion. Draw tongue out of mouth and hold it there. A second person kneels at patient's head and takes hold of both his arms just below the elbows. He then draws them upward over the patient's head, and holds them in that position until he counts two: this draws air into the lungs. He then lowers arms to sides again and presses them firmly inwards, holding them there until he has again counted two; this forces air out of the lungs. Go on doing this until doctor arrives, or until patient breathes naturally. As soon as he does so, rub the limbs in an upward direction with the dry hands, or better still with hot flannels. Put patient to bed between blankets, surrounded with hot water bottles. May give him wine or brandy when quite sensible.

RUPTURE, or "break of the body."—Try and push it back with flat hand: keep man on his back. Cold wet clothes laid over rupture will, perhaps, aid its return.

Pearls of Wisdom.

One may ruin himself by frankness, but one surely dishonors himself by duplicity.

A woman whose ruling passion is not vanity is superior to any man of equal capacity.

Good qualities are the substantial riches of the mind, but it is good breeding that sets them off to advantage.

It is a great misfortune not to have enough wit to speak well, or not enough judgment to keep silent.

It is heaven upon earth to have a man's mind move in charity, rest on Providence, and turn upon the poles of truth.

Of all the gifts that nature can give us the faculty of remaining silent, or of answering apropos is perhaps the most useful.

Receive no satisfaction for premeditated impertinence. Forget it, forgive it, but keep him inexorably at a distance who offered it.

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Knots and Splices.



A COMMON BEND.—It is formed by passing the end of a rope through the bight of another rope, then round both parts of a rope and down through its own bight.



FIGURE OF EIGHT KNOT.—Take the end of the rope round the standing part, under its own part, and through the lower bight.



TIMBER HITCH.—Is made by taking the end of a rope round a spar, passing it under and over the standing part, and then passing several turns round its own part.

FISHERMAN'S BEND.—With the end of a rope take two turns round, then form a half-hitch round the standing part, and under the turns, and another half-hitch round the standing part.





OVERHAND KNOT. — This is made by passing the end of the rope over the standing part and through the bight.

A SHORT SPLICE.—A short splice is made by unlaying the ends of two ropes, or the two ends of one rope to a sufficient length, then crutch them together as per adjoining sketch; draw them close and push the strands of one under the strands of the other, the same as the eye-splice. This splice is used for block-straps, slings, etc. If the ends are to be served over, they are but once stuck through; if not, they are stuck twice and cross-whipped across the strands, so as to make them more secure. When the ends are to be served, take a few of the underneath yarns, enough to fill up the lay of the rope for worming, then scrape or trim the outside ends, and marl them down ready for serving.





TO MAKE TWO HALF-HITCHES. — Pass the end of the rope round the standing part, and bring it up through the bight — this is one half-hitch; two of these, one above the other, constitute two half-hitches.

ROLLING BEND.—It is something similar to a fisherman's bend. It is two round turns round a spar, two half-hitches around the standing part, and the ends stopped back.



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To MAKE A BOWLINE KNOT.—Take the end of the rope in your right hand, and the standing part in your left; lay the end over the standing part, then with your left hand turn the bight of the standing part over the end part; then lead the end through the standing part above, and stick it down through the cuckold's neck formed on the standing part, and it will appear as the sketch.



A REEF KNOT.—First make an over-handed knot, supposing it to be round a yard; then bring the end being to you over the left hand, and through the bight haul both ends taut. This knot is used chiefly for joining the ends of ropes or lines together.



A History of the Invention of the Screw, One of the Six Mechanical Powers.

It is not clearly known how far the mechanical powers were known to the ancients. There is no doubt that they comprehended the lever, the wheel and axle, and the pulley, and an acquaintance with the principle of the inclined plane seems to have been necessary to the Egyptians in moving the huge blocks of stone of which the pyramids are built. Archimedes, about 236 B. C., invented a pumping-screw, or spiral-shaped cylinder, for raising water. The writings of this mechanician and philosopher form the clearest index we have to the extent of knowledge of his time, and, indeed, his own intelligence was so far ahead of that of his contemporaries that much of his reasoning was not fully established as part of the world's stock of knowledge until centuries after his death. Apparently Archimedes did not understand the inclined plane, for he makes no direct mention of it, and we have no evidence to show that it was included in the knowledge of mechanics possessed by the Romans. The true discovery of the use of the inclined plane dates from the latter part of the sixteenth century, when the minds of men were just awakening from their long sleep during the dark ages. The discovery is generally ascribed to Galileo, but Stevinus, one of his contemporaries, a mechanician of Holland, was the first to explain in a treatise the true theory of the power. The screw is an application of the inclined plane, as may be seen by winding a triangular piece of paper around a cylinder. The screw and the wedge are alluded to by more than one writer of the sixteenth century, showing that a knowledge of these secondary powers formed a part of the revival of physical science, in which Galileo took a most important part, if he did not wholly inspire it. The principle of the screw propeller was first enunciated by Hooke in 1681, though it was not successfully applied to the movement of vessels

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until the nineteenth century. The first use of the screw was in the screw-jack for raising heavy weights. The various modifications and applications of this power belong to the era of mechanical discovery in the present century.

Landlord and Tenant.

SOME USEFUL DON'TS RESPECTING THEIR RIGHTS AND DUTIES.

Don't rent property except on written lease.

Don't depend on the verbal promises of a landlord.

Don't look to a landlord for general repairs, unless specially provided for in the lease.

Don't remove a fixture (mantel, tile floor, stationary tubs, etc.), unless you expect to restore the premises as you found them.

Don't fail to record a lease when drawn for three years or more.

Don't take a married woman for a tenant, unless the laws of the State permit her to make an executory contract.

Don't accept any shorter notice than thirty days when holding by the month.

Don't let premises for illegal use, or arrears of rent upon ejectment will not be collectable.

Don't leave your landlord trade fixtures erected by you on the premises.

Don't erect a building upon foundations sunken into the ground, or it will become part of the realty.

Don't turn the premises over to the landlord until all questions of ownership of fixtures, additions, etc., have been settled in writing.

Don't try to hold back the rent for repairs made by you.

Don't move into premises until you get your written lease or agreement.

Don't allow a provision not to sublet deter you from putting in a tenant of same standing as yourself.

Deepest Lake in the World.

In the Cascade Mountains, about seventy-five miles northeast of Jacksonville, Ore. the seeker for the curious will find the Great Sunken Lake, the deepest lake in the world. This lake rivals the famous valley of Sindbad the Sailor. It is said to average 2,000 feet down to the water on all its sides. The depth of the water is unknown, and its surface is as smooth and unruffled as a mammoth sheet of glass, it being so far below the mountain rim as to be unaffected by the strongest winds. It is about 15 miles in length, and about 4½ wide. For unknown ages it has lain still, silent, and mysterious in the bosom of the great mountain range, like a gigantic trench scooped out by the hands of a giant genie. A hunting and surveying party recently left Jacksonville with the intention of ascertaining the exact depth of this mysterious body of water, and to find out, if possible, whether or not fish are to be found within its ghostly precincts.

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Sizes of Books.

The name indicates the number of pages in the sheet, thus: in a folio book, 4 pages or 2 leaves = 1 sheet; a quarto, or 4 to., has 8 pages or 4 leaves to a sheet; an octavo, or 8 vo., 16 pages or 8 leaves to a sheet. In a 12 mo., 24 pages or 12 leaves = 1 sheet, and the 18 mo., 36 pages, or 18 leaves = 1 sheet, and so on. The following are the approximate sizes of books:

Royal Folio	19 inches	× 12
Demy	18 "	× 11
Super Imp. Quarto (4 to)	15½ "	× 13
Royal 4 to	12½ "	× 10
Demy 4 to	11½ "	× 8½
Crown 4 to	11 "	× 8
Royal Octavo	10½ "	× 6½
Medium 8 vo	9½ "	× 6
Demy 8 vo	9 "	× 5½
Crown 8 vo	7½ "	× 4½
Foolscap 8 vo	7 "	× 4
12 mo	7 "	× 4
16 mo	6½ "	× 4
Square 16 mo	4½ "	× 3½
Royal 24 mo	5½ "	× 3½
Demy 24 mo	5 "	× 2¾
Royal 32 mo	5 "	× 3
Post 32 mo	4 "	× 2½
Demy 48 mo	3¾ "	× 2¼

Specific Volume and Weight of Dry Air.

At different temperatures under a constant atmospheric pressure of 29.22 inches in the barometer, the volume at 32 degrees Fahr. being the unit.

Temp. Fahr.	Volume.	Weight per cubic feet. Pounds.	Temp. Fahr.	Volume.	Weight per cubic feet. Pounds.
0°	·935	·0864	162°	1·265	·0638
12	·960	·0842	172	1·285	·0628
22	·980	·0824	182	1·306	·0618
32	1·000	·0807	192	1·326	·0609
42	1·020	·0791	202	1·347	·0600
52	1·041	·0776	212	1·367	·0591
62	1·061	·0761	230	1·404	·0575
72	1·082	·0747	250	1·444	·0559
82	1·102	·0733	275	1·495	·0540
92	1·122	·0720	300	1·546	·0522
102	1·143	·0707	325	1·597	·0506
112	1·163	·0694	350	1·648	·0490
122	1·184	·0682	375	1·689	·0477
132	1·204	·0671	400	1·750	·0461
142	1·224	·0659	450	1·852	0436
152	1·245	·0649	500	1·954	·0413

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Natural Slopes of Earth, with Horizontal Line.

Gravel, average	40°
Dry sand "	38°
Sand "	22°
Vegetable earth, average	28°
Compact " "	50°
Shingle "	39°
Rubble	45°
Clay, well dried, average	45°
Clay, wet, "	16°

Contents of Cisterns.

To find the number of gallons contained in a cistern, multiply the length, width, and depth together, all in feet. This will give the contents in cube feet, which multiply by 6.24, and the product will be the number of gallons. If the dimensions are in inches, use .003607 in place of 6.24.

Two dimensions of a cistern being given to find the third, to contain a given number of gallons, multiply the required number of gallons by .16046, if the dimensions are in feet, or by 277.274, if the dimensions are in inches, and divide the result by the product of the two given dimensions. The quotient will be the third dimension required.

To find the number of gallons contained in a cylinder, multiply the square of the diameter in feet by the length in feet of the cylinder, and multiply the product by 4.895; or multiply the square of the diameter in inches by the length in feet, and multiply the product by .034; or multiply the square of the diameter in inches by the length in inches, and multiply the product by .00283.

The diameter of a cylinder being given, to find the length, multiply the number of gallons by 2043, and divide the product by the square of the diameter in feet, and the quotient is the length in feet.

The length of a cylinder being given, to find the diameter, multiply the number of gallons by .2043, and divide the product by length in feet, and the square root of the quotient is the diameter in feet. If the dimensions are in inches, use 353 in place of .2043.

Conduits for the Conveyance of Sewage.

Internal diameter of conduit.	Least velocity of current per minute.
Above 36 inches	150 feet.
" 18 to 36 "	180 "
" 6 to 18 "	200 "
Under 6 "	240 "

Painting, Glazing, and Paper Hanging.

PAINTING.

As an average ¼ lb. of paint should be allowed per square yard for the first coat, and about 1-6 lb. for each additional

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coat. 1 lb. of stopping should be allowed for every 20 square yards.

A gallon of tar and 1 lb. of pitch will cover about 12 square yards the first coat, and 17 yards each additional coat.

Priming consists of white lead and linseed oil.

Knotting consists of red lead and size.

Putty consists of Spanish whiting and linseed oil.

WHITE PAINT.

28 lbs. white lead, 6 pints linseed oil, 2 pints turpentine, and 1 lb. litharge, will cover about 100 square yards.

BLACK PAINT.

28 lbs. black paint, 10 pints linseed oil, 2 pints turpentine, and 1 lb. litharge, will cover about 160 square yards.

DISTEMPER.

112 lbs. whiting, 28 lbs. dry white lead, and 7 lbs. glue, mixed with boiling water.

With ordinary paints, new wood and iron work require four coats, including the priming coat, but exclusive of any flatting coat.

Old paint requires two coats for inside and three for outside work.

The following are the yards super. which a fixed amount of materials will cover in each coat, arrived at from actual measurement of work done with materials issued from store.

1ST COAT, OR PRIMING.

10 lbs. white lead,
1 oz. red lead,
2 oz. litharge,*
4 pints linseed oil.
} 63 superficial yards.

2D COAT.

10 lbs. white lead,
2 oz. litharge,*
2½ pints linseed oil,
1½ pints spirits of turpentine,
} 100 superficial yards.

3D AND 4TH COATS.

10 lbs. white lead,
2 oz. litharge,*
2 pints linseed oil,
2 pints spirits of turpentine,
} 113 superficial yards.

* Or ½ oz. burnt white vitriol, and 1½ oz. of litharge.

For outside work, when exposed to the sun, more turps should be used to prevent the paint from blistering, and only boiled linseed oil should be used. For inside work raw linseed may be used, but the less oil the less gloss. For the flatting coat, the color being ground in oil, only turps is added. For colored paints, the last two coats have the color added to the composition in the proportion of 1 to 2 lbs. for every 10 yards of surface to be painted; and the quantity of white lead is reduced in proportion.

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One pint of varnish will cover about 16 yards, one coat.

1 gallon of	linseed oil	weight	9.4	lbs.
1 "	whale oil	"	9.2	"
1 "	oil of turpentine	"	8.7	"
1 "	naphtha	"	8.5	"
1 "	petroleum	"	8.8	"
1 "	tar	"	10.1	"

Steam Boilers and Steam Engines—General Rules and Memoranda.

LAND BOILERS.

POWER.—When the horse-power of a boiler is spoken of nominal horse-power (see Engines) is meant. The term is unsatisfactory, but it is usual. It gives little more than an idea of the size of the boiler, with little reference to its steaming capacity, which depends upon very many conditions, such as great area, heating surface, quality of coal used, mode of firing, etc., which are difficult to take into account in conjunction with each other in any rules. The real efficiency of a boiler is its evaporative power, which should be measured by noting the fuel consumed to boil off a certain weight of water under atmospheric pressure (*i. e.*, with manhole lid off). Otherwise, a boiler that primes will show a high but fictitious result. Mechanical stokers ought to be tested in this way also.

RULES FOR NOMINAL HORSE-POWER OF BOILERS.

For Plain Cylindrical Boilers.—Multiply the length by the diameter (both in feet), and divide by 6.

For Single-flue Boiler.—Add diameters of the shell and flue (in feet) together, multiply by length, and divide by 7.

For Double-flue Boiler.—Add the three diameters (in feet) of shell and flue tubes together, multiply by length, and divide by 8.

It is now usual to allow 15 square feet of heating surface per nominal horse-power for factory boilers: for multi tubular boilers, from 18 to 26 square feet of heating surface, and from .5 to .85 of grate area.

Rule for Grate Area.—Given the nominal horse power of boiler, and assuming 15 square feet of heating surface per horse-power, the grate area in square feet can be found thus: Multiply the cube of the horse-power by 5 and divide by 3.

AVERAGE EVAPORATIVE POWER OF FUEL.

1 lb. of coke evaporates 9 lbs. of water. (Feed-water supplied at 212° Fahr.)

1 lb. of coal evaporates 9 lbs. of water (sometimes 10 in special boilers).

1 lb. of slack evaporates 4 lbs. of water.

1 lb. of oak (dry) evaporates 4½ lbs. of water.

1 lb. of pine evaporates 2½ lbs. of water.

Coal loses about ⅛ of its weight in coking, but increases in bulk 1-10.

Stationary expansive condensing engines use about 4 lbs. of coal per indicated horse-power per hour.—(Fair amount.)

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An average of 27 kinds of coal gave about 40½ cubic feet per ton.

Combustion.—An ordinary furnace requires 24 lbs. of air, or 300 cubic feet of air for the consumption of each 1 lb. of coal; by means of fan-blast or jet of steam this quantity of air may be decreased to 18 lbs., or 220 cubic feet. From 13 lbs. to 20 lbs. of coal may be consumed per superficial foot of fire-grate. ¾ ft. of fire-grate required to evaporate a cubic foot of water.

RULES FOR STRENGTH OF BOILERS.

Bursting power of shell:—

$$P = \frac{T \times C}{4D}$$

Where
P = Bursting pressure in lbs. per square inch.
T = Thickness of plate in sixteenths of inch.
D = Diameter of shell in feet.
C = 1,097 for single riveting, } Wrought iron.
1,372 double riveting, }
1,722 for single riveting, } Steel.
2,156 double riveting, }

Collapsing pressure of tubes;—

$$P = \frac{87.4 \times T^2}{L \times D}$$

P = Collapsing pressure in lbs. per square inch.
T = Thickness of tubes in thirty-seconds of inch.
L = Length in feet.
D = Diameter in inches.

General Memoranda.—Thickness of fire-bars, ½ to ⅝ inch; width of fire-bar spaces, ½ to ½ inch; inclination of fire-bars, 1 in 10 to 1 in 12; height of dead-plate above floor of boiler-shed or stoke-hole, 2 ft. 8 in.; minimum height of water over flue, 4 inches; average height of water over flue, 9 inches; inclination of cylindrical boilers toward blow-off cock in setting, ½ inch in 10 feet.

Plastering.

	1 in. thick.	¾ in. thick.	½ in. thick.
1 bush. of cement will cover	11-7 sup. yd.	1½ sup. yd.	2¼ sup. yd.
1 bush. of cement and ½ of sand will cover	2¼ "	3 "	4½ "
1 bush. of cement and 2 of sand will cover	3½ "	4½ "	6¾ "
1 bush. of cement and 3 of sand will cover	4½ "	6 "	9 "
1 cubic yard of lime, 2 yards of sand, and 3 bushels of hair will cover	75 sup. yards on brick.		
	70 " " earth.		
	60 " " laths.		

Ordinary plasterer's laths are 3 or 4 feet long and about 1″ wide, and called single laths if about 3-16″ thick, lath and a

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half when about ¼″ thick, and double laths when about ⅜″ thick; 125 laths, 4 feet long = 1 bundle.

A bundle of 3′ laths would require 668 nails, and of 4′ laths 625 nails, if nailed on to bearers 1′ from center to center.

About 380 ⅞″ cut lathing nails = 1 lb.

Common stucco is 1 of lime to 3 or 4 of clean washed sand. Bastard stucco ⅔ fine stuff and ⅓ very fine clean sand.

Gauged stuff, or "putty and plaster," is 3¼ fine stuff, or putty, and ¼ plaster of Paris.

Parian is a white cement, said to be a mixture of plaster of Paris and borax. Four bushels of Parian cement, with an equal proportion of clean washed sand, will cover 10 yards super, at ½″ thick.

Portland cement, quick setting, weighs from 90 to 100 lbs. per struck bushel.

A plasterer, laborer, and a boy can lath, lay and set about 80 yards per diem, or render set about 33 yards per diem.

Whiting—6 lbs. of whiting to 1 quart of double size, covered with cold water for 6 hours, then mixed with the size and left in a cold place till it becomes like jelly; it is now ready to dilute with water and use. It will take 1 lb. of jelly to every 6 superficial yards.

Gas Supply, etc.

The following table gives the diameter of service pipes for supplying a given number of lights with a pressure of 5-10ths in the main, each light consuming five feet per hour, together with the quantity of gas the service is capable of delivering per hour, supposing this to be open at the end.

Lights.	Diam. of pipe.		Quantity per hour. Yds.	cub. ft.
From 1 to 5	¼	inch length of service in...	150	60
" 5 " 10	¾	" ...	100	74
" 10 " 20	1	" ...	100	151
" 20 " 40	1¼	" ...	100	264
" 40 " 70	1½	" ...	25	528
" 70 " 100	1⅝	" ...	25	890
" 100 " 150	2	" ...	100	1,033

The illuminating power of coal gas varies from 4.4 to 1.6 times that of a tallow candle 6 to a pound, the consumption being from 2.3 to 1.5 cubic feet per hour, and the specific gravity from .58 to .42. The higher the flame from a burner, the greater the intensity of the light, the most effective height being five inches.

Water absorbs its own volume of carbonic acid gas.

The greater the proportion of hydrogen, and the less oxygen and sulphur, the better the coal is adapted for generating gas.

Boiler Chimneys.

A Handy Rule.—An expert in one of the boiler associations informs us his practice is to allow 3½ square feet of chimney area for every full-sized boiler—say 28 ft. by 7 ft., or 4 square

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feet for a single boiler, the height of chimney being about the same as other chimneys in the neighborhood, and preferably not less than 30 yards high.

Wilson's Table of Dimensions of Chimneys.

Height of Chimney in feet.	Lb. of coal per hour per 1 foot of area at top of Chimney.	Height in inches of column of water balanced by draught pressure.	Horse power of each sq. ft. of Chimney. Assuming 4 lbs. of coal per horse power.	Area of top of Chimney in ft. per horse-power for 1 or 2 boilers.	Area of top of Chimney in ft. per horse-power where several boilers are working together.	Area of flue in feet per horse power.
30	78.24	.218	7.3	.146	.091	.182
40	90.35	.296	8.4	.126	.077	.155
50	101.01	.364	9.4	.113	.070	.140
60	110.65	.437	10.3	.103	.064	.129
70	119.52	.5	11.2	.095	.059	.119
80	127.77	.58	11.9	.089	.055	.111
90	135.52	.656	12.6	.084	.052	.105
100	142.85	.729	13.3	.08	.05	.01
125	159.71	.911	14.9	.071	.044	.089
150	174.96	1.09	16.3	.065	.04	.082
175	188.98	1.26	17.6	.060	.038	.075
200	202.03	1.45	18.8	.056	.035	.07
225	214.28	1.64	20	.053	.033	.066
250	225.87	1.82	21	.05	.031	.063
275	236.90	1.99	22	.048	.03	.06
300	247.43	2.18	23	.046	.028	.057

Rule for Finding the Required Area for any Boiler.—Multiply the nominal horse power of the boiler by 112, and divide the product by the square root of the height of the chimney in feet. The quotient will be the required area in square inches.

Steam Engines.

Meaning of Horse Power.—A horse power as used for rating engines and other prime movers, is the power required to raise

33,000 lbs. 1 foot high in one minute, or
1,000 lbs. 33 feet high in one minute, or generally
33,000 ft. lbs. of work done in one minute.

Engines are rated in terms of nominal horse power or indicated horse power.

Nominal horse power is based merely upon the size of the cylinder, and therefore only gives an idea of the size of the

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engine, leaving out the important factors of steam pressure and piston speed. The term is now going out of use. It was deduced by Watt from considerations now obsolete as working data.

He took the then average piston speed of 128 feet per minute, and an effective steam pressure of 7 lbs., and found that with the general proportions it required generally about 22 circular inches of piston area to develop the horse power. Therefore—

Rule for nominal horse power for condensing engines is: Square the diameter in inches, which gives area of piston in circular inches, and divide by 22 for nominal horse power. This rule is still often used. Other and more exact rules are:

D = Diameter of cylinder in inches.

S = Stroke of engine in feet.

Nhp = Nominal horse power of engine.

$$Nhp = \frac{D^2 \times \sqrt[3]{S}}{15.6} \text{ for high pressure.}$$

$$Nhp = \frac{D^2 \times \sqrt[3]{S}}{47} \text{ for condensing engines.}$$

That is, to find Nhp for high pressure: Multiply square of diameter of cylinder by cube root of stroke.

Nhp for condensing: Multiply square of diameter of cylinder by cube root of stroke and divide by 47.

The indicated horse power is the work done by the steam on the piston.

The actual horse power is that actually given off by the engine. It is the indicated horse power less the power required to overcome the friction of the engine loaded.

To find indicated horse power working expansively (by calculation).

A = Area of piston in square inches.

P = Average pressure of steam in lb. per square inch in cylinder.

S = Length of stroke in feet.

R = Number of revolutions per minute.

$$\text{Indicated horse power} = \frac{2\,A\,P\,R\,S}{33{,}000}$$

That is, to find the I. H. P.: Multiply the area of cylinder in inches by average pressure in lb., then by length of stroke in feet, then by the number of revolutions per minute, then by 2, and divide the whole by 33,000.

The Weight that Can be Lifted by a Screw.

Or the tension that can be given a bolt or stud by using a wrench to the nut, can be determined by finding the distance moved by the power or the hand in making one complete revolution of the wrench. Divide this by the pitch of the screw, and multiply the quotient by the power applied. There will be from 70 to 75 per cent. deducted for friction.

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Table of Work Done by Men and Animals.

Nature of Labor.	Daily Duration of Work in Hours.	No. of Units of Work per Day.	No. of Units of Work per Minute.	Weight Raised, or Mean Pressure, in lbs.	Velocity in Feet per Minute.
1. *Raising Weights Vertically.*					
A man mounting a gentle incline or ladder without burden—*i. e.*, raising his own weight	8	203,200	4,230	145	29
Laborer raising weights with rope and pulley, the rope returning without load	6	563,000	1,560	40	39
Laborer lifting weights by hand	6	531,000	1,480	44	34
Laborer carrying weights on his back up a gentle incline or up a ladder, and returning unladen	6	406,000	1,130	145	8
Laborer lifting earth with a spade to a mean height of 5¼ feet	10	281,000	470	6	78
Laborer wheeling materials in a barrow up an incline of 1 in 12, and returning with empty barrow	10	313,000	520	130	4
2. *Action on Machines.*					
Laborer walking and pushing or pulling horizontally	8	150,000	3,130	27	116
Laborer turning a winch	8	1,250,000	2,600	18	144
Laborer pushing and pulling alternately in a vertical direction	8	1,146,000	2,390	11	216
Horse yoked to a cart, and walking	10	15,088,000	26,150	150	175
Horse yoked to a whim gin	8	8,440,000	17,600	100	175
Ditto ditto trotting	4.5	7,086,000	26,060	66⅔	391

One man can lift with both hands 236 lbs.
One man can support on his shoulders 330 lbs.
A man's strength is greatest in raising a weight when his weight is to that of his load as 4 is to 3.

NOTE.—In the above table the unit of work is taken at a pressure of 1 lb. exerted through 1 foot.

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Wells.

To ascertain the quantity of water in a well, take half the circumference (in the clear), and multiply by half the diameter, multiply the result by the depth, which gives the cubic measure, then reckon 6 gallons and 1 pint to the foot cube.

Facts About Glue.

In securing the joints of framing, as well as for other purposes, glue is indispensable to the joiner. It is obtained by boiling down the horny and sinewy parts of animals; the older they are the stronger being the glue produced. Good glue should be very hard in the cake, and, when held up to the light, should be of a transparent yellowish-brown color, free from cloudy or black spots. It should be broken up in small pieces, and steeped in cold water for twelve hours, and then heated up with a little water until of a uniform consistency, and just thick enough to run freely off a brush in a continuous thin stream, without breaking into drops. In gluing up work, the surface should be made perfectly clean, smooth, and dry, and the glue should be applied as hot as possible.

According to experiments made by Tredgold, the adhesive force of fresh-made glue, cementing together two pieces of dry ash, after being left for twenty-four hours, was found to be 715 lbs. to the square inch, the preasure being applied gradually, and the surface separated being found on examination to be not entirely covered.

With glue which had been frequently melted, with occasional additions of fresh glue and water, the adhesive power was reduced to from 350 to 560 lbs. to the inch. The lateral adhesion of the fibers of a piece of Scotch fir, quite dry and seasoned, was found to be 562 lbs. to the inch, therefore, with fresh-made glue, the wood would have parted before the glue. The tensile strengh of a square inch of solid glue, was found to be 4,000 lbs. (Philos. Mag, 1826). The strength of common glue for coarse work, and to stand the weather, is increased by adding a little finely powdered chalk.

A glue for outside work is often made by grinding as much white lead with linseed oil as will just make the liquid of a whitish color, and strong, but not too thick. Glue dissolved in skimmed milk, in the proportion of 1 lb. of glue to two quarts of milk, is said to resist moisture with great effect.

Ordinary glue can be rendered insoluble in water by adding to the water with which it is mixed a small quantity of bichromate of potash; the exact proportion must be ascertained by experiment, but for most purposes 1-50 the amount of glue will be sufficient.

A glue, said to be proof against both fire and water, is made by mixing a handful of quicklime with four ounces of linseed oil, boiling to a good thickness, and drying on tin plates in the shade. It is rendered fit for use by boiling over the fire in the usual way.

Marine glue is made of one part of India-rubber, twelve of

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mineral naphtha or coal tar, gently heated and mixed, and twenty parts of powdered shellac. It is then poured on to a slab to cool, and in using must be heated to about 250°.

Rates of Flow of Water at which Different Substances are Carried off.

	Per second. ft.	in.
River mud, liquid earth, etc	0	3
Brown pottery clay	0	3¼
Common clay	0	6
Yellow sand, loamy	0	8½
Common river sand	1	0
Gravel, size of small seeds	0	4½
" " peas	0	7½
" " beans	1	0½
Coarse ballast	2	0
Sea shingle, about 1" diam	2	2
Large shingle	3	0
Angular flints, size of hen's egg	3	3
Broken stones	4	0
Agglomerated, or soft shistose rock	4	4
Rocks with distinct layers, "flaky"	6	0
Hard rocks	10	0

Carpentry.

The following materials upon an average will weigh 1 ton.

	Cubic feet.
Ash	from 37 to 45
Baltic fir	" 50 " 60
Beech	" 42 " 50
Deals	" 55 " 65
Elm	" 53 " 60
Ebony	" 27 " 30
Lime	" 56 " 59
Maple	" 46 " 48
Mahogany	" 34 " 36
Oak	" 32 " 39
Oak, seasoned	" 32 " 48
Pine	" 55 " 60
Scotch fir	" 60 " 65
Walnut	" 50 " 58

Measures of Soils, etc.

One ton of soil = 18 feet cube.

45 cubic feet of soil = 2½ tons.

A cubic foot contains 6 gallons and 1 quart of water, weighing 62½ lbs.

15½	cubic feet of	chalk weighs	1 ton.
18	" "	clay "	1 "
21	" "	earth "	1 "
18	" "	gravel "	1 "
21	" "	sand "	1 "

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Strength of Materials.

Strength of Tie Bars, Suspension Rods, etc.

Breaking Weight per Square Inch.	Breaking Weight per Square Eighth.	Materials.	Breaking Weight per Circular Eighth.	Breaking Weight per Circular Inch.
tons	lbs.		lbs.	tons
Average. 50	1,750	Steel	1,375	89.3
Average. 20	700	Wrought Iron	550	15.7
Average. 7	245	Cast Iron	192	5.5
Average. 8	280	Copper and Brass	220	6.3
5	175	Oak, Fir, Beech and Elm	136	3.9

Breaking weight — { tons given per sq. or circular *inch;* or lbs. given per sq. or circular *eighths,* multiplied by the area of the cross section in *either* measure.

For safe working divide the result by 4.

Weight of Snow.

Snow w ighed at Washington at different times in 1887-8-9, weighed from 5½ to 10¾ lbs. per cubic foot. In Canada it weighed 14 lbs. 4 oz. on falling; 21 lbs. 4 oz. twenty-four hours after falling, temperature 8° Fahr.; 28 lbs. 10 oz. seventy-two hours after falling, temp. 30° Fahr.

Tables of Speeds (Approximate) for Wood-Working Machinery.

Circular saws for ripping soft wood, 9,000 ft. per min. at the periphery. Ripping hard wood, 6,800 ft. per min. at the periphery. Cross-cutting soft wood, 10,000 feet per min., and cross-cutting hard wood, 7,500 ft. per min.

Mill or reciprocating saws, designed to carry not more than one saw per 1 in. width of saw or swing frame. To cut logs up to 4 ft. sq., 110 revs. per min.; 3 ft. 6 in. sq., 120 revs. per min.; 3 ft. sq., 125 revs. per min.; 2 ft. 6 in. sq., 135 revs. per min.; 2 ft. sq., 155 revs. per min.; 1 ft. 6 in. sq., 180 revs. per min.

Double Equilibrium Deal Sawing Frames (balance swing frames). To cut two deals up to 14 in. × 5 in., 300 revs. per min.; 18 in. × 6 in., 260 revs. per min.; 24 in. × 7 in., 220 revs. per min.

Single Deal Sawing Frames.—To cut one deal up to 11 in. × 3 in., 260 revs. per min.; 14 in. × 4 in., 250 revs. per min.; 18 in. × 6 in., 215 revs. per min.

Single-bladed Frames.—1,500 feet per min.

Band Saws.—Blades running on wheels up to 3 ft. diameter.

For Sawing Soft Woods.—Traverse of saw-blade per min.

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up to 4,500 ft.; do. hard wood, 3,500 ft.: do. very hard wood, ivory, etc., up to 750 ft.; do. iron, up to 250 ft.

Jigger Saws, to cut 12 in. deep, 800 to 1,000 revs. per min.

Planing Machines.—The cutting edges of planing and molding irons—when two only are employed and arranged on cutter blocks, varying in diameter from 4 in. to 9 in. in diameter—should be speeded to travel from 5,000 ft. to 6,000 ft. per min.

Mortising Machines (Reciprocating).—Heavy machines to mortise up to 3 in. wide, 175 to 275 strokes per min.; 1 in. wide, 200 to 300 strokes; 1 in. wide (movable table), 275 to 400 strokes.

Rotary Mortising and Boring Machines.—Soft wood, 2,000 revs. per min.; hard wood, 1,200 per min.

Tenoning Machines.—Heavy machines, 2,500 ft. to 3,500 ft. of cutting edge per min. Light machines, 3,000 ft. to 4,000 ft. of cutting edge per min.

Emery wheels for saw-sharpening, etc., 4,500 ft. to 6,000 ft.

Flow and Fall of Rivers and Canals.

A river is said to be sluggish when it flows at the rate of about 1 mile an hour; ordinarily swift, 2 miles an hour; very rapid, 5 miles an hour; a torrent, 6 miles an hour.

Drainage, Etc.

FRESH WATER.

One cubic foot of fresh water weighs 1,000 ounces, or 62.5 lbs. avoirdupois, and contains 6.2321 Imperial gallons.

One foot in depth has a pressure of .434 lb. to the square inch.

One foot in depth has a pressure of 62.5 lbs. to the square foot.

35.84 feet in depth has a pressure of 2,240 lbs., or 1 ton to the square foot.

One cylindrical foot weighs 785.4 ounces, or 49.08 lbs. avoirdupois, and contains 4.8947 Imperial gallons.

One cylindrical foot in depth has a pressure of .34 lb. on an area 1 inch in diameter.

One cylindrical foot in depth has a pressure of 49.08 lbs. on an area 1 foot in diameter.

45.64 cylindrical feet in depth has a pressure of 2,240 lbs., or one ton on an area 1 foot in diameter.

The quantity of water in 1 inch in depth of rainfall on an Imperial acre of surface is 3.630 cubic feet, which is 22,622.523 Imperial gallons, or 101.28 tons. 3,630 cubic feet of rain falling in 24 hours is 2.52 cubic feet per minute.

SEA WATER.

One cubic foot weighs 64.25 lbs.

One cylindrical foot weighs 50.46195 lbs.

34.887 feet in depth has a pressure of 2,240 lbs., or 1 ton to the square foot.

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Shrinkage of Castings.

The allowance for shrinking in castings should be for each foot in length :—

	Parts of an inch.
For cast iron pipes	.125 — ⅛
" beams and girders	.1 — 1-10
" cylinders, large	.094 — 3-32
" " small	.06 — 1-16
Brass	.17 — 3-16
Lead	.31 — 5-16
Zinc	.25 — ¼
Copper	.17 — 3-16

Hemp Ropes.

Weight per fathom of Italian hemp hawser laid, tarred.

Circum. of rope in ins.	Weight per fath. in lbs.	Circum. of rope in ins.	Weight per fath. in lbs.
2	.93	7½	13.25
2½	1.5	8	15
3	2.02	8½	17
3½	2.9	9	19
4	3.8	9½	21.8
4½	4.75	10	23.6
5	6	10½	26
5½	7.12	11	28.5
6	8.5	11½	30
6½	10	12	34
7	11.7		

White rope is about 1-7 lighter, rather stronger, and 40 per cent. less stiff than tarred rope.

Cable-laid wire ropes have less than ⅔ strength of hawser-laid ropes of same circumference, and are about ⅔ weight; they stretch much more, but are much more supple.

Steel-wire rope is at least twice as strong and a little heavier than iron rope.

The strength of chain varies as the square of the diam. of the iron in the link.

The weight per fathom of crane-chain — square of the number of ⅛ in. in diam. of iron, thus a ⅝" chain weighs 25 lbs. Studded-chain is 1½ times as strong as crane-chain. Straight shackles and long-linked chain, without studs, are only 5-6, eye bolts, 6-7, bow shackles and triangular and circular ring-bolts ⅘, and hooks 1-9 strength of crane-chain of same diameter of iron.

Italian hemp ropes are stronger than Russian hemp ropes in the ratio of 100 to from 79 to 23.4; on the other hand the rigidity is in the proportion of, Italian, 100, Russian, 80.4 to 96.5.

Hempen ropes deteriorate after a few months' wear, though apparently good on careful examination by the eye. With the best ropes not more than six months in use, the loss was

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equal to 25 per cent., and extended, with other ropes, even to 51 per cent., thus showing that it is imperative to use a large margin of safety.

Table of the Qualities of Different Ropes Compared with Italian Hemp.

The amount of stretching is that due to the breaking weight. All but the hide ropes are hawser laid.

Nature.	Strength.	Stiffness.	Weight Dry.	Stretching.
Italian Hemp*		1	1	
Baltic*	0.7 to .9	0.8 to 0.9	1	1-7 to 1-12
Manilla†	0.9 to 1	0.75	0.88	
Flax	0.9	low	.....	1-75
Coir Hair‡	0.2 to 0.25	low	0.43	⅛ to 1-3
Green Hides§	0.5	high	1	0.24
Iron Wire	3	high	4	.....
Steel	6	high	4	.....

* Become weaker in water—may lose ⅓ of their strength if soaked for 72 hours.

† Keeps its strength in water, but cuts where knotted or bent short. Wears in tackle; is difficult to tar.

‡ Floats for a time in water. Stands exposure to wet well.

§ When dry does not stretch.

Large hemp hawsers (8 in. and 9 in.), when new, stretch about 1-25 1-12 1-11, and 1-9 of their length under loads of ⅛th, ¼th, ⅓d, and ½ the breaking weight. Small ropes only stretch from ⅓ to ⅔ as much.

Steel-wire hawsers stretch respectively about 1-360th, 1-250th, and 1-130th, under a stress of ¼th, ⅓d, and ½ the breaking weight.

Flour Mills, Saw Mills, Wood-Working Machinery.

FLOUR MILLS.

For each pair of 4-feet stones, with all the necessary dressing machinery, there is required 15 horses' power.

One pair of 4-feet stones will grind about 5 bushels of wheat per hour. Each bushel of wheat so ground per hour requires .87 actual or 1.11 indicated horse's power, exclusive of dressing and other machinery.

Stones, 4 feet diam., 120 to 140 revolutions per minute.

Dressing machines, 21 inches diam., 450 to 500 revolutions per minute.

Creepers, 3½ inches pitch, 75 revolutions per minute.

Elevator, 18 inches diam., 40 revolutions per minute.

Screen, 16 inches diam., 300 to 350 revolutions per minute.

788 cubic feet of water, discharged at a velocity of 1 foot per second, are necessary to grind and dress 1 bushel of wheat per hour — 1.49 horse's power per bushel.

2,000 feet per minute, for the velocity of a stone 4 feet in diam., may be considered a maximum speed.

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Relative Weights of Metals.

The weight of	Bar Iron being		1.
	Cast Iron	=	.95
	Steel	=	1.02
	Copper	=	1.16
	Brass	=	1.09
	Lead	=	1.48
The weight of	Cast Iron being		1.
	Bar Iron	=	1.07
	Steel	=	1.08
	Brass	=	1.16
	Copper	=	1.21
	Lead	=	1.56
The weight of	Yellow Pine being		1.
	Cast Iron	=	16.
	Steel	=	17.2
	Copper	=	19.3
	Brass	=	18.4
	Lead	=	24.
The weight of	Brass being		1.
	Bar Iron	=	.92
	Cast Iron	=	.86
	Steel	=	.93
	Copper	=	1.05
	Lead	=	1.35
The weight of	Copper being		1.
	Bar Iron	=	.87
	Cast Iron	=	.82
	Steel	=	.88
	Brass	=	.93
	Lead	=	1.28
The weight of	Lead being	=	1.
	Bar Iron	=	.68
	Cast Iron	=	.64
	Steel	=	.69
	Brass	=	.74
	Copper	=	.78

Lightning Conductors.

Copper is the best material for conductors. When circumstances are not such as to promote corrosion iron may be used, but of larger dimensions. Its conductivity is about one-fifth that of copper.

Copper lightning conductors should be of the following dimensions:—

Rods ⅜″ diam., tubes ½″ diam., ⅛″ thick, or bands 1½″ wide, ¼″ thick.

Iron lightning conductors should be either solid rods 1″ diam., or bands 2″ wide, ¼″ thick.

Lightning conductors afford protection over a circle whose radius equals their height from the ground; formerly considered twice.

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Specific Gravities and Weights of Woods.

Woods (Seasoned).*	Specific gravity.	Weight of a cubic foot in lbs. avoir.	Woods (Seasoned).	Specific gravity.	Weight of a cubic foot in lbs. avoir.
Acacia	.8	50	Larch	.5	31
Alder	.51	32		.56	35
Apple tree	.793	49	Lignum vitæ	.65	41
Ash	.7	43		1.33	83
	.84	53	Locust	.71	44
Bamboo	.4	25	Logwood	.9	55
Bay Tree	.8	50	Mahogany, Honduras	.64	40
Beech	.69	43	Mahogany, Spanish or Cuba	.77	48
	.85	33	Maple	.755	47
Birch	.711	44	Mora	.92	57
Blue gum	.843	52	Oak, English	.73	45
Box	.96	60	and French	.9	56
Brazil wood, red	1.031	64	Oak, American	.72	47
Bullet tree	1.046	65		.86	53
Cabacalli	.9	56	" Baltic	.74	46
Cane	.4	25	" Italian	.96	60
Cedar of Lebanon	.56	35		1.04	65
" American	.48	30	Orange	.705	44
Charcoal, birch	.54	34	Pear	.661	41
" fir	.45	28	Pine, pitch	.66	41
" oak	.33	21	" red	.64	40
" pine	.29	18	" yellow	.52	33
Cherry	.715	44	Plum	.87	54
Chestnut	.64	40	Poon	.579	36
Cork	.24	15	Poplar, white	.51	32
Cowrie	.579	36	" Italian	.42	26
Cypress	.598	37	Saul	.96	60
Ebony, Indian	1.1	70	Spruce	.48	30
" American	1.28	60	Sycamore	.6	37
Elder	.67	42	Teak, Indian	.78	49
Elm	.55	34	" African	.96	60
	.72	50	Tonka	.99	62
Fir, Dantzic	.58	36	Wainscot, Riga	.6	38
" Riga	.54	33	Walnut, Am.	.56	35
Hawthorn	.91	57	Walnut, Spanish	.67	42
Hazel	.64	40	Watergum	1.	62
Holly	.76	47	Willow	.48	30
Hornbeam	.77	48	Yew	.807	50
Kauri, or Cowdie	.53	33			
Laburnum	.92	57			

* The specific gravities of woods differ considerably, according as they are dry or green, and from hills or plains. Those given are for woods which have been drying in the air for ten or twelve months, and which have lost one-third or one-fourth of their weight. The quantity of water in green wood is about 42 per cent.

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WEIGHT OF METALS.—Weight in lbs. of a Square Foot of Different Metals, in Thicknesses Varying by 1-16 of an Inch.

Thickness in Inches.	Wrought Iron.	Cast Iron.	Steel.	Copper.	Zinc.	Brass.	Gun Metal.	Tin.	Lead.
1-16	2.8	2.3	2.5	2.9	2.8	2.6	2.7	2.4	3.7
1-8	5.0	4.7	5.1	5.8	4.7	5.3	5.5	4.8	7.4
3-16	7.5	7.0	7.6	8.7	7.0	8.2	8.2	7.2	11.2
¼	10.0	9.4	10.2	11.6	9.4	11.0	10.9	9.6	14.9
5-16	12.5	11.7	12.8	14.5	11.7	13.7	13.7	12.0	18.6
⅜	15.0	14.1	15.3	17.2	14.0	16.4	16.4	14.4	22.3
7-16	17.5	16.4	17.9	20.0	16.4	19.2	19.1	16.8	26.0
½	20.0	18.7	20.4	22.9	18.7	21.9	21.9	19.3	29.7
9-16	22.5	21.1	25.0	25.7	21.1	24.6	24.6	21.7	33.4
⅝	25.0	23.5	25.5	28.6	23.4	27.4	27.3	24.1	37.1
11-16	27.5	25.8	28.1	31.4	25.7	30.1	30.0	26.5	40.9
¾	30.0	28.1	30.6	34.3	28.1	32.9	32.8	28.9	44.6
13-16	32.5	30.5	33.2	37.2	30.4	35.6	35.0	31.3	48.3
⅞	35.0	32.8	35.7	40.0	32.8	38.3	38.2	33.7	52.0
15-16	37.5	35.2	38.3	42.9	35.1	41.2	41.0	36.1	55.7
1	40.0	37.5	40.8	45.8	37.5	43.9	43.7	38.5	59.4

NOTE.—The weight per square foot to any gauge can easily be obtained from the above table by multiplying the weight of a square foot of the metal one inch thick by the thickness of the gauge in inches or parts of an inch.

Average Number of Cubic Feet Per Ton of Various Substances for Estimating Work or Stowage.

Iron	4.7
Lead	3.2
Brick	22
Clay	22
Sand	24
Earth, loose	28
Granite	16
Oak	39 5
Ash	45
Cedar	72
Mahogany, sp	45
Deal	50
Pine, red	55
" yellow	77
Water, fresh	36
" salt	35
Coke	90
Coal (stowed)	48
Wood (equivalent) requires	288

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Specific Gravities and Weights of Different Metals.

Metals.	Specific gravity.	Weight of a cubic foot in lbs. avoir.	Metals.	Specific gravity.	Weight of a cubic foot in lbs. avoir.
Aluminium	2.6	162	Meteoric iron	7.965	497
Antimony, cast	6.712	419	Lead, cast	11.352	709
Arsenic	5.763	360	Lead, milled	11.4	712
Bismuth, cast	9.822	614	Mercury, common, at 32°	13.568	848
Brass, cast	7.8	487	Mercury pure	14	875
	8.4	524	Mercury, solid	15.6	977
Brass wire	8.544	534	Nickel	8 279	517
Bronze	8.218	513	Palladium	11.8	737
Cobalt, cast	7.812	488	Pewter	7.471	466
Copper, cast	8.788	549	Platinum	21	1,311
Copper coin	8.915	557		22	1,373
Copper wire and sheet	8.878	555	Rhodium	11	687
Gold, coin	17.647	1,102	Silver coin	10.534	658
Gold trinket	15.609	981	Silver pure, cast	10.744	671
Pure gold, cast	19.258	1,203	Steel	7.8	487
Pure gold, hammered	19.316	1,210		7.9	493
Gun metal	8.784	549	Tin, cast	7.3	456
Iridium	23.	1,437		7.5	468
Iron, wrought	7	474	Type Metal	10.4	653
	7.8	486	Zinc	6.8	424
Iron, wrought average	7.698	480		7.19	449

Weight of a Cubic Inch of Different Metals.

1 cubic inch zinc weighs .252 lbs. = 1 cubic inch wrought iron × .92.

1 cubic inch cast iron weighs .26 lbs. = 1 cubic inch wrought iron × .93.

1 cubic inch tin weighs .262 lbs. = 1 cubic inch wrought iron × .94.

1 cubic inch wrought iron weighs .28 lbs. = 1 cubic inch wrought iron × 1.

1 cubic inch steel weighs .288 lbs. = 1 cubic inch wrought iron × 1.02.

1 cubic inch brass weighs .3 lbs. = 1 cubic inch wrought iron × 1.09.

1 cubic inch copper weighs .32 lbs. = 1 cubic inch wrought iron × 1.15.

1 cubic inch lead weighs .41 lbs. = 1 cubic inch wrought iron × 1.47.

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Specific Gravities and Weights of Stones, Earths, Etc.

Stones, Earths, etc.	Specific gravity.	Weight of a cubic ft. in lbs. avoir.	Stones, Earths, etc.	Specific gravity.	Weight of a cubic ft. in lbs. avoir.
Amber	1.078	67	Glass, white flint.	3.	188
Asbestos	2.996	187	Glass, plate	2.94	184
Asphalte, gritted.	2.5	156	Glass, crown	2.53	158
Basalt	2.864	180	Granite	2.625	164
Bathstone	1.97	123	Gypsum	2.28	140
Bermuda stone, hard	2.62	164	Jargon, Ceylon	4.416	276
Bermuda stone, soft	1.47	92	Kentish rag	2.66	166
Beryl, Oriental	3.549	221	Lime, chalk, ground	.83	52
Bitumen	1	62	Limestone, lias	2.5	156
Brick, common stock	1.8	115	" magnesian	2.3	144
Brick, red facing	2	130	Marble (average)	2.7	170
Brick, fire	2.4	150	Marl	1.9	120
Brickwork in cement	1.8	110	Masonry, rubble	2.2	140
Caen stone	2	125	" ashlar, Port'd	2.2	140
Cement, Portland	1.2	87	" " granite	2.5	160
Cement, Roman	.9	60	Millstone	2.5	155
Chalk, solid	1.8 to 2.8	112 to 175	Mortar, old	1.4	90
Chalk in lumps	—	87	Mortar, new	1.7	110
Clay, potters'	1.9	120	Mud	1.63	102
Clay with gravel	2	126	Opal	2.114	132
Clay, ordinary	1.9	120	Peat, hard	1.3	83
Coal, anthracite	1.602	103	Pitch	1.1	79
Coal, bituminous	1.24 to 1.44	77 to 90	Plaster of Paris	1.2	80
Coke	.7	47	Porcelain, Chinese	2.385	147
Concrete	1.9	120	Porphyry, green	2.9	180
Concrete, lime	1.8	118	Pumice stone	.91	57
Coral	2.68	167	Purbeck stone	2.6	162
Crystal, rock	2.653	165	Puzzolana	2.7	170
Diamond	3.536	221	Quartz	2.64	166
Earth, vegetable	1.4	90	Rotten stone	2.	124
Earth, loamy	1.6	100	Sand, river	1.9	118
Earth, semi fluid	1.7	110	Sandstone	2.3	145
Emerald, Peru	2.775	173	Shale	2.6	162
Emery	4.	250	Shingle	—	95
Feldspar	2.6	162	Slate	2.9	181
Flint	2.594	162	Slates, Cornish	2.5	160
Freestone, hewn.	2.2	140	Spar	2.594	162
			Sulphur, melted	2.	124
			Tiles, average	1.8	115
			Topaz	3.8	237
			Trap	2.7	172
			White lead	3.16	197

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Measurement of Heights by a Barometer.

Approximate Rule.—For a mean temperature of 55 degrees, x, required difference in height in feet, h, the height of the mercury at the lower station, h', the height of the mercury at the upper station in feet.

$$55000 \times \frac{h-h'}{h+h'} = x.$$ Add $\frac{1}{440}$ of this result

for each degree which the mean temperature of the air at the two stations exceeds 55 degrees, and deduct as much for each degree below 55 degrees.

Weight and Specific Gravities of Gases and Vapors.

Gases at 32° Fahr. and under one atmosphere of pressure.	Vol. of 1 lb weight.	Weight of 1 cubic feet.	Specific gravity
	cubic feet	pounds.	Air=1.
Vapor of mercury (ideal)	1.776	0.563	6.9740
Vapor of bromine	2.236	0.447	5.5400
Chloroform	2.337	0.428	5.3000
Vapor of turpentine	2.637	0.378	4.6978
Acetic ether	4.075	0.245	3.0400
Vapor of benzine	4.598	0.217	2.6943
Vapor of sulphuric ether	4.790	0.209	2.5860
Vapor of ether (?)	4.777	0.206	2.5563
Chlorine	5.077	0.197	2.4400
Sulphurous acid	5.513	0.1814	2.2470
Alcohol	7.679	0.1302	1.6130
Carbonic acid (actual)	8.101	0.12344	1.5290
Carbonic acid (ideal)	8.157	0.12259	1.5186
Oxygen	11.205	0.089253	1.1056
Air	12.387	0.080728	1.0000
Nitrogen	12.723	0.078596	0.9736
Carbonic oxide	12.804	0.0781	0.9674
Olefiant gas	12.580	0.0795	0.9847
Gaseous steam	19.918	0.05022	0.6220
Ammoniacal gas	21.017	0.04758	0.5894
Light carburetted hydrogen	22.412	0.04462	0.5527
Coal gas	28.279	0.03536	0.4381
Hydrogen	178.83	0.005592	0.0692

Weight of Men and Animals.

The average weight of 20,000 men and women, weighed at Boston, Mass., in 1864, was—men, 141½ lbs.; women, 124½ lbs.

A crowd of people closely packed = 85 lbs. per sup. ft.

The average weight of a man = 140 lbs. 6 oz., or about fifteen men to a ton.

A strong cart horse = 14 cwt., and a cavalry horse = 11 cwt.

An ox = 7 to 8 cwt. Cow, 6½ to 8 cwt.

A pig = 1 to 1½ cwt., and a sheep = ¾ to 1½ cwt.

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Weight and Specific Gravities of Liquids.

Liquids at 32 deg. Fahr.	Weight of one cubic foot.	Weight of one gallon	Specific gravity.
	Pounds.	Pounds.	Water=1.
Mercury	848.7	136.0	13.596
Bromine	185.1	29.7	2.966
Sulphuric acid, max. concentratn.	114.9	18.4	1.84
Nitrous acid	96.8	15.5	1.55
Chloroform	95.5	15.3	1.53
Water of the Dead Sea	77.4	12.4	1.24
Nitric acid, of commerce	76.2	12.2	1.22
Acetic acid, maximum concentratn.	67.4	10.8	1.08
Milk	64.3	10.3	1.03
Sea water, ordinary	64.05	10.3	1.026
Pure water (distild.) at 39° 1.F.	62.425	10.0	1.000
Wine of Bordeaux	62.1	9.9	0.994
Wine of Burgundy	61.9	9.9	0.991
Linseed oil	58.7	9.4	0.94
Poppy oil	58.1	9.3	0.93
Rape seed oil	57.4	9.2	0.92
Whale oil	57.4	9.2	0.92
Olive oil	57.1	9.15	0.915
Turpentine oil	54.3	8.7	0.87
Potato oil	51.2	8.2	0.82
Petroleum	54.9	8.8	0.88
Naphtha	53.1	8.5	0.85
Ether, nitric	69.3	11.1	1.11
" sulphurous	67.4	10.8	1.08
" nitrous	55.6	8.9	0.89
" acetic	55.6	8.9	0.89
" hydrochloric	54.3	8.7	0.87
" sulphuric	44.9	7.2	0.72
Alcohol, proof spirit	57.4	9.2	0.92
Alcohol, pure	49.3	7.9	0.79
Benzine	53.1	8.5	0.85
Wood spirit	49.9	8.0	0.80

Weight of Liquids per Gallon.

Sulphuric acid	in lbs. 18.5	Whale oil	in lbs. 9.2
Nitric acid	" 12.7	Oil of turpentine	" 8.7
Muriatic acid	" 12.	Petroleum	" 8.8
Alcohol of commerce	" 8.2	Tar	" 10.1
Alcohol proof spirit.	" 9.2	Vinegar	" 10.1
Naphtha	" 8.5	Water, distilled	" 10
Linseed oil	" 9.4	Salt water	" 10.3

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Number of Union Soldiers Furnished by Each State During the Rebellion.

State or Territory.	No. of Soldiers.	State or Territory.	No. of Soldiers.
Alabama	2,576	Mississippi	545
Arkansas	8,289	Missouri	109,111
California	15,725	Nebraska	3,157
Colorado	4,903	Nevada	1,080
Connecticut	57,379	New Hampshire	34,629
Dakota Territory	206	New Jersey	81,010
Delaware	13,670	New Mexico T.	6,561
District of Columbia	16,872	New York	467,047
Florida	1,290	North Carolina	3,156
Illinois	259,147	Ohio	319,659
Indiana	197,147	Oregon	1,810
Iowa	76,309	Pennsylvania	366,107
Kansas	20,151	Rhode Island	23,699
Kentucky	59,625	Tennessee	31,092
Louisiana	5,224	Texas	1,965
Maine	72,114	Vermont	35,262
Maryland	50,316	Washington T	964
Massachusetts	152,048	West Virginia	32,068
Michigan	89,372	Wisconsin	96,424
Minnesota	25,052		

Signs and Symbols.

= This is the sign of equality. It denotes that the quantities so connected are equal to one another; thus, 3 feet=1 yard.

+ This is the sign of addition, and signifies plus or more; thus, 4+3=7.

− This is the sign of subtraction, and signifies minus or less; thus, 4−3=1.

× This is the sign of multiplication, and signifies multiplied by or into; thus, 4×3=12.

÷ This is the sign of division, and signifies divided by; thus, 4÷2=2.

( ) { } [ ] These signs are called brackets, and denote that the quantities between them are to be treated as one quantity; thus,

$$5\left\{3(4+2)-6(3-2)\right\}=5\,(18-6)=60.$$

Letters are often used to shorten or simplify a formula. Thus, supposing we wish to express length × breadth × depth, we might put the initial letters only, thus, $l \times b \times d$, or, as is usual when algebraical symbols are employed, leave out the sign × between the factors and write the formula $l\,b\,d$.

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When it is wished to express division in a simple form, the divisor is written under the dividend; thus, $(x+y) \div z = \frac{x+y}{z}$

°, ′, ″ These signs are used to express certain angles in degrees, minutes, and seconds; thus, 25 degrees 4 minutes 21 seconds would be expressed 25° 4′ 21″.

Note.—The two latter signs are often used to express feet and inches; thus 2 feet 6 inches may be written 2′ 6″.

$\surd$ This sign is called the radical sign, and placed before a quantity indicates that some root of it is to be taken, and a small figure placed over the sign, called the exponent of the root, shows what root is to be extracted.

Thus $\sqrt[2]{a}$ or $\surd a$ means the square root of a.

$\sqrt[3]{a}$ " cube "

$\sqrt[4]{a}$ " fourth "

g This sign is used to denote the force of gravity at any given latitude.

π The Greek letter pi is invariably used to denote 3·14159; that is, the ratio borne by the diameter of a circle to its circumference.

Note.—When the figure 2 is affixed to any number, as diameter 2 or 12_2, the number is to be squared, as $12 \times 12 = 144$, the square; and with 3 affixed, the number is to be cubed, *i. e.*, multiplied twice by itself, as $6^3 = 6 \times 6 \times 6 = 216$, the cube of 6.

The Atmosphere.

Weight of atmosphere

=14·706 lbs. per square inch.
=29·92 inches of mercury.
=33·7 feet of water.

The barometer falls about ½″ for every increase of altitude of 500 feet, with a mean temperature of 50° Fahr.

Composition of Atmosphere.—By volume 20·8 oxygen, 79·2 nitrogen; by weight, 23 oxygen, 77 nitrogen. It also contains a little ammoniacal gas, and from 3 to 6 parts in 10,000 of its volume of carbonic acid.

Height of the Barometer at Different Levels above the Surface of the Earth.

Feet.	Inches.	Miles.	Inches.
1,000	28·91	2	20·29
2,000	27·86	3	16·68
3,000	26·85	4	13·72
4,000	25·87	5	11·28
5,000	24·93	10	4·24
1 mile.	24·67	15	1·6

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POPULATION OF CITIES IN THE UNITED STATES.

CONTAINING 5,000 INHABITANTS AND OVER, WITH THEIR POPULATION IN 1890, IN 1880 AND 1870.

CENSUS OF 1890.

	1890.	1880.	1870.
Adams, Mass.	9,200	5,591	12,090
Adrian, Mich.	3,756	7,849	8,438
Akron, O.	27,601	16,512	10,006
Alameda, Cal.	11,165	5,708	1,557
Albany, N. Y.	94,923	90,758	69,422
Albina, Ore.	5,129	143	.....
Alexandria, Va.	14,339	13,659	13,570
Allegheny, Pa.	105,287	78,682	53,180
Allentown, Pa.	25,228	18,063	13,884
Alliance, O.	7,607	4,626	.....
Alpena, Mich.	11,283	6,153	2,612
Alton, Ill.	10,294	8,975	8,665
Altoona, Pa.	30,337	19,710	10,610
Americus, Ga.	6,398	3,635	3,250
Amesbury, Mass.	9,793	3,355	5,581
Amsterdam, N. Y.	17,336	9,466	5,426
Anderson, Ind.	10,741	4,126	3,126
Andover, Mass.	6,142	5,169	4,873
Annapolis, Md.	7,604	6,642	5,744
Ann Arbor, Mich.	9,431	8,061	7,363
Anniston, Ala.	9,998	942	.....
Ansonia, Conn.	10,342	7,892	.....
Appleton, Wis.	11,869	8,005	5,518
Arkansas City, Kan.	8,347	1,012	.....
Arlington, Mass.	5,629	4,100	3,361
Asheville, N. C.	10,235	2,616	1,400
Ashland, Pa.	7,346	6,052	5,714
Ashland, Wis.	9,956	900	.....
Ashtabula, O.	8,338	4,445	1,990
Aspen, Colo.	5,108	.....	.....
Astoria, Ore.	6,184	2,803	639
Atchison, Kan.	13,963	15,105	7,054
Athol, Mass.	6,319	4,307	3,517
Athens, Ga.	8,639	6,099	4,251
Atlanta, Ga.	65,533	37,409	21,798
Atlantic City, N. J.	13,055	5,477	1,043
Attleboro, Mass.	7,577	11,111	6,769
Auburn, N. Y.	25,858	21,925	17,225
Auburn, Me.	11,250	9,555	6,169
Augusta, Ga.	33,300	21,891	15,389
Augusta, Me.	10,527	8,665	7,808
Aurora, Ill.	19,688	11,873	11,162
Austin, Tex.	4,575	10,013	4,428
Baltimore, Md.	434,439	332,312	267,354
Bangor, Me.	19,103	16,856	8,289
Barre, Vt.	6,391	6,333	5,760
Batavia, N. Y.	7,221	4,845	3,890

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Baton Rouge, La	10,478	7,197	6,498
Battle Creek, Mich	13,197	7,063	5,838
Bath, Me	8,723	7,874	7,371
Bay City, Mich	27,839	29,693	7,064
Bayonne, N. J	19,033	9,372	3,034
Beatrice, Neb	13,836	2,447	624
Beaver Falls, Pa	9,735	5,104	1,120
Belfast, Me	5,294	5,308	5,278
Beloit, Wis	6,315	4,790	4,396
Bellaire, O	9,934	8,025	4,033
Belleville, Ill	15,361	10,683	8,146
Bennington, Vt	6,391	6,333	5,760
Berkeley, Cal	5,101	.....	.....
Bethlehem, Pa	6,762	5,193	4,512
Beverly, Mass	10,821	8,456	6,507
Biddeford, Me	14,443	12,651	10,282
Big Rapids, Mich	5,303	3,552	.....
Binghamton, N. Y	35,005	17,317	12,692
Birmingham, Ala	26,178	400	.....
Blackstone, Mass	6,138	4,907	5,421
Bloomington, Ill	20,484	17,180	14,500
Boone, Iowa	6,520	3,330	.....
Boston, Mass	448,477	362,839	250,526
Bowling Green, Ky	7,803	5,114	4,574
Braddock, Pa	8,561	3,310	.....
Bradford, Pa	10,514	9,197	1,446
Brainerd, Minn	5,703	1,865	.....
Brattleboro, Vt	6,862	5,880	4,933
Brazil, Ind	5,905	3,441	.....
Brenham, Tex	5,209	4,101	2,221
Bridgeton, N. J	11,424	8,722	.....
Bridgeport, Conn	48,866	27,643	18,969
Bristol, Conn	7,382	5,347	3,788
Bristol, Pa	6,553	5,273	3,269
Brockton, Mass	27,294	13,608	8,007
Brookline, Mass	12,103	8,057	.....
Brooklyn, N. Y	806,343	566,663	396,099
Brownsville, Tex	6,134	4,938	4,905
Brunswick, Ga	8,459	2,891	2,348
Brunswick, Me	6,012	5,384	4,687
Bucyrus, O	5,974	3,835	.....
Buffalo, N. Y	255,664	155,134	117,714
Burlington, Iowa	22,565	19,450	14,930
Burlington, N. J	7,264	6,090	5,817
Burlington, Vt	14,590	11,365	14,387
Burrellville, R. I	15,494	5,714	4,674
Butler, Pa	8,734	3,163	964
Butte City, Mont	10,723	3,366	247
Cairo, Ill	10,234	9,011	6,261
Calais, Me	7,290	6,173	5,944
Cambridge, Mass	70,029	52,669	39,634
Camden, N. J	58,313	41,659	20,045
Canandaigua, N. Y	5,868	5,726	4,862
Canton, O	20,189	12,258	8,660
Canton, Ill	5,004	3,762	.....
Cape Elizabeth, Me	5,459	5,302	5,100
Carbondale, Pa	10,833	7,714	6,393
Carlisle, Pa	7,620	6,209	6,650

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Carthage, Mo.	7,981	4,167	.....
Cedar Rapids, Iowa	18,126	10,104	5,940
Chambersburg, Pa.	7,863	6,877	6,308
Champaign, Ill.	5,839	5,106	4,625
Charleston, S. C.	54,955	49,964	48,956
Charlestown, W. Va.	6,742	4,192	1,593
Charlotte, N. C.	11,557	7,094	4,473
Charlottesville, Va.	5,591	2 676	.....
Chattanooga, Tenn.	29,100	12,892	6,093
Cheybogan, Mich.	6,235	2,269	.....
Chelsea, Mass.	27,909	21,782	18,547
Chester, Pa.	19,791	14,997	9,485
Cheyenne, Wyo.	11,690	3,456	1,450
Chicago, Ill.	1,099,850	503,185	298,977
Chicopee, Mass.	14,050	11,286	9,607
Chillicothe, O.	11,288	10,938	8,920
Chillicothe, Mo.	5,717	4,078	3,978
Chippewa Falls, Wis.	8,670	3,982	2,507
Cincinnati, O.	296,908	255,139	216,239
Circleville, O.	6,856	6,046	5,407
Claremont, N. H.	5,565	4,704	4,053
Clarkesville, Tenn.	7,924	3,880	3,200
Cleveland, O.	261,353	160,146	72,829
Clinton, Iowa	13,619	9,052	6,129
Clinton, Mass.	10,424	8,029	5,429
Cohoes, N. Y.	22,509	19,416	15,357
Colchester, Vt.	5,143	4,421	3,911
Coldwater, Mich.	5,247	4,681	4,381
College Point, N. Y.	6,127	4,192	3,652
Columbia, Pa.	10,599	8,312	6,461
Columbia, S. C.	15,353	10,036	9,298
Columbia, Tenn.	5,370	3,400	.....
Colorado Springs, Colo.	11,140	4,226	81
Columbus, Ga.	17,303	10,123	7,401
Columbus, Ind.	6,719	4,813	3,359
Columbus, O.	88,150	51,647	31,274
Concord, N. H.	17,004	13,843	12,241
Connellsville, Pa.	5,629	3,609	.....
Conshohocken, Pa.	5,470	4,561	3,071
Corning, N. Y.	8,550	4,802	4,018
Corry, Pa.	5,677	5 277	6,809
Corsicana, Tex.	6,285	3,373	60
Cortlandt, N. Y.	8,590	4,802	4,018
Council Bluffs, Iowa	21,474	18,063	10,020
Coventry, R. I.	5,068	4,519	4,349
Covington, Ky.	37,371	29,720	24,505
Cranston, R. I.	8,099	5,940	4,822
Crawfordsville, Ind.	6,089	5,251	3,701
Creston, Iowa	7,200	5,081	411
Cumberland, Md.	12,729	10,693	8,056
Cumberland, R. I.	8,090	6,445	3,882
Dallas, Tex.	38,067	10,358	13,314
Danbury, Conn.	16,552	11,666	6,758
Danville, Ill.	11,491	7,733	4,751
Danville, Pa.	7,998	8,346	8,436
Danville, Va.	10,395	7,733	3,483
Danvers, Mass.	7,454	6,598	5,600
Davenport Iowa	26,872	21,831	20,038

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Dayton, O.	61,220	38,878	30,473
Decatur, Ill.	16,841	9,547	7,161
Dedham, Mass.	7,123	6,233	7,342
Deering, Me.	5,353	4,324	.....
Defiance, O.	7,094	6,233	7,342
Delaware, O.	8,224	6,894	5,641
Denison, Tex.	10,958	3,975	.....
Denver, Colo.	106,713	35,629	4,759
Des Moines, Iowa	50,093	22,428	5,241
Detroit, Mich.	205,876	116,340	79,577
Dixon, Ill.	5,161	3,658	.....
Dover, N. H.	12,790	11,687	9,204
Dubuque, Iowa.	30,311	22,254	18,434
DuBois, Pa.	6,149	2,718	.....
Duluth, Minn.	33,115	5,415	3,131
Dunkirk, N. Y.	9,416	7,248	5,231
Dunmore, Pa.	8,315	5,15	.....
Durham, N. C.	5,485	2,041	.....
Easton, Pa.	14,491	1,924	10,937
E. Liverpool, O.	10,656	5,568	3,105
E. Portland, Ore.	10,532	2,934	830
E. Providence, R. I.	8,422	5,056	2,668
E. St. Louis, Ill.	15,169	9,185	5,644
Eau Claire, Wis.	17,415	10,119	2,293
Edgewater, N. Y.	14,265	8,044	.....
Elgin, Ill.	17,823	8,787	5,441
Elizabeth, N. J.	37,764	28,229	20,832
Elkhart, Ind.	11,360	6,953	3,265
Elmira, N. Y.	30,893	20,541	15,863
El Paso, Tex.	10,398	736	764
Elyria, O.	5,611	4,777	3,038
Emporia, Kan.	7,551	4,631	2,168
Enfield, Conn.	7,199	3,500	6,322
Erie, Pa.	40,634	27,737	19,646
Escanaba, Mich.	6,808	3,026	.....
Evansville, Ind.	50,756	29,280	21,830
Everett, Mass.	11,068	4,159	2,220
Fall River, Mass.	74,398	48,961	26,766
Fargo, N. D.	5,664	2,693	.....
Faribault, Minn.	6,520	5,415	3,045
Findlay, O.	18,553	4,633	3,315
Fitchburg, Mass.	22,037	12,429	11,260
Flint, Mich.	9,803	8,409	5,386
Florence, Ala.	6,012	1,359	.....
Flushing, N. Y.	8,436	6,683	6,223
Fond du Lac, Wis.	12,024	13,094	12,764
Fort Madison, Iowa.	7,901	4,679	4,011
Fort Scott, Kan.	11,946	5,372	4,174
Fort Smith, Ark.	11,311	3,099	2,227
Fort Wayne, Ind.	35,392	26,880	17,718
Fort Worth, Tex.	23,076	6,663	.....
Fostoria, O.	7,070	3,569	.....
Framingham, Mass.	9,239	6,235	4,968
Frankfort, Ind.	5,919	2,803	.....
Frankfort, Ky.	7,892	6,958	5,396
Franklin, Pa.	6,221	5,040	3,008
Frederick, Md.	8,193	8,659	8,526
Freeport, Ill.	10,180	8,516	7,880

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Freeman, O.	7,141	8,446	5,455
Freeman, Neb.	6,747	3,013	1,195
Fresno, Cal.	10,818	1,112	.....
Gainesville, Tex.	6,524	2,067	.....
Galena, Ill.	5,635	6,541	7,019
Galesburg, Ill.	15,264	11,437	10,158
Galion, O.	6,326	5,635	3,523
Galveston, Tex.	29,084	22,248	13,818
Gardiner, Me.	5,491	4,339	4,497
Gardner, Mass.	8,424	4,588	3,333
Geneva, N. Y.	7,557	5,878	5,521
Glens Falls, N. Y.	9,509	4,900	4,500
Gloucester, Mass.	24,651	19,329	15,399
Gloucester, N. J.	6,564	5,347	3,682
Gloversville, N. Y.	13,864	7,133	4,518
Georgetown, D. C.	14,046	12,578	11,384
Goshen, Ind.	6,033	4,123	3,133
Grafton, Mass.	5,002	4,039	4,564
Grand Rapids, Mich.	60,278	32,016	16,507
Grand Haven, Mich.	5,023	4,862	3,147
Grand Island, Neb.	7,536	2,963	1,057
Green Bay, Wis.	9,069	7,464	4,666
Greenbush, N. Y.	7,301	3,295	.....
Greenfield, Mass.	5,252	3,903	.....
Greenfield, S. C.	8,607	6,160	2,757
Greenville, Miss.	6,658	2,191	....
Greenville, O.	5,479	3,535	.....
Greenwich, Conn.	10,131	7,892	7,644
Groton, Conn.	5,539	5,128	5,124
Hackensack, N. J.	6,004	4,248	8,038
Hagerstown, Md.	10,118	6,627	5,779
Hamilton, O.	17,565	12,122	11,081
Hammond, Ind.	5,428	699	.....
Hannibal, Mo.	12,857	11,074	10,125
Harrisburg, Pa.	39,385	30,762	23,104
Harrison, N. J.	8,338	6,898	4,129
Hartford, Conn.	53,230	42,015	37,180
Hastings, Neb.	13,584	2,817	.....
Haverhill, Mass.	27,412	18,472	13,052
Haverstraw, N. Y.	5,170	3,506	.....
Hazelton, Pa.	11,872	6,935	4,317
Helena, Mont.	13,834	3,624	3,106
Helena, Ark.	5,189	3,652	.....
Henderson, Ky.	8,835	5,365	4,171
Highlands, Colo.	5,161	.....	.....
Hoboken, N. J.	43,648	30,999	20,297
Holyoke, Mass.	35,637	21,915	10,733
Homestead, Pa.	7,911	592	....
Hoosick Falls, N. Y.	7,014	4,530	.....
Hopkinsville, Ky.	5,833	4,229	3,136
Hornellsville, N. Y.	10,996	8,195	4,552
Houston, Tex.	27,557	16,513	9,382
Hot Springs, Ark.	8,086	3,554	.....
Hudson, N. Y.	9,970	8,670	8,615
Huntingdon, Pa.	5,729	4,125	3,034
Huntsville, Ala.	7,995	4,977	4,907
Huntington, Ind.	7,328	3,863	2,925
Huntington, W. Va.	10,108	3,174	....

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Hutchinson, Kan	8,682	1,538	....
Hyde Park, Mass	10,193	3,146	3,184
Independence, Mo	6,380	3,146	3,184
Indianapolis, Ind	105,436	75,056	48,224
Iowa City, Iowa	7,016	7,123	5,914
Ironton, O	10,939	8,857	5,686
Iron Mountain, Mich	5,599	.....	....
Ironwood, Mich	7,745	.....	....
Ishpeming, Mich	11,197	6,039	6,103
Ithaca, N. Y	11,079	9,105	8,462
Jackson, Mich	20,798	16,105	11,447
Jackson, Tex	10,039	5,377	4,119
Jackson, Miss	5,920	5,204	4,234
Jacksonville, Fla	17,201	7,650	6,912
Jacksonville, Ill	12,935	10,927	9,202
Jamaica, N. Y	5,361	3,922	....
Jamestown, N. Y	16,038	9,357	5,336
Janesville, Wis	10,836	9,018	8,796
Jeffersonville, Ind	10,666	9,357	7,254
Jefferson City, Mo	6,742	5,271	4,420
Jersey City, N. J	163,443	120,722	82,546
Johnstown, R. I	9,778	5,765	4,192
Johnstown, Pa	21,805	8,380	6,028
Johnstown, N. Y	7,768	5,013	3,282
Joliet, Ill	23,264	11,657	7,263
Joplin, Mo	9,943	7,038	.....
Kalamazoo, Mich	17,853	8,057	9,181
Kankakee, Ill	9,025	5,651	5,189
Kansas City, Mo	132,716	55,785	32,260
Kansas City, Kan	38,316	3,202	.....
Kearney, Neb	8,074	1,782	.....
Keene, N. H	7,446	6,784	5,971
Kenosha, Wis	6,532	5,039	4,309
Kenton, O	5,557	3,940	.....
Keokuk, Iowa	14,101	12,117	12,766
Key West, Fla	18,085	6,890	5,016
Killingly, Conn	7,027	6,921	5,712
Kingston, N. Y	21,261	18,344	6,315
Kokomo, Ind	8,261	4,042	2,177
Knoxville, Tenn	22,535	9,693	8,682
Laconia, N. H	6,143	3,790	.....
LaCrosse, Wis	25,090	14,505	7,785
La Fayette, Ind	16,243	14,860	13,506
Lancaster, O	7,555	6,803	2,860
Lancaster, Pa	32,011	25,769	20,233
Lansing, Mich	13,492	8,319	5,241
Lansingburg, N. Y	10,550	7,432	6,372
La Porte, Ind	7,126	6,195	6,581
Laramie, Wyo	6,388	2,696	828
Laredo, Tex	11,319	3,521	2,046
La Salle, Ill	9,855	7,847	5,200
Lawrence, Mass	54,654	39,151	28,921
Lawrence, Kan	9,997	8,510	8,320
Leadville, Colo	10,384	14,820	.....
Leavenworth, Kan	19,768	16,546	17,873
Lebanon, Pa	14,664	8,778	6,727
Leominster, Mass	7,269	5,772	3,894
Lewiston, Me	21,701	19,083	13,0[illegible]

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Lexington, Ky.	21,567	16,656	14,801
Lima, O.	15,981	7,567	4,500
Lincoln, Ill.	6,200	5,639	.....
Lincoln, R. I.	20,355	13,765	7,689
Little Falls, N. Y.	8,783	6,910	5,367
Little Rock, Ark.	25,874	13,138	12,380
Litchfield, Ill.	5,811	4,326	3,852
Lock Haven, Pa.	7,358	5,845	6,996
Lockport, N. Y.	16,038	13,522	12,426
Logansport, Ind.	13,328	11,198	8,950
Long Branch, N. J.	7,231	2,838	.....
Long Island City, N. Y.	30,506	17,129	3,867
Los Angeles, Cal.	50,395	11,183	5,728
Louisiana, Mo.	5,090	4,325	3,639
Louisville, Ky.	161,129	123,758	100,752
Lowell, Mass.	77,096	59,475	40,928
Ludington, Mich.	7,517	4,190	.....
Lynchburg, Va.	19,709	15,959	8,995
Lynn, Mass.	55,727	38,274	28,233
Lyons, Iowa.	5,799	4,095	4,068
Macon, Ga.	22,748	12,479	10,810
Madison, Ind.	8,836	8,945	10,709
Madison, Wis.	13,426	10,324	9,176
Mahanoy, Pa.	11,286	7,181	5,539
Milton, Mass.	23 031	12.017	1,367
Manchester, N. H.	44,126	32,630	23,536
Manchester, Va.	9,246	5,729	2,599
Manchester, Conn.	8,222	6,462	4,223
Manistee, Mich.	12,812	6,930	3,343
Mankato, Minn.	8,838	5,550	3,482
Manitowoc, Wis.	7,710	6,367	5,168
Mansfield, O.	13,473	9,859	8,029
Marblehead, Mass.	8,202	7,467	7,703
Marietta, O.	8,273	5,444	5,218
Marion, Ind.	8,769	3,182	1,658
Marion, O.	8,327	3,899	2,531
Marinette, Wis.	11,523	2,750	.....
Marlboro, Mass.	13,805	10,127	8,474
Marquette, Mich.	9,093	4,690	4,000
Marshall, Tex.	7,207	5,624	1,920
Marshalltown, Iowa.	8,914	6,240	3,218
Martinsburg, W. Va.	7,226	6,335	4,863
Martin's Ferry, O.	6,250	3,819	.....
Massillon, O.	10,092	6,836	5,135
Mattoon, Ill.	6,833	5,737	4[illegible]
McKeesport, Pa.	20,741	8,212	[illegible]
Maysville, Ky.	5,358	5,220	[illegible]
Meadville, Pa.	9,520	8,860	7,103
Medford, Mass.	11,079	7,573	5,717
Melrose, Mass.	8,519	4,560	3,414
Memphis, Tenn.	64,495	33,592	40,228
Menominee, Mich.	10,630	3,288	1,597
Menominee, Wi	5,491	2,589	.....
Meriden, Conn.	21,652	15,540	10,496
Meridian, Miss.	10,624	4,008	2,709
Merrill, Wis.	6,809	.....	.....
Michigan City, Ind.	10,776	7,366	3,985
Middletown, Conn.	[illegible]	11,731	6,923

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Middletown, N. Y.	11,977	8,494	6,049
Middletown, Pa.	5,080	3,351	.....
Middletown, O.	7,681	4,538	3,046
Middleboro, Mass.	6,065	5,237	4,887
Milwaukee, Wis.	204,268	115,587	71,440
Millville, N. J.	10,002	7,660	6,101
Milford, Mass.	8,780	9,310	9,886
Milton, Pa.	5,377	2,102	.....
Minneapolis, Minn.	164,738	46,887	13,066
Mobile, Ala.	31,076	29,132	32,034
Moberly, Mo.	8,215	6,070	1,514
Moline, Ill.	12,000	7,800	4,166
Monmouth, Ill.	5,936	5,000	4,662
Monroe, Mich.	5,238	4,930	5,066
Montague, Mass.	6,296	4,675	2,224
Montgomery, Ala.	21,883	16,713	10,588
Morristown, N. J.	8,156	5,418	5,674
Mt. Carmel, Pa.	8,254	1,756	2,451
Mt. Vernon, O.	6,027	5,249	4,676
Mt. Vernon, N. Y.	10,830	4,586	.....
Muncie, Ind.	11,345	5,219	2,972
Muscatine, Iowa	11,454	2,295	6,718
Muskegon, Mich.	22,702	11,262	6,002
Nanticoke, Pa.	10,044	3,884	.....
Natick, Mass.	9,118	8,479	6,404
Nashua, N. H.	19,311	13,397	10,543
Nashville, Tenn.	76,168	43,350	25,865
Natchez, Miss.	10,101	7,058	9,057
Naugatuck, Conn.	6,218	4,274	2,830
Nebraska City, Neb.	11,494	4,183	6,050
Neenah, Wis.	5,083	4,202	2,955
Negaunee, Mich.	6,078	3,931	2,550
Nevada, Mo.	7,262	1,913	.....
Newark, N. J.	181,830	136,508	105,059
Newark, Ohio	14,270	9,600	6,698
New Albany, Ind.	21,059	16,423	14,397
New Bedford, Mass.	40,733	26,845	21,320
New Berne, N. C.	7,843	6,443	5,819
New Brighton, N. Y.	16,423	12,679	7,495
New Brighton, Pa.	5,616	3,653	.....
New Britain, Conn.	19,007	11,900	9,480
New Brunswick, N. J.	18,603	17,166	15,056
Newburg, N. Y.	23,807	18,049	17,014
Newburyport, Mass.	13,947	13,538	12,595
New Castle, Pa.	11,600	8,418	6,164
New Haven, Conn.	81,299	62,882	50,840
New London, Conn.	13,757	11,537	9,576
New Orleans, La.	240,039	216,090	191,418
Newport, Ky.	24,918	20,433	15,087
Newport, R. I.	19,457	15,693	12,251
New Rochelle, N. Y.	8,217	.....	.....
Newton, Mass.	21,379	16,995	12,825
Newton, Kan.	5,605	2,601	.....
New York, N. Y.	1,515,301	1,206,299	942,292
Niagara Falls, N. Y.	5,502	3,220	.....
Norfolk, Va.	34,871	21,966	19,229
Norristown, Pa.	19,791	13,063	10
North Adams, Mass.	16,074	10,191	..

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Northampton, Mass.	14,990	12,172	16,160
North Attleboro, Mass.	6,727	.....	.....
Norwalk, Conn.	17,747	13,956	12,119
Norwalk, O.	7,195	5,704	4,498
Norwich, Conn.	16,156	15,112	16,653
Norwich, N. Y.	5,212	.....	.....
Oakland, Cal.	48,862	34,555	10,500
Oconto, Wis.	5,219	4,171	2,655
Ogden, Utah	14,889	6,069	3,127
Ogdensburgh, N. Y.	11,862	10,341	10,076
Oil City, Pa.	10,932	27,315	2,276
Oldtown, Me.	5,312	3,395	.....
Olean, N. Y.	7,358	3,036	.....
Omaha, Neb.	140,452	30,518	16,083
Oneida, N. Y.	6,063	3,934	.....
Oleonta, N. Y.	6,272	1,711	1,061
Orange, N. J.	18,844	13,207	9,348
Oshkosh, Wis.	22,836	15,748	12,663
Oskaloosa, Iowa.	6,758	4,598	3,204
Oswego, N. Y.	21,842	21,116	20,910
Ottawa, Ill.	..985	7,834	7,736
Ottawa, Kan.	6,248	4,032	2,941
Ottumwa, Iowa.	14,001	9,004	5,214
Owensboro, Ky.	9,837	6,231	3,437
Owosso, Mich.	6,564	2,501	2,065
Paducah, Ky.	12,797	8,036	6,866
Palestine, Tex.	5,838	2,997	.....
Palmer, Mass.	6,520	5,504	3,631
Pana, Ill.	5,077	3,009	.....
Paris, Tex.	8,254	3,980	.....
Parkersburg, W. Va.	8,408	6,582	5,546
Parsons, Kan.	6,736	4,199	.....
Passaic, N. J.	13,028	6,532	.....
Paterson, N. J.	78,347	51,031	33,579
Pawtucket, R. I.	27,633	19,030	6,619
Peabody, Mass.	10,158	9,028	7,343
Peekskill, N. Y.	9,676	6,893	6,560
Pekin, Ill.	6,347	5,993	5,696
Pensacola, Fla.	11,750	6,845	3,347
Peoria, Ill.	41,024	29,259	22,849
Perth Amboy, N. J.	9,512	4,808	2,861
Peru, Ill.	5,550	4,632	3,650
Peru, Ind.	7,028	5,280	3,617
Petersburg, Va.	22,680	21,656	18,950
Philadelphia, Pa.	1,046,964	847,170	674,022
Phillipsburg, N. J.	8,644	7,181	5,932
Phoenixville, Pa.	8,514	6,682	5,292
Pine Bluff, Ark.	9,952	3,203	2,081
Piqua, O.	9,090	6,631	5,967
Pittsburg, Pa.	238,617	156,389	86,076
Pittsburg, Kan.	6,697	624	.....
Pittsfield, Mass.	17,281	13,364	11,112
Pittston, Pa.	10,302	7,412	6,760
Plainfield, N. J.	11,267	8,125	5,095
Plattsburg, N. Y.	7,010	5,245	5,139
Plattsmouth, Neb.	8,392	4,175	1,944
[illegible]mouth, Mass.	7,314	7,093	6,238
[illegible]outh, Pa.	9,344	6,065	2,684

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Pontiac, Mich.	6,200	4,509	4,867
Portage, Wis.	5,143	4,346	3,945
Port Chester, N. Y.	5,274	3,254	.....
Port Huron, Mich.	13,543	8,883	5,973
Port Jervis, N. Y.	9,327	8,678	6,377
Portland, Me.	36,425	33,810	31,413
Portland, Ore.	46,385	17,577	8,293
Port Richmond, N. Y.	6,290	3,526	.....
Portsmouth, N. H.	9,827	9,690	9,211
Portsmouth, O.	12,394	11,321	10,592
Portsmouth, Va.	13,268	11,390	10,590
Portstown, Pa.	13,285	5,305	4,125
Portsville, Pa.	14,117	13,253	12,384
Poughkeepsie, N. Y.	22,206	20,207	20,080
Providence, R. I.	132,146	104,857	68,904
Provo City, Utah	5,159	3,432	.....
Pueblo, Colo.	24,558	3,217	.606
Putnam, Conn.	6,512	5,827	4,192
Quincy, Mass.	16,723	10,570	7,442
Quincy, Ill.	31,494	27,268	24,052
Racine, Wis.	21,014	16,031	9,880
Rahway, N. J.	7,105	6,455	6,258
Raleigh, N. C.	12,678	9,265	7,790
Reading, Pa.	58,061	43,278	33,930
Red Wing, Minn.	6,294	5,876	4,260
Revere, Mass.	5,668	2,263	.....
Richmond, Ind.	16,243	12,472	9,445
Richmond, Va.	81,388	66,600	51,038
Roanoke, Va.	16,159	669	.....
Rochester, N. Y.	133,896	89,366	62,386
Rochester, N. H.	7,396	5,784	4,103
Rochester, Minn.	5,321	5,103	3,953
Rockford, Ill.	23,584	13,129	11,049
Rock Island, Ill.	13,634	11,659	7,890
Rockland, Me.	8,174	7,599	7,074
Rockville, Conn.	7,772	5,902	.....
Rome, N. Y.	14,994	12,194	11,000
Rome, Ga.	6,957	3,877	3,199
Rutland, Va.	11,760	12,149	9,834
Saco, Me.	6,075	6,389	5,755
Sacramento, Cal.	56,336	51,420	16,283
Saginaw, Mich.	46,322	10,525	7,460
Salem, Mass.	30,801	27,563	24,117
Salem, N. J.	5,516	5,056	4,555
Salem, O.	5,780	4,041	3,700
Salina, Kan.	6,149	3,111	918
Salt Lake City, Utah	44,843	20,768	12,854
San Antonio, Tex.	37,573	20,550	12,256
Sandusky, O.	18,471	15,838	13,000
San Diego, Cal.	16,159	2,637	2,300
San Francisco, Cal.	298,997	233,959	149,473
San Jose, Cal.	18,000	12,567	9,089
Santa Barbara, Cal.	5,864	3,460	.....
Santa Cruz, Cal.	5,596	3,898	.....
Santa Fe, N. M.	6,185	6,635	4,765
Santa Rosa, Cal.	5,220	3,616	.....
Saratoga Springs, N. Y.	11,975	8,421	7,516
Sault Ste Marie, Mich.	5,760	1,947	.....

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Savannah, Ga	43,189	30,709	28,235
Schenectady, N. Y	19,902	13,655	11,026
Scranton, Pa	75,215	45,850	35,092
Seattle, Wash	42,837	3,533	1,107
Sedalia, Mo	14,068	3,561	4,560
Selma, Ala	7,622	7,529	6,484
Seneca Falls, N. Y	6,116	5,880	5,890
Seymour, Ind	5,337	4,250	2,372
Shamokin, Pa	14,403	8,184	2,282
Sharon, Pa	7,459	5,684	4,231
Sheboygan, Wis	16,359	7,314	5,310
Shelbyville, Ind	5,451	3,745	.....
Shenandoah, Pa	15,944	10,147	2,951
Sherman, Tex	7,335	6,090	1,439
Shreveport, Ind	11,979	8,009	4,607
Sing Sing, N. Y	9,327	6,578	4,696
Sioux City, Iowa	37,806	7,366	3,401
Sioux Falls, S. D	10,177	2,163	.....
Skowhegan, Me	5,068	3,860	.....
Somersworth, N. H	6,206	5,586	4,504
Somerville, Mass	40,152	24,933	14,685
South Bend, Ind	21,819	13,280	7,206
South Bethlehem, Pa	10,302	4,925	.....
South Bridge, Mass	7,655	6,464	5,208
South Chester, Pa	7,076	3,664	.....
South Easton, Pa	5,616	4,534	3,167
Southington, Conn	5,501	5,411	4,314
South Omaha, Neb	8,062	.....	.....
Spartanburg, S. C	5,544	3,253	.....
Spencer, Mass	8,747	7,466	3,952
Spokane Falls, Wash	19,822	350	.....
Springfield, Ill	24,963	19,743	17,364
Springfield, Mass	44,179	33,340	26,703
Springfield, Mo	21,850	6,522	5,565
Springfield, O	31,895	20,730	12,652
St. Albans, Vt	7,771	7,193	7,014
Stanford, Conn	15,700	11,297	9,714
Staunton, Va	6,975	6,664	5,120
St. Charles, Mo	6,161	5,014	5,570
St Cloud, Minn	7,686	2,462	2,161
Stillton, Pa	2,950	2,447	.....
Sterling, Ill	5,824	5,087	3,998
Steubenville, O	13,394	12,093	8,107
Stevens Point, Wis	7,896	4,449	1,810
Stillwater, Minn	11,260	9,055	4,124
St. Johnsbury, Vt	6,391	6,333	4,665
St. Louis, Mo	451,770	350,518	310,864
Stockton, Cal	14,424	10,282	10,068
Stoneham, Mass	6,155	4,890	4,513
Stoningham, Conn	7,184	7,355	6,313
St. Paul, Minn	133,156	41,473	20,030
Streator, Ill	11,414	5,157	1,486
Sunbury, Pa	5,930	4,077	3,131
Superior, Wis	11,983	655	.....
Syracuse, N. Y	88,143	51,792	43,051
Tacoma, Wash	36,006	1,098	75
Tamaqua, Pa	6,054	5,730	5,960
Tampa, Fla	5,532	720	.....

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Taunton, Mass	25,448	21,213	18,629
Terre Haute, Ind	30,217	26,042	16,103
Thomasville, Ga	5,514	2,555	.....
Thompson, Conn	5,580	5,051	3,804
Tiffin, O	10,801	7,879	5,648
Titusville, Pa	8,073	9,046	8,039
Tonawanda, N. Y	7,145	3,864	.....
Topeka, Kan	31,007	15,452	4,790
Toledo, O	81,434	50,137	31,584
Trenton, N. J	57,458	29,910	22,874
Trenton, Mo	5,039	3,312	.....
Trinidad, Colo	5,523	2,226	.....
Troy, N. Y	60,956	56,747	46,464
Tucson, Ariz	5,150	7,007	.....
Union, N. J	1,064	5,849	4,640
Uniontown, Pa	6,359	2,265	2,503
Urbana, O	6,510	6,252	4,276
Utica, N. Y	44,007	33,914	28,804
Vallejo, Cal	6,343	5,967	.....
Valparaiso, Ind	5,090	4,461	2,765
Van Wert, O	5,512	4,679	2,665
Vicksburg, Miss	13,378	11,814	12,443
Vincennes, Ind	8,853	7,680	5,449
Virginia City, Nev	8,511	10,917	7,058
Waco, Tex	14,445	7,295	3,003
Wakefield, Mass	6,982	5,547	4,135
Waltham, Mass	[illegible]	[illegible]	[illegible]
Ware, Mass	7,289	4,817	4,259
Warren, O	5,973	4,428	3,457
Washington, D. C	188,932	147,293	109,199
Washington, Ind	6,064	4,323	2,901
Washington, Pa	7,063	4,292	3,571
Washington, O	5,742	3,798	.....
Waterbury, Conn	28,646	17,806	10,326
Waterloo, Iowa	6,674	5,630	4,337
Watertown, Mass	7,073	5,426	4,326
Watertown, N. Y	14,725	10,697	9,330
Watertown, Wis	8,755	7,883	7,550
Waterville, Me	7,107	4,672	4,852
Waukesha, Wis	6,321	2,969	.....
Wausau, Wis	9,253	4,277	1,349
Webb City, Mo	5,043	1,598	.....
Webster, Mass	7,031	5,696	4,763
Wellsville, O	5,247	3,377	.....
West Bay City, Mich	12,981	6,397	.....
Westborough, Mass	5,195	3,601	.....
Westbrook, Me	6,632	3,981	.....
West Chester, Pa	8,028	7,046	5,630
Westerley, R. I	6,813	6,104	4,109
Westfield, Mass	9,805	7,587	6,519
West Springfield, Mass	5,077	4,149	2,606
West Troy, N. Y	12,967	8,820	10,693
Weymouth, Mass	10,866	10,570	9,010
Wheeling, W. Va	34,552	30,737	19,280
Wichita, Kan	23,853	4,911	689
Wilkes Barre, Pa	37,718	23,339	10,174
Williamsport, Pa	27,132	18,934	16,030
Willimantic, Conn	8,648	6,608	.....

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Wilmington, Del.	61,431	42,478	30,841
Wilmington, N. C.	20,076	17,350	13,446
Winchester, Va.	5,196	4,958	4,477
Winfield, Kan.	5,184	2,844	.....
Winona, Minn.	18,208	10,208	7,192
Winston, N. C.	8,018	2,854	443
Woburn, Mass.	13,499	10,931	8,560
Woonsocket, R. I.	20,830	16,050	11,527
Wooster, O.	5,901	5,840	5,419
Worcester, Mass.	84,655	58,291	41,105
Xenia, O.	7,301	7,026	6,377
Yonkers, N. Y.	32,033	18 892	12,733
York, Pa.	20,793	13,940	11,003
Youngstown, O.	33,220	15,435	8,075
Ypsilanti, Mich.	6,129	4,984	5,471
Zanesville, O.	21,009	18,113	10,011

The Dates of the Principal Battles of the Rebellion, Who Commanded in Each, and the Number killed on Both Sides.

Bull Run (first), July 21, 1861—North, General McDowell; killed, 481 ; South, General Beauregard ; killed, unknown. Shiloh, April 7, 1862 ; North, General Grant ; killed, 1,735; South, General A. S. Johnston; killed, 1,728. Seven Pines and Fair Oaks, May 31 and June 1, 1862—North, General McClellan; killed, 890; South, General J. E. Johnston; killed, 2,800. Antietam, Sept. 16 and 17, 1862—North, General McClellan; killed, 2,010; South, General Lee; killed, 3,500. Chancellorville, May 2 and 3, 1863—North, General Hooker; killed, 1,512; South, General Jackson; killed, 1,581. Gettysburg, July 1, 2 and 3, 1863—North, General Meade; killed, 2,834; South, General Lee; killed, 3,500. Vicksburg, July 3 and 4, 1863—North, General Grant; killed, 545; South, General Pemberton; killed, unknown. Chickamauga, Sept. 19-23, 1863—North, General Thomas; killed, 1,644; South, General Bragg; killed, 2,389. Wilderness, May 5-7, 1864—North, General Grant; killed, 5,597; South, General Lee; killed, 2,000. Spottsylvania, May 8-21, 1864—North, General Grant; killed, 4,177; South, General Lee; killed, 1,000. The above figures are based on medical official returns, and do not agree with returns of the Adjutant General. No two reports agree. The Adjutant General makes killed at Wilderness, 2,261, and at Spottsylvania 2,270; while General Meade's report, based on reports immediately after the battle, states killed at Wilderness at 3,288; at Spottsylvania 2,146.

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The Army Roster.

The United States Army foots up a grand total of 28,795 men, officers included, who represent a force of 2,174. The entire department costs yearly about $23,000,000. There are 675 officers on the retired list, and they cost $1,300,000 a year. The active officers of the army cost the Government $5,073,020 a year, and they form 7½ per cent. of the force, receiving over 56 per cent. of the pay. This does not include the retired officers.

Number of Men Called for by the U. S. Government During the Civil War.

Number of men called for, periods of service, and number of men obtained under each call:

Date of Call.	Number Called For.	Periods of Service.	Number Obtained.
April 15, 1861	75,000	3 months	93,326
May 3, 1861	82,748	3 years	714,231
July 22 and 25, 1861	500,000		
May and June, 1862		3 months	15,007
July 2, 1862	300,000	3 years	431,958
August 4, 1862	300,000	9 months	87,588
June 15, 1863	100,000	6 months	16,361
October 17, 1863	300,000	3 years	374,807
February 1, 1864	200,000		
March 14, 1864	200,000	3 years	284,021
April 23, 1864	85,000	100 days	83,652
July 18, 1864	500,000	1, 2, 3 years	384,882
December 19, 1864	300,000	1, 2, 3 years	204,568
Totals	2,942,748		2,690,401

The Catacombs of Paris.

The so-called catacombs of Paris were never catacombs in the ancient sense of the word, and were not devoted to purposes of sepulture until 1784. In that year the Council of State issued a decree for clearing the Cemetery of the Innocents, and for removing its contents, as well as those of other grave-yards, into the quarries which had existed from the earlier times under the city of Paris and completely undermined the southern part of the city. Engineers and workmen were sent to examine the quarries and to prop up their roofs lest the weight of buildings above should break them in. April 7, 1786, the consecration of the catacombs was performed with great solemnity, and the work of removal from the cemeteries was immediately begun. This work was all performed by night; the bones were brought in funeral cars, covered with a pall, and followed by priests chanting the service of the dead; and when they reached the catacombs the bones were shot down the shaft. As the cemeteries

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were cleared by order of the government, their contents were removed to this place of general deposit, and these catacombs further served as convenient receptacles for those who perished in the revolution. At first the bones were heaped up without any kind of order except that those from each cemetery were kept separate, but in 1810 a regular system of arranging them was commenced, and the skulls and bones were built up along the wall. From the main entrance to the catacombs, which is near the barriers d' Enfer, a flight of ninety steps descends, at the foot of which galleries are seen branching in various directions. Some yards distant is a vestibule of octagonal form, which opens into a long gallery lined with bones from floor to roof. The arm, leg, and thigh bones are in front, closely and regularly piled, and their uniformity is relieved by three rows of skulls at equal distances. Behind these are thrown the smaller bones. This gallery conducts to several rooms resembling chapels, lined with bones variously arranged. One is called the "Tomb of the Revolution," another the "Tomb of Victims," the latter containing the relics of those who perished in the early period of the revolution and in the "Massacre of September." It is estimated that the remains of 3,000,000 human beings lie in this receptacle. Admission to these catacombs has for years been strictly forbidden on account of the unsafe condition of the roof. They are said to comprise an extent of about 3,250,000 square yards.

New Orleans Cemeteries, Water-works, Etc.

As the soil in New Orleans is almost semi-fluid three feet below the surface, there are no graves in the cemeteries, but the dead are all buried in tombs above ground. Some of these are costly and beautiful structures of marble, iron, etc., but the most are large vaults of masonry, consisting of rows of cells superimposed on each other, generally to the height of seven or eight feet. Each cell is barely large enough to admit the coffin, and is hermetically bricked up at its narrow entrance as soon as the funeral rites have been performed. In most cases a marble tablet appropriately inscribed is placed over the brickwork by which the tomb is closed. These tombs are locally called "ovens." As for cellars, most buildings have none, though a part of the city has been imperfectly drained to admit of shallow excavations for this purpose. The water-works of New Orleans, which were constructed in 1836, conduct the river water through the city for domestic purposes. The majority of the dwellings have also cisterns for the reception of rain water, which is generally preferred to the water of the river.

The Catacombs of Rome.

Many of the catacombs are of great antiquity, probably having been hewn long before the Rome of Romulus and Remus was founded, and so extended, in course of time, that every one of the seven hills on which the city stood was perforated and honey-combed by passages, dark galleries, low

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corridors, and vaulted halls. What greatly facilitated the work was the light and soft nature of the material to be quarried, and the workmen were thus enabled to shape the shafts and galleries as they pleased. As the city grew in extent and wealth, these quarries were enlarged or new ones opened, until the decline of the empire began, and then old edifices were made to supply the materials to build new ones. But little is to be gleaned from the ancient writers as to the uses to which these subterranean recesses were put when they ceased to be quarried. Horace says of the caverns under the Esquilline Hill, that it "was the common sepulcher of the miserable plebeians." The catacombs were crowded with the Christians during the persecutions under Nero, Domitian, Trajan, Hadrian, Severus, Maximinus, and Diocletian, who found there retreats which saved them from the tyranny of the Roman royal pagans. It is held by some modern writers that though the quarries were used to some extent as sepulchers, it is evident that the greater part of the catacombs were originally constructed as places of interment for the dead. Each catacomb forms a net-work of passages, or galleries, intersecting each other at right angles, but sometimes diverging from a common center; these galleries, or passages, are usually about eight feet high, and from three to five feet wide. The graves are in tiers on the sides, and when undisturbed are found closed with marble slabs or tiles, on which are often inscriptions or Christian emblems. It has been estimated that the entire length of the catacombs is not less than 580 miles, and that they contain about 6,000,000 bodies. From being the refuge of persecuted Christians, they became about the thirteenth century the hiding-places of outlaws and assassins, who were, however, finally driven out or the entrances to their retreats closed. Many interesting and valuable works have been written on the subject, and fathers of the Christian church have spent their lives in investigating these wonderful caverns.

National Cemeteries.

National cemeteries for soldiers and sailors may be said to have originated in 1850, the army appropriation bill of that year appropriating money for a cemetery near the City of Mexico, for the interment of the remains of soldiers who fell in the Mexican war. The remains of Federal soldiers and sailors who fell in the war for the Union have been buried in seventy-eight cemeteries exclusive of those interred elsewhere, a far greater number. In the subjoined list are given the names and locations of the National Cemeteries, with the number therein buried, known and unknown.

	Known.	Unknown.
Cypress Hills, N. Y.	3,675	76
Woodlawn, Elmira, N. Y.	3,096	.....
Beverly, N. J.	142	7
Finn's Point, N. J.	.....	2,644
Gettysburg, Pa.	1,967	1,608

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	Known.	Unknown.
Philadelphia, Pa.	1,860	28
Annapolis, Md.	2,289	197
Antietam, Md.	2,853	1,811
Loudoun Park, Baltimore, Md.	1,627	166
Laurel, Baltimore, Md.	232	6
Soldiers Home, D. C.	5,313	288
Battle, D. C.	13	.....
Grafton, W. Va.	634	620
Arlington, Va.	11,911	4,349
Alexander, Va.	3,434	124
Ball's Bluff, Va.	1	24
Cold Harbor, Va.	672	1,281
City Point, Va.	3,779	1,374
Culpepper, Va.	454	910
Danville, Va.	1,171	155
Fredericksburg, Va.	2,487	12,770
Fort Harrison, Va.	289	575
Glendale, Va.	233	961
Hampton, Va.	4,868	494
Popular Grove, Va.	2,197	3,998
Richmond, Va.	841	5,709
Seven Pines, Va.	150	1,208
Staunton, Va.	233	520
Winchester, Va.	2,094	2,361
Yorktown, Va.	748	1,434
Newbern, N. C.	2,174	1,077
Raleigh, N. C.	625	553
Salisbury, N. C.	94	12,032
Wilmington, N. C.	710	1,398
Beaufort, S. C.	4,748	4,493
Florence, S. C.	199	2,799
Andersonville, Ga.	12,878	959
Marietta, Ga.	7,182	2,963
Barrancas, Fla.	791	657
Mobile, Ala.	751	112
Corinth, Miss.	1,788	3,920
Natchez, Miss.	308	2,780
Vicksburg, Miss.	3,896	12,704
Alexandria, La.	534	772
Baton Rouge, La.	2,468	495
Chalmette, La.	6,833	5,675
Port Hudson, La.	596	3,218
Brownsville, Texas.	1,409	1,379
San Antonio, Texas.	307	167
Fayetteville, Ark.	431	781
Fort Smith, Ark.	706	1,152
Little Rock, Ark.	3,260	2,337
Chattanooga, Tenn.	7,993	4,963
Fort Donelson, Tenn.	158	511
Knoxville, Tenn.	2,089	1,046
Memphis, Tenn.	5,159	8,317
Nashville, Tenn.	11,824	4,692

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	Known.	Unknown.
Pittsburgh Landing, Tenn	1,229	2,361
Stone River, Tenn	3,820	2,314
Camp Nelson, Ky	2,477	1,165
Cave Hill, Louisville, Ky	3,342	588
Danville, Ky	346	12
Lebanon, Ky	591	277
Lexington, Ky	894	105
Logan's, Ky	345	366
Crown Hill, Indianapolis, Ind	686	36
New Albany, Ind	2,138	676
Camp Butler, Ill	1,007	355
Mound City, Ill	2,505	2,721
Rock Island, Ill	280	9
Jefferson Barracks, Mo	8,569	2,906
Jefferson City, Mo	348	412
Springfield, Mo	845	713
Fort Leavenworth, Kan	821	913
Fort Scott, Kan	388	161
Keokuk, Iowa	610	21
Fort Gibson, I. T	212	2,212
Fort McPherson, Neb	149	291
City of Mexico, Mexico	254	750

The Death of J. Wilkes Booth.

After the shot in the theater at Washington, which resulted in the death of President Lincoln, Booth had scarcely escaped from the theater when special detectives and a squad of United States Cavalry were upon his track, for he had been recognized by some as he appeared for a moment after the shot. After being deluded several times, his pursuers finally learned that, accompanied by Harold, who had held his horse at the door of the theater, Booth had gone thirty miles into Maryland, and there had his broken leg dressed by a Doctor Mudd, who had also given him a crutch. For ten days longer he escaped, hiding in swamps and thickets; but he was at length traced to Garrett's barn, on Bowling Green, about twenty miles from Fredericksburg. The pursuing party, twenty-eight in number, reached the barn at dusk, and ordered Booth and Harold to surrender. The latter, after a short parley, yielded, but Booth declared that he would never be taken alive. In hope of driving him out, fire was set to some straw about the barn, but unintimidated he stood his ground, and was in the act of firing at one of his besiegers, when Colonel Conger commanded Sergeant Boston Corbett to shoot. The ball entered Booth's head, and two hours and a half later he died in great agony. Booth's body was originally buried in the grounds of the arsenal at Washington, under some willow trees, and the grave was unmarked, even by a mound. Very few people knew where it lay, and various stories of its disposition were current. In 1866 Edwin Booth, the actor, applied to President Johnson, through Mr. Weaver, the Sexton of Christ Church, Baltimore, for the possession of

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his brother's remains. An order was issued by the President directing the commandant at the arsenal to exhume and deliver the remains to Mr. Weaver, which was done in a very secret manner, for fear of public interference. The body was taken to a cemetery in Baltimore, where it was buried beside the elder Booth and other members of the family. The removal was not generally known for a long time afterward. Booth's brain and heart, and some bones that were taken from his leg, are on exhibition at the Army Medical Museum at Washington—the same building in which the assassination took place.

The conspiracy resulted as follows: Harold Payne, Atzerot, and Mrs. Surratt were hung; Arnold, Mudd, and McLaughlin were imprisoned for life, and Spangler for six years. Doctor Mudd was pardoned a few years later.

The Yellowstone Park.

The Yellowstone National Park extends sixty-five miles north and south and fifty-five miles east and west, comprising 3,575 square miles, and is 6,000 feet or more above sea-level. Yellowstone lake, twenty miles by fifteen, has an altitude of 7,788 feet. The mountain ranges which hem in the valleys on every side rise to the height of 10,000 to 12,000 feet, and are always covered with snow. This great park contains the most striking of all the mountains, gorges, falls, rivers, and lakes in the whole Yellowstone region. The springs on Gardiner's River cover an area of about one square mile, and three or four square miles thereabout are occupied by the remains of springs which have ceased to flow. The natural basins into which these springs flow are from four to six feet in diameter and from one to four feet in depth. The principal ones are located upon terraces midway up the sides of the mountain. The banks of the Yellowstone River abound with ravines and canons, which are carved out of the heart of the mountains through the hardest rocks. The most remarkable of these is the canon of Tower Creek and Column Mountain. The latter, which extends along the eastern bank of the river for upward of two miles, is said to resemble the Giant's Causeway. The canon of Tower Creek is about ten miles in length, and is so deep and gloomy that it is called "The Devil's Den." Where Tower Creek ends the Grand Canon begins. It is twenty miles in length, impassable throughout, and inaccessible at the water's edge, except at a few points. Its rugged edges are from 200 to 500 yards apart, and its depth is so profound that no sound ever reaches the ear from the bottom. The Grand Canon contains a great multitude of hot springs of sulphur, sulphate of copper, alum, etc. In the number and magnitude of its hot springs and geysers, the Yellowstone Park surpasses all the rest of the world. There are probably fifty geysers that throw a column of water to the height of from 50 to 200 feet, and it is stated that there are not fewer than 5,000 springs; there are two kinds, those depositing lime and those depositing silica. The temperature

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of the calcareous springs is from 160 to 170 degrees, while that of the others rises to 200 or more. The principal collections are the upper and lower geyser basins of the Madison River and the calcareous springs on Gardiner's River. The great falls are marvels to which adventurous travelers have gone only to return and report that they are parts of the wonders of this new American wonderland.

Famous American Caves.

The Mammoth Cave is in Edmondson County, near Green River, about seventy-five miles from Louisville. It was discovered in 1809 by a hunter named Hutchins, while in pursuit of a wounded bear. Its entrance is reached by passing down a wild, rocky ravine through a dense forest. The cave extends some nine miles. To visit the portions already traversed, it is said, requires 150 to 200 miles of travel. The cave contains a succession of wonderful avenues, chambers, domes, abysses, grottoes, lakes, rivers, cataracts, and other marvels, which are too well known to need more than a reference. One chamber—the Star—is about 500 feet long, 70 feet wide, 70 feet high, the ceiling of which is composed of black gypsum, and is studded with innumerable white points, that by a dim light resemble stars, hence the name of the chamber. There are avenues one and a half and even two miles in length, some of which are incrusted with beautiful formations, and present the appearance of enchanted palace halls. There is a natural tunnel about three-quarters of a mile long, 100 feet wide, covered with a ceiling of smooth rock 45 feet high. There is a chamber having an area of from four to five acres, and there are domes 200 and 300 feet high. Echo River is some three-fourths of a mile in length, 200 feet in width at some points, and from 10 to 30 in depth, and runs beneath an arched ceiling of smooth rock about 15 feet high; while the Styx, another river, is 450 feet long, from 15 to 40 feet wide, and from 30 to 40 feet deep, and is spanned by a natural bridge. Lake Lethe has about the same length and width as the river Styx, varies in depth from 3 to 40 feet, lies beneath a ceiling some 90 feet above its surface, and sometimes rises to a height of 60 feet. There is also a Dead Sea, quite a somber body of water. There are several interesting caves in the neighborhood, one three miles long, and three each about a mile in length.

Wyandotte Cave is in Jennings Township, Crawford County, Ind., near the Ohio River. It is a rival of the great Mammoth Cave in grandeur and extent. Explorations have been made for many miles. It excels the Mammoth Cave in the number and variety of its stalagmites and stalactites, and in the size of several of its chambers. One of these chambers is 350 feet in length, 245 feet in height, and contains a hill 175 feet high, on which are three fine stalagmites. Epsom salts, niter, and alum have been obtained from the earth of the cave.

Howe's Cave is situated thirty-nine miles from Albany, N.Y., and after the Luray Cave, Virginia, and the Mammoth Cave,

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Kentucky, is probably the most remarkable cavern known. Lester Howe, for whom it was named, discovered it in the year 1842. It is also called the Otsgaragee Cave. Howe, it is related, penetrated to a distance of eleven or twelve miles, but visitors do not generally go farther than about four miles. The cave is lighted by gas as far as a body of water called the Stygian Lake. The entrance is about fifty feet above the valley, and the rock chambers known as the Reception-room, Washington Hall, the Bridal Chamber, and the Chapel, are successively reached. Then the Harlequin Tunnel is traversed, and the visitor passes through Cataract Hall, Ghost Room, and Music Hall. The Stygian Lake is 10 feet deep, and is 30 by 20 feet in extent. Fine stalagmites appear both above and below the lake. The visitor crosses the lake in a small boat, landing on Plymouth Rock, whence the path follows a small brook, and traverses the chambers and passages known as the Devil's Gateway, Museum, Geological Room, Uncle Tom's Cabin, Giants' Study, Pirates' Cave, Rock Mountains, and Valley of Jehoshaphat. Then the Winding Way is succeeded by the Rotunda. The stalactites and stalagmites are abundant and beautiful. The cave, as far as it is usually traversed by visitors, is one of the wonders of the continent.

Origin of Petroleum.

Professor Mendeleeff has advanced the theory that petroleum is of mineral origin, and that its production is going on and may continue almost indefinitely. His hypothesis is that water finds its way below the crust of the earth, and there meets with carbides of metals, particularly of iron, in a glowing state. Oil-bearing strata occur in the neighborhood of mountain regions, where it may be supposed that the dislocations of the strata afford passages for the access of the water. The water is decomposed into its constituent gases; the oxygen unites with the iron, while the hydrogen takes up the carbon and ascends into higher regions, where part of it is condensed into mineral oil, and part remains as natural gas, to escape where it can find an outlet, or to remain stored at great pressure until a bore-hole is put down to provide it a passage to the surface.

In What Way and by Whom Coal Oil Was Discovered.

Like many other similar discoveries, that of coal oil has been traced simultaneously to several localities and persons. It is certain, however, that for many years oil had been observed floating on the surface of the water in a well not far from Titusville, Pa., and while it was used it was merely in a small way, and for medicinal purposes. In the year 1853 Dr. Brewer suggested its use for lighting and lubricating, and in 1854 the first of the oil companies was formed, but the dull times came and the operations of the concern were in a rather indifferent condition. However, Messrs. Drake and Bowditch, of the company referred to, concluded that they would

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sink a well, and they were at once satisfied by seeing from 400 to 1,000 gallons of oil a day being the product. The "boom" thus given caused thousands to flock to the oil regions, and in two or three years experiment had shown pretty nearly the boundaries and capacity of the oil producing region. Up to 1861 the wells found were those where the oil had to be pumped out by various methods, all the way from the common pump up to the most improved machinery, and in quantities varying with the apparatus employed. But in the year just indicated the first large flowing well was struck, and the oil rose so plenteously as to flow over the surface, yielding from 800 to 1,000 barrels daily. The oil region of the Keystone State is but one of several extensive districts on this continent which are very productive, and the assertion may be ventured that we know very little of the boundless supplies which a Great First Cause has hidden away in the earth until we need them.

Chicago's Great Fires.

There were 2,100 acres of land burned over, nearly all of which area was thickly covered with buildings. There were nearly 18,000 buildings destroyed, of which about 2,400 were stores and factories; and there were but few short of 100,000 people rendered homeless by the calamity. The extreme length of the burnt district was 3¾ miles, and its greatest width a little over a mile. The fire of July, 1874, originated on South Clark street, between Taylor and Twelfth, and spread north-east to Michigan avenue. It was estimated that in this fire about fifty acres were burned over, many of the new buildings which had been erected after the great fire of 1871 having been leveled. The loss of property in the great fire of 1871 was $192,000,000, after allowing $4,000,000 for salvage on foundations of buildings. This estimate does not include the shrinkage of real estate values, or the large loss to mercantile interests by the interruption of trade consequent upon the destruction of stocks and business facilities. Mr. Colbert estimated the grand aggregate not very much below $290,000,000. The loss occasioned by the fire of 1874 was estimated as follows: The net loss to insurance companies was officially placed at $2,244,970, or 40 per cent. of the entire loss, making an estimated total loss of $5,612,425. The cash contributions to Chicago within three mo. as after the fire amounted to $4,200,000.

Great Fires of History.

The loss of life and property in the willful destruction by fire and sword of the principal cities of ancient history—Nineveh, Babylon, Persepolis, Carthage, Palmyra, and many others—is largely a matter of conjecture. The following is a memorandum of the chief conflagrations of the current era:

In 64, A. D., during the reign of Nero, a terrible fire raged in Rome for eight days, destroying ten of the fourteen wards. The loss of life or destruction of property is not known.

In 70, A. D., Jerusalem was taken by the Romans and a large part of it given to the torch, entailing an enormous destruction of life and property.

In 1106 Venice, then a city of immense opulence, was almost wholly consumed by a fire, originating in accident or incendiarism.

In 1212 the greater part of London was burned.

In 1666 what is known as the Great Fire of London raged in the city from Sept. 2 to 6, consuming 13,200 houses, with St. Paul's Church, 86 parish churches, 6 chapels, the Guild Hall, the Royal Exchange, the Custom House, 52 companies' halls, many hospitals, libraries, and other public edifices. The total destruction of property was estimated at $58,672,500. Six lives were lost, and 436 acres burnt over.

In 1679 a fire in Boston burned all the warehouses, eighty dwellings, and vessels in the dock-yards; loss estimated at $1,000,000.

In 1700 a large part of Edinburgh was burned; loss unknown.

In 1728 Copenhagen was nearly destroyed; 1,650 houses burned.

In 1736 a fire in St. Petersburg burned 2,000 houses.

In 1729 a fire in Constantinople destroyed 12,000 houses, and 7,000 people perished. The same city suffered a conflagration in 1745, lasting five days; and in 1750 a series of three appalling fires—one in January, consuming 10,000 houses; another in April, destroying property to the value of $5,000,000, according to one historian, and according to another, $15,000,000; and in the latter part of the year another, sweeping fully 10,000 houses more out of existence. It seemed as if Constantinople was doomed to utter annihilation.

In 1751 a fire in Stockholm destroyed 1,000 houses; and another fire in the same city in 1759 burned 250 houses, with a loss of $2,420,000.

In 1752 a fire in Moscow swept away 18,000 houses, involving an immense loss.

In 1758 Christiania suffered a loss of $1,250,000 by conflagration.

In 1760 the Portsmouth (Eng.) dock-yards were burned, with a loss of $2,000 000.

In 1764 a fire in Konigsburg, Prussia, consumed the public buildings, with a loss of $3,000,000; and in 1769 the city was almost totally destroyed.

In 1763 a fire in Smyrna destroyed 2,600 houses, with a loss of $1,000,000; in 1772 a fire in the same city carried off 3,000 dwellings, and 3,000 to 4,000 shops, entailing a loss of $20,000,000; and in 1776 there were 4,000 shops, mosques, magazines, etc., burned.

In 1776, six days after the British seized the city, a fire swept off all the west side of New York city, from Broadway to the river.

In 1771 a fire in Constantinople burned 2,500 houses; another in 1778 burned 2,000 houses; in 1782 there were 600 houses burned, in February, 7,000 in June, and on Aug. 12,

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during a conflagration that lasted three days, 10,000 houses, 50 mosques, and 100 corn mills, with a loss of 100 lives. Two years later a fire, on March 13, destroyed two-thirds of Pera, the loveliest suburb of Constantinople, and on Aug. 5 a fire in the main city, lasting twenty-six hours, burned 10,000 houses. In this same fire-scourged city, in 1791, between March and July, there were 32,000 houses burned, and about as many more in 1795; and in 1799 Pera was again swept with fire, with a loss of 13,000 houses, including many buildings of great magnificence.

In 1784 a fire and explosion in the dock-yards, Brest, caused a loss of $5,000,000.

But the greatest destruction of life and property by conflagrations, of which the world has anything like accurate records, must be looked for within the current century. Of these the following is a partial list of instances in which the loss of property amounted to $3,000,000 and upward:

Dates.	Cities.	Property Destroyed.
1802	Liverpool	$ 5,000,000
1803	Bombay	3,000,000
1805	St. Thomas	30,000,000
1808	Spanish Town	7,500,000
1812	Moscow, burned five days; 30,800 houses destroyed	150,000,000
1816	Constantinople, 12,000 dwellings, 3,000 shops	.....
1820	Savannah	4,000,000
1822	Canton, nearly destroyed	.....
1828	Havana, 350 houses	.....
1835	New York ("Great Fire")	15,000,000
1837	St. John, N. B.	5,000,000
1838	Charleston, 1,158 buildings	3,000,000
1841	Smyrna, 12,000 houses	.....
1842	Hamburg, 4 219 buildings, 100 lives lost	35,000,000
1845	New York, 35 persons killed	7,500,000
1845	Pittsburgh, 1,100 buildings	10,000,000
1845	Quebec, May 28, 1,650 dwellings	3,750,000
1845	Quebec, June 28, 1,300 dwellings	.....
1846	St. Johns, Newfoundland	5,000,000
1848	Constantinople, 2,500 buildings	15,000,000
1848	Albany, N. Y., 600 houses	3,000,000
1849	St. Louis	3,000,000
1851	St. Louis, 2,500 buildings	11,000,000
1851	St. Louis, 500 buildings	3,000,000
1851	San Francisco, May 4 and 5, many lives lost	10,000,000
1851	San Francisco, June	3,000,000
1852	Montreal, 1,200 buildings	5,000,000
1861	Mendoza, destroyed by earthquake and fire, 10,000 lives lost	.....
1862	St. Petersburg	5,000,000
1862	Troy, N. Y., nearly destroyed	.....
1862	Valparaiso, almost destroyed	.....
1864	Novgorod, immense destruction of property	.....

Edison Clark

Dates.	Cities.	Property Destroyed.
1865	Constantinople, 2,800 buildings burned	.....
1866	Yokohama, nearly destroyed	.....
1865	Carlstadt, Sweden, all consumed but Bishop's residence, hospital, and jail; 10 lives lost.	.....
1866	Portland, Me., half the city	11,000,000
1866	Quebec, 2,500 dwellings and 17 churches	.....
1870	Constantinople, Pera suburb	26,000,000
1871	Chicago, 250 lives lost, 17,430 buildings burned, on 2,124 acres	192,000,000
1871	Paris, fired by the Commune	160,000,000
1872	Boston	75,000,000
1873	Yeddo, 10,000 houses	.....
1877	Pittsburgh, caused by riot	3,260,000
1877	St. Johns, N. B., 1,650 dwellings, 13 lives lost	12,500,000
1889	Seattle, Wash	20,000,000

From the above it appears that the five greatest fires on record, reckoned by destruction of property, are:

Chicago fire, of Oct. 8 and 9, 1871	$192,000,000
Paris fires, of May, 1871	160,000,000
Moscow fire, of Sept. 14-19, 1812	150,000,000
Boston fire, Nov. 9-10, 1872	75,000,000
London fire, Sept. 2-6, 1666	53,652,500
Hamburg fire, May 5-7, 1842	35,000,000

Taking into account, with the fires of Paris and Chicago, the great Wisconsin and Michigan forest fires of 1871, in which it is estimated that 1,000 human beings perished and property to the amount of over $3,000,000 was consumed, it is plain that in the annals of conflagrations that year stands forth in gloomy pre-eminence.

The Life of Beatrice Cenci.

Beatrice Cenci was a beautiful Roman girl, who was born about 1583, and executed in September, 1599. Her father was Francesco Cenci, Minister of Finance of Pius V., and a man of dissolute habits. Beatrice and her step-mother were taken to a desolate castle among the Sabine hills near the Neapolitan frontier, and there subjected to every species of indignity. A terrible story is told of the acts of Cenci toward his daughter, who appealed in vain to the Pope for protection and then the girl, with her step-mother, resolved to rid themselves of the brutal father and husband. They employed two assassins to waylay and kill Francesco, but these failed, and then on Sept. 9, 1598, Beatrice and her step-mother drugged him, and assassins were sent into his room, where he was killed while asleep. One of the murderers made a confession, and Beatrice, her step-mother, and two brothers were charged with the instigation of the crime and put to the torture. The step-mother and Beatrice's brother, Giacomo, admitted their guilt, but Beatrice, although then but 16 years old, long persisted in maintaining her innocence.

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They probably would have been pardoned, but while the Pope was considering their case, the Princess of Santa Croce was murdered by her son, and the fate of Beatrice, her brother Giacomo, and their step-mother, Lucrezia Petroni, was decided, and they were executed. To the end Beatrice displayed great courage. Her remains were interred at Montorio, in the Church of San Pietro, and the vast estates of the family were confiscated and bestowed on members of the Aldobrandini and Borghese families, relatives of Pope Clement VIII. and the future Paul V. There was intense indignation among the people, who did not believe Beatrice was guilty, and the estates were finally in part restored to the heirs of Giacomo. The poet Shelley has founded a drama upon the story.

Foul Air in Wells.

A good extemporized apparatus for removing carbonic acid gas from wells is simply an opened-out umbrella let down and rapidly hauled up a number of times in succession. The person who made and reports this experiment states that the effect was to remove the gas in a few minutes from a well so foul as to instantly extinguish a candle previous to the use of the umbrella.

The Mountain Meadows Massacre.

John D. Lee, a "bishop" of the Mormon Church, was shot at Mountain Meadows, March 23, 1877, for the part he took in the wholesale and cold-blooded murder perpetrated there by white "saints" and red sinners twenty years before. The man Lee left a confession, which was widely printed after his execution, and which contained in detail the substantial facts of the massacre. Early in September, 1857, a party of immigrants known as "the Arkansas Company" arrived in Utah from the East, on their way to California. One of the Mormons named Laney, then living in Utah, had given some food to two of the immigrants, and this came to the ears of certain leading "saints." It appears that Laney had some time previous been a Mormon missionary, and had labored in the interest of his sect in Tennessee, where he was assailed by a mob. He was rescued by two men, father and son, named Aden, and found his way back to Utah. The two men to whom he had given some food were the Adens, father and son, who were recipients of Laney's hospitality, extended to them out of gratitude. For this act Laney was murdered by an "angel of death," at the instigation of a Mormon "bishop." While the immigrant company were on their way West, the Mormon leaders, among whom were "Bishop" Dame (who instigated, as Lee claimed, the murder of Laney), George A. Smith (then "First Counselor of the Church," and Brigham Young's right-hand man), and another Mormon dignitary named Haight, as well as Lee, conspired to massacre the entire outfit. The "saints" claimed that immigrants who had passed through Utah en route to California, had on several occasions treated them and their people with indignities;

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h d stolon or destroyed their property, and had given the Mormons just cause for complaint. The followers of Young and his "bishops" and head men had won over to their interests the Indians residing near and among them, and had sent out Mormon runners, who gathered in the Indians to the number of several hundred to aid them in the butchery. Under the lead of the Mormons the Indians attacked the immigrants, killing some and wounding many more. Then there was a lull in the fight. The immigrants had defended themselves behind their wagons and in pits thrown hastily up in their camp. Then it was urged among the Mormon leaders, who held a council of war, that the immigrants be starved out, but the majority were for carrying out orders which were said to have been dictated by Brigham Young himself. It was arranged that there be a flag of truce, the Indians to be kept quiet until this was accomplished. The pilgrims responded to this, and were advised by the Mormons to put away their arms in their wagons and move to another point. This they did. The road they were to take was marked out, and the Mormons and Indians were secreted along the trail behind rocks and within easy range of the passing wagons. When the unsuspecting company were driving past they were halted by their Mormon guides, the Indians and the rest of the Mormons rushed in upon them, and dispatched them, man, woman, and child. Only a few of the children escaped. The wagons of the unfortunates were emptied, the bodies of the slain were stripped and left nude for the time, and later were thrown into shallow graves in a ravine near by. The remains were soon scented by the wolves and were unearthed and made a horrid repast. When the military found the bones they gave them a decent burial, and some one carved on a rude stone raised over the graves the words, "Vengeance is mine! I will repay, saith the Lord." It was claimed by John D. Lee that Brigham Young knew of and permitted the massacre.

Familiar Quotations.

An old proverb says, "An apt quotation is as good as an original remark," and so we deem it. We consider them golden links by which the mediocre binds together his unpolished blades of language into sheaves of the choicest expression. Those to whom nature has not presented the silver-coated tongue, this is their needed help. In all manner of speech, of declamation, composition, and discussion, there's naught that puts such animation, expression, and emphasis into the sentences as frequent sprinkling in of gems of thought molded by those who, though dead, are still alive. We pen the following for the benefit of many who have not access to anything which treats of the origin of many of our commonest sayings and gems of thought, which have become household expressions:

"Delays have dangerous ends."—*Shakespeare.*

"Smooth runs the water where the brook runs deep."—*Ibid.*

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"Uneasy lies the head that wears the crown—*Shakespeare.*

"The ripest fruit first falls.—*Ibid.*

"How bitter a thing it is to look into happiness through another man's eyes."—*Ibid.*

"I cannot tell what the dickens his name is "—*Ibid.*

"Don't put too fine a point to your wit for fear it should get blunted."—*Cervantes.*

"Every one is the son of his own works."—*Ibid.*

"Better late than never."—*Thomas Tusser.*

"At Christmas play, and make good cheer,
For Christmas comes but once a year."—*Ibid.*

"A rolling stone gathers no moss."—*Gosson.*

"One half the world knoweth not how the other half liveth."—*Rabelais.*

"Man proposes and God disposes."—*Thomas Kempis.*

"Of two evils the less is always to be chosen."—*Ibid.*

"And yet he had a thomb of gold."—*Chaucer.*

"The tree of liberty only grows when watered by the blood of tyrants."—*Bertrand Barere.*

"Millions for defense, but not one cent for tribute."—*Charles Pinckney.*

"All men are created equal."—*Jefferson.*

"Man wants but little here below, nor wants that little long."—*Goldsmith.*

"Ask me no questions and I'll tell you no fibs."—*Ibid.*

A Famous Phrase.

Patrick Henry, in March, 1775, delivered a speech in the Virginia Convention in favor of a resolution "that the colony be immediately put in a state of defense." In concluding his address, the impassioned son of Hanover County said: "Is life so dear, or peace so sweet, as to be purchased at the price of chains and slavery? Forbid it, Almighty God! I know not what course others may take; but as for me, give me liberty, or give me death!"

Author of "Nearer, My God, to Thee."

Mrs. Sarah Flower Adams was the authoress of the grand hymn. This lady was born in Cambridge, England, in the month of February, 1805. Her father was the editor of a weekly Cambridge paper, and the same authority informs us that her mother was a woman of fine gifts and culture. The sweet hymn-writer was the youngest child, and was early noted for the taste which she manifested in literature, and later in life for great zeal and earnestness in her religious life. She is said to have contributed both prose and verse to the periodicals of her day, and to have her criticisms in art matters highly esteemed. She wrote a catechism for children, which was published in the year 1845. She married young, was of frail constitution, but was always, even with many creature complaints, very busy with her literary labors. At just what time and under what circumstances she wrote the great hymn is not known. It was first published in 1841, but

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the authoress never knew the fame which the sacred song brought her. Mrs. Adams died at the age of 44, and since then the lines she penned have been singing themselves round the world.

The World's Seven Wonders.

The seven wonders of the world are: The Pyramids, the Colossus of Rhodes, Diana's Temple at Ephesus, the Pharos of Alexandria, the Hanging Gardens at Babylon, the Statue of the Olympian Jove, and the Mausoleum by Artemisia at Halicarnassus. The Pyramids are numerous, and space forbids anything like even a list of them. The great piles were constructed of blocks of red or syenitic granite, and of a hard calcareous stone. These blocks were of extraordinary dimensions, and their transportation to the sites of the pyramids and their adjustment in their places, indicate a surprising degree of mechanical skill. The Great Pyramid covers an area of between twelve and thirteen acres. The masonry consisted originally of 89,028,000 cubic feet, and still amounts to about 82,111,000 feet. The present vertical height is 450 feet, against 479 feet originally, and the present length of the sides is 746 feet, against 764 feet originally. The total weight of the stone is estimated at 6,316,000,000 tons. The city of Rhodes was besieged by Demetrius Poliorcetes, King of Macedon, but, aided by Ptolomy Soter, King of Egypt, the enemy were repulsed. To express their gratitude to their allies and to their tutelary deity, they erected a brazen statue to Apollo. It was 105 feet high, and hollow, with a winding staircase that ascended to the head. After standing fifty-six years, it was overthrown by an earthquake, 224 years before Christ, and lay nine centuries on the ground, and then was sold to a Jew by the Saracens, who had captured Rhodes, about the middle of the seventh century. It is said to have required nine hundred camels to remove the metal, and from this statement it has been calculated its weight was 720,000 pounds. The Temple of Diana, at Ephesus, was built at the common charge of all the Asiatic States. The chief architect was Chersiphon, and Pliny says that 220 years were employed in completing the temple, whose riches were immense. It was 425 feet long, 225 broad, and was supported by 125 columns of Parian marble (sixty feet high, each weighing 150 tons), furnished by as many kings. It was set on fire on the night of Alexander's birth by an obscure person named Erostratus, who confessed on the rack that the sole motive which prompted him was the desire to transmit his name to future ages. The temple was again built, and once more burned by the Goths in their naval invasion A. D., 256. The colossal statue of Jupiter in the temple of Olympia, at Elis, was by Phidias. It was in gold and ivory, and sat enthroned in the temple for 800 years, and was finally destroyed by fire about A. D. 475. From the best information, it is believed that the Mausoleum at Halicarnassus was a rectangular building surrounded by an Ionic portico of

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thirty-six columns, and surmounted by a pyramid, rising in twenty-four steps, upon the summit of which was a colossal marble quadriga with a statue of Mausolus. The magnificent structure was erected by Artemisia, who was the sister, wife, and successor of Mausolus.

Castle Garden.

Castle Garden is a historic spot. It was originally a fort, and afterward was transformed into a summer garden, and in that way derived the name it now bears. Half a century ago it was used for civic and military displays and receptions. In 1824 Lafayette revisited America, and a grand ball was given in his honor at Castle Garden, and President Jackson, in 1832, and President Tyler, in 1843, were publicly received there. Later it became a concert hall, and there Jenny Lind made her first appearance in this country. In 1855 the immigrant depot was established within its walls. The present building at Castle Garden was erected after the partial destruction by fire of the original structure in 1876.

The Blarney Stone.

Blarney is a village in Ireland, in the County of Cork, about five miles from the far-famed city of that name. It is chiefly celebrated as giving the name to a peculiar kind of eloquence which is said to be characteristic of the light-hearted natives of the Emerald Isle. The old castle at Blarney contains the identical stone, the kissing of which is believed to give the person peculiar skill in speech. It is one of those superstitions which can be traced back until the mind of man runneth not to the contrary.

The Big Trees of California.

The big trees of Calaveras and Mariposa Counties, in California, belong to the same genus as the common redwood. This giant of the Sierras is not a handsome tree, either when young or aged; the branches are short, the spray less graceful than the coast redwood, the leaves small and awl-shaped, but the cones are several times larger, and the wood is of a duller reddish hue. The forests were first seen by white men in the spring of 1852, when a hunter named Dowd conducted a party of miners to the locality where the big trees grew. In the several groves where they have been found, there are many trees from 275 to 335 feet high, and from 25 to 34 feet in diameter. The area of Mariposa Grove is two miles square, and it contains 427 of the monster trees. The largest in the Calaveras Grove is "The Keystone State," and is 325 feet high, and its girth six feet from the ground is 45 feet. There are some in the Mariposa Grove which are not so high, but which have a greater circumference. "The Grizzly Giant," for example, being 93 feet at the ground, and over 64 eleven feet above. Some dozen miles south of the Mariposa Grove is the Fresno Grove, which is said to contain about 600 trees, the largest 81 feet in circumference; while

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about fifty miles north of the Calaveras, in Placer County, a small grove has been discovered. Careful computations have been made of the ages of these trees, and some cautious scientists admit, in regard to one of them, that "its age cannot have exceeded 1,300 years!"

The Language of Precious Stones.

Diamond, innocence; ruby, beauty and elegance; emerald, success in love; opal, hope; amethyst, sincerity; topaz, fidelity; garnet, constancy and fidelity; turquois, prosperity; cornelian, contented mind; sardonyx, conjugal felicity; agate, health and long life; bloodstone, courage.

Destroying the Germs of Consumption.

It is satisfactory to know that to some extent two germicides for consumption have been discovered, the one gaseous and the other liquid. Salicylic acid, however, appears to be the more lastingly successful. Perhaps a better germicide may be found, yet the principle of the method of treatment is quite revolutionary. In consumption the blood contains living bacilli-tubercles; and this system introduces into the blood by injections the microbes of salicylic acid to kill the bacilli. When the bacilli are destroyed nature will have a chance of repairing the damage done. The highest rate of consumption is in the New England States; the lowest in the Southern and Western States, and especially in the Territories.

The Natural Bridge of Virginia.

It is one of the most wonderful structures nature has left to show her handiwork. The bridge spans the mountain chasm in which flows the little stream called Cedar Creek, the bed of which is more than two hundred feet below the surface of the plain. The middle of the arch is forty-five feet in perpendicular thickness, which increases to sixty at its juncture with the vast abutments. It is sixty feet wide, and its span is almost ninety feet. Across the top is a public road, and being on the same level with the neighboring country, one may cross it in a coach without being aware of the interesting place. It is on the abutments that many names are carved by persons who have climbed up the face of the precipice. For a number of years the name of Washington, cut in the rock when the Father of his Country was a lad, stood high above those of all the other daring spirits. In 1818, however, a student of Washington College, Virginia, James H. Piper by name, climbed from the foot to the top of the rock.

A Fact About Ourselves.

The average weight of male adults is 130 pounds, of women about 110 pounds. The average height of American recruits is about five feet nine inches; the average height of well-built men is five feet nine inches; of women five feet four inches. One inch of height should add two pounds of weight. The specific gravity of the body ranges from

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0,950 to 1.080. The heart weighs 260 grammes in women and 330 grammes (10¼ ounces) in men; the average weight is 292 grammes. The period of its maximum weight is between 50 and 80. The amount of blood in the body is one-thirteenth the weight of the body, or five or six quarts, or eleven or twelve pounds. A man dies when he has lost a fifth of his blood. The heart with each contraction ejects six ounces of blood from each ventricle, at a pressure in the ventricle of one-fourth of an atmosphere. The heart sends all the blood around the body twice every minute, or about thirty-five contractions. A deadly poison injected into a vein kills in 15 seconds, on the average; injected under the skin, in 4 minutes. A cubic millimeter of the blood contains 5,000,000 blood cells in men, 4,500,000 in women. There are 300 red cells to every one white blood cell. The red cells have an average diameter of 1.3200 inch, the white cells 1.2500 inch. The specific gravity of the blood is 1.055. The frequency of the pulse in the new born is 150; in infants of 1 year, 110; at 7 to 14 years, 85; in adult man, 72; in women, 80. The respirations are one-fourth as rapid as the pulse.

Mechanism of the Heart.

In the human subject the average rapidity of the cardiac pulsation for an adult male is about 70 beats per minute. These beats are more frequent, as a rule, in young children and in women, and there are variations within certain limits in particular persons, owing to peculiarities of organization. It would not necessarily be an abnormal sign to find in some particular individuals the habitual frequency of the heart's action from 60 to 65, or from 75 to 80 a minute. As a rule, the heart's action is slower and more powerful in fully developed and muscular organizations, and more rapid and feebler in those of slighter form. In animals the range is from 25 to 45 in the cold-blooded, and 50 upward in the warm-blooded animals, except in the case of the horse, which has a very slow heart-beat, only 40 strokes a minute. The pulsations of men and all animals differ with the sea level also. The work of a healthy human heart has been shown to equal the feat of raising 5 tons 4 cwt. one foot per hour, or 125 tons in twenty-four hours. The excess of this work under alcohol in varying quantities is often very great. A calculation has been made giving the work of the heart in mileage. Presuming that the blood was thrown out of the heart at each pulsation in the proportion of sixty-nine strokes per minute, and at the assumed force of nine feet, the mileage of the blood through the body might be taken at 207 yards per minute, seven miles per hour, 168 miles per day, 61,320 miles per year, 5,150,880 miles in a life-time of 84 years. The number of beats of the heart in the same long life would reach the grand total of 2,869,776,000.

The First Book in English.

So far as known, the first book ever written in English was a poem—"a Paraphrase"—as it is called—of the creation, the

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war in heaven, and of the fall of Satan, about the year 657. The author was Caedmon, a convert from paganism to Christianity. After the Norman conquest there seem to have been no books written in English until the reign of King John, which began in 1199. During this reign Layamon, a priest of Worcestershire, wrote a remarkable poem of 32,250 lines, called "Brut."

Designations of Groups of Animals.

The ingenuity of the sportsman is, perhaps, no better illustrated than by the use he puts the English language to in designating particular groups of animals. The following is a list of the terms which have been applied to the various classes:

A covey of partridges.	A cast of hawks.
A nide of pheasants.	A trip of dottrell.
A wisp of snipe.	A swarm of bees.
A flight of doves or swallows.	A school of whales.
A muster of peacocks.	A shoal of herrings.
A siege of herons.	A herd of swine.
A building of rooks.	A skulk of foxes.
A brood of grouse.	A pack of wolves.
A plump of wild fowl.	A drove of oxen.
A stand of plovers.	A sounder of hogs.
A watch of nightingales.	A troop of monkeys.
A clattering of choughs.	A pride of lions.
A flock of geese.	A sleuth of bears.
A herd or bunch of cattle.	A gang of elk.
A bevy of quails.	

Origin of the Pawnbrokers' Sign.

The three golden balls used as a pawnbroker's sign appeared in England in very early times. It was used by the Lombard merchants who emigrated to London from Italy. These established the first pawnbroker establishments, and it is generally held that they adopted the three golden balls to be borne on the arms of the Lombard corporation, from the armorial bearings of the Medici family, which was conspicuous among the Lombard merchant princes of Italy.

Elevation of the Lakes Above Tide.

	Feet.
Lake Ontario, elevation	247.25
Lake Erie, elevation	573.58
Lake Huron, elevation	581.92
Lake Michigan, elevation	581.92
Lake Superior, elevation	602.39

This is the mean average height of the lakes above tidewater in the Hudson, as shown by fifteen years' observation of Lake Ontario and Lake Erie, and by five years' observation of Lake Huron, Lake Michigan, and Lake Superior. There are remarkable periodic variations in the elevation of the lakes, particularly of Lake Erie. There is an annual fluctua-

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tion, and other fluctuations occur quite regularly in periods of several years, all of which must be taken into account in obtaining the mean elevation, while they explain in part the differences between earlier official data on this matter.

Weight of a Million Dollars.

The United States gold dollar contains 25.8 troy grains. A troy pound contains 5,760 troy grains, but the ordinary pound of currency, avoirdupois, weighs 7,000 troy grains. Therefore, $1,000,000 in United States gold coin weigh 3,686.4 pounds, avoirdupois. A United States standard silver dollar weighs 412.5 troy grains, and $1,000,000 in United States silver coin of the present standard weigh 56,931 pounds avoirdupois, or nearly 28¼ tons.

How Many Cubic Feet There Are in a Ton of Coal.

There is a difference between a ton of hard coal and one of soft coal. For that matter, coal from different mines, whether hard or soft, differs in weight, and consequently in cubic measure, according to quality. Then there is a difference according to size. To illustrate, caretul measurements have been made of Wilkesbarre anthracite, a fine quality of hard coal, with the following results:

Size of coal.	Cubic feet in ton of 2,240 lbs.	Cubic feet in ton of 2,000 lbs.
Lump	33.2	28.8
Broken	33.9	30.3
Egg	34.5	30.8
Stone	34.8	31.1
Chestnut	35.7	31.9
Pea	36.7	32.8

For soft coal the following measures may be taken as nearly correct; it is simply impossible to determine any exact rule, even for bituminous coal of the same district: Briar Hill coal, 44.8 cubic feet per ton of 2,240 pounds; Pittsburgh, 47.8; Wilmington, Ill., 47; Indiana block coal, 42 to 43 cubic feet.

Invisible Ink.

A recipe for making ink whose writing is only visible under the effect of heat. Invisible ink is made of several substances, but the most curious known is that made from cobalt. It is a very remarkable phenomenon that this ink may be made to disappear and reappear at pleasure. This property is peculiar to inks obtained from cobalt, for all the other kinds are at first invisible until some substance has been applied to make them appear; but when once they have appeared they remain. To prepare this ink, take zaffre and dissolve it in nitro-muriatic acid till the acid extracts from it the metallic part of the cobalt, which communicates to the zaffre a blue color; then dilute the solution, which is very acrid, with common water; if you write with this liquid on paper, the characters will be invisible; but when exposed to a sufli-

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cient degree of heat they will become green. When the paper has cooled they will disappear. Observe, if the paper be too much heated they will not disappear at all.

The History of Plymouth Rock.

A flat rock near the vicinity of New Plymouth is said to have been the one on which the great body of the Pilgrims landed from the Mayflower. The many members of the colony, who died in the winter of 1620-21, were buried near this rock. About 1738 it was proposed to build a wharf along the shore there. At this time there lived in New Plymouth an old man over 90 years of age named Thomas Faunce, who had known some of the Mayflower's passengers when a lad, and by them had been shown the rock on which they had landed. On hearing that it was to be covered with a wharf the old man wept, and it has been said that his tears probably saved Plymouth Rock from oblivion. After the Revolution, it was found that the rock was quite hidden by the sand washed upon it by the sea. The sand was clea ed away, but in attempting to take up the rock it was split in two. The upper half was taken to the village and placed in the town square. In 1834 it was removed to a position in front of Pilgrim Hall and inclosed in an iron railing. In September, 1880, this half of the stone was taken back to the shore and reunited to the other portion. A handsome archway was then built over the rock, to protect it in part from the depredations of relic hunters.

Wealth of Principal Na'ions.

The subjoined estimate is only an approximation, of course, but probably is as near the correct truth as such approximations ever are:

Argentine Republic	$ 1,660,000,000	Greece	$ 1,055,000,000
Australia	4,950,000,000	Holland	4,935,000,000
Austria	18,060,000,000	Italy	12,755,000,000
Belgium	4,030,000,000	Mexico	3,190,000,000
Canada	3,250,000,000	Norway	1,410,000,000
Denmark	1,830,000,000	Portugal	1,855,000,000
France	40,300,000,000	Spain	7,965,000,000
Germany	31,615,000,000	Sweden	3,475,000,000
Great Britain and Ireland	43,600,000,000	Switzerland	1,620,000,000
		United States	47,475,000,000

How Postage Stamps Are Made.

The design of the stamp is engraved on steel, and, in the printing, plates are used on which 200 stamps have been engraved. Two men are kept busy at work covering these with colored inks and passing them to a man and a girl who are equally busy printing them with large rolling hand-presses. Three of these little squads are employed all the time. After the small sheets of paper containing 200 printed stamps have dried enough they are sent into another room and gummed. The gum used for this purpose is a peculiar composition, made of the powder of dried potatoes and other vegetables

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mixed with water. After having been again dried, this time on little racks fanned by steam power for about an hour, they are put between sheets of pasteboard and pressed in hydraulic presses capable of applying a weight of 2,000 tons. The next thing is to cut the sheets in two; each sheet, of course, when cut, containing 100 stamps. This is done by a girl, with a large pair of shears, cutting by hand being preferred to that done by machinery, which would destroy too many stamps. They are then passed to another squad of workers, who perforate the paper between the stamps. Next, they are pressed once more, and then packed and labeled and stowed away to be sent out to the various offices when ordered. If a single stamp is torn or in any way mutilated, the whole sheet of 100 stamps is burned. Not less than 500,000 are said to be burned every week from this cause. The greatest care is taken in counting the sheets of stamps to guard against pilfering by the employees, and it is said that during the past twenty years not a single sheet has been lost in this way. During the process of manufacturing the sheets are counted eleven times.

A Building in Europe into Which no Woman Has Entered for 1,400 Years.

The building is the Monastery at St. Honorat, on the Island of St. Honorat, near Cannes, France. This establishment was founded near the end of the fourth century, and to this day no woman has been allowed to enter its precincts.

Secession and Readmission of Confederate States.

	Seceded.	Readmitted.
South Carolina	Dec. 20, 1860	June 11, 1868
Mississippi	Jan. 9, 1861	Feb. 3, 1870
Alabama	Jan. 11, 1861	June 11, 1868
Florida	Jan. 11, 1861	June 11, 1868
Georgia	Jan. 19, 1861	April 20, 1870
Louisiana	Jan. 26, 1861	June 11, 1868
Texas	Feb. 1, 1861	Mar. 15, 1870
Virginia	April 17, 1861	Jan. 15, 1870
Arkansas	May 6, 1861	June 20, 1868
North Carolina	May 21, 1861	June 11, 1868
Tennessee	June 24, 1861	July .. 1866

Substitute For Glass.

The new translucent substance intended as a substitute for glass has been satisfactorily adopted in some of the public buildings of London, and various advantages are claimed for it, among these being such a degree of pliancy that it may be bent backward and forward like leather, and be subjected to considerable tensile strain with impunity; it is also almost as translucent as glass and of a pleasing amber color, varying in shade from light golden to pale brown. The basis of the material is a web of fine iron wire, with warp and weft threads about one-twelfth of an inch apart, this being in-

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closed, like a fly in amber, in a sheet of translucent varnish, of which the base is linseed oil. There is no resin or gum in the varnish, and, once having become dry, it is capable of standing heat and damp without undergoing any change, neither hardening or becoming sticky. Briefly, the manufacture is accomplished by dipping the sheets edgewise into deep tanks of varnish, and then allowing the coating which they thus receive to dry in a warm atmosphere. It requires somewhat more than a dozen of these dips to bring the sheets to the required degree of thickness, and, when this has been accomplished, the material is stored for several weeks to thoroughly set.

A New Glass.

It is reported that a new kind of glass, of which phosphorus and boron form constituent elements, has been invented in Sweden. It possesses very high refractive power, far superior to that of the glass now used for optical purposes; and its discovery therefore is expected to effect great increase in microscopic and telescopic power.

Malleable Glass.

Neri, whose book on glass was published at Florence in 1612, says, "In the time of Tiberius was invented a way of making glass malleable, a thing afterward lost and to this day wholly unknown, nor if such a thing were now known, without doubt it would be more esteemed for its beauty and incorruptibility than silver or gold, since from glass there ariseth neither smell or taste, nor any other quality." But though unknown to the old Italian, the art was practiced in Persia, if we may believe Bailey, who says that in 1610 Sophi, Emperor of Persia, sent to King Philip III., of Spain, six glasses that were malleable and would not break by being hammered, and Blacourt tells that an inventor having presented a bust of malleable glass to Richelieu, 1620, was rewarded for his ingenuity by perpetual imprisonment, lest the vested interests of French glass-workers should be injured by the new invention.

How Looking-glasses Are Made.

After the glass has been carefully polished on both sides it is laid on a firm table (usually of stone), with upturned edges, and one or more sheets of tin-foil are laid upon the plate. Quicksilver is then spread over it, and at once forms an amalgam with the tin, making a reflecting surface. The process is simple enough in theory, but requires experience and skill to put it into practice with satisfactory results.

Discovery of Glass.

There is little or nothing known with certainty in regard to the invention of glass. Some of the oldest specimens are Egyptian, and are traced to about 1,500 years before Christ. Transparent glass is believed to have been first used about 750 years before the Christian era. The credit of the invention was given by the ancients to the Phœnicians. The story

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is a familiar one, of the Phœnician merchants who rested their cooking pots on blocks of natron (sub-carbonate of soda), and found glass produced by the union, under heat, of the alkali and the sand on the shore.

Philosophy of Some Common Things.

WHY CANNEL COAL IS SO CALLED.—Cannel coal is a corruption of candle coal. This kind of coal is very hard, and can be cut into blocks or strips, and, as it burns with a clear, yellow flame, was often used when first known as a substitute for candles.

WHY A SHOE SHINES WHEN POLISHED WITH BLACKING.—The philosophy of polish on any substance is simply the production by friction of such smoothness of the surface layer of its particles that they readily reflect the rays of light falling upon them. Different articles are used to aid in procuring this smoothness on different substances. With leather the best substance seems to be a paste containing bone-black—that is, the powder obtained from charred bones or ivory—to which is added a small quantity of acid to dissolve it, oil to preserve the soft texture of the leather, and treacle and gum to render the mass adhesive. A small portion of this rubbed over leather is but slightly absorbed, but renders the whole surface black, and by the help of vigorous friction the smooth surface of the leather necessary for the shining effect is induced.

THE CAUSE OF A WHIP CRACK OR POP.—The cracking of a knot on the end of a whip is simply the concussion of the air produced by its rapid movement. The effect differs with the material used for the whip-lash, because some textures present a much greater resistance to the air than others.

The First Cable Message.

The first message on the Atlantic cable of 1858, which soon proved a failure, was a congratulatory despatch from Queen Victoria to President Buchanan. The first message on the successful cable completed in 1866 was the announcement of the treaty of peace between Prussia and Austria. There are now 228 submarine telegraph cables, all told; some of them merely connecting islands with the main shore, or crossing narrow straits and arms of the sea, others thousands of miles in length. There is no direct cable between Africa and South America, but messages can be sent between these portions of the globe, via Cuba or the United States and Europe, or in some cases simply via Portugal through the Brazilian and South African cables. The French Atlantic cable was laid in 1879, by a company chartered in France, and composed at first chiefly of French capitalists. The greater part of each of the Atlantic cables lies too far below the surface to be disturbed by storms, tides, or currents. The shore ends are made much stronger and heavier, to withstand the action of waves and currents, and in some cases, near the landings, they are weighted to hold them in place; a thing entirely unnecessary in deep water.

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Is the Moon Inhabited?

From what is now known of the moon it is certain that if that body is inhabited it must be by beings organized very differently from the human race or any animals on the earth. The moon is without water and without atmosphere; and, owing to the fact that it revolves on its axis but once a month, so that the lunar days and nights are each nearly thirty times as long as our days and nights, the extremes of heat and cold range every month from 400 degrees Fahrenheit above zero to 300 below. In the midst of such conditions no form of animal or vegetable life known to this planet could possibly exist; and it is generally agreed among astronomers that the moon is utterly barren of life in any form.

The Largest Rivers in the World.

Name.	Miles.
EUROPE.	
Volga, Russia	2,500
Danube	1,800
Rhine	840
Vistula	700
ASIA.	
Yenesiy and Selenga	3,580
Kiang	3,290
Hoang Ho	3,040
Amoor	2,500
Euphrates	1,980
Ganges	1,850
Tigris	1,160
AFRICA.	
Nile	3,240
Niger	2,400
Gambia	1,000
SOUTH AMERICA.	
Amazon and Beni	4,000
Platte	2,700
Rio Madeira	2,300
Rio Negro	1,650
Orinoco	1,600
Uruguay	1,100
Magdalena	900
NORTH AMERICA.	
Mississippi and Missouri	4,300
Mackenzie	2,800
Rio Bravo	2,300
Arkansas	2,070
Red River	1,520
Ohio and Allegheny	1,480
St. Lawrence	1,450

The Nathan Murder.

The murder of Benjamin Nathan, a wealthy New York citizen, took place July 29, 1870. The unfortunate man was killed in his own chamber, and although the utmost silence reigned all night, and the windows of his room were open, no warning was conveyed to the watchman near by; even the members of the deceased's household, some of whom slept in an adjoining room, were not awakened. The scene of the homicide presented an appalling appearance, everything bore evidence of a fierce struggle; the room was stained in many places with blood, and there were nine frightful wounds upon the head and face of the murdered man. There hung over the case a vail of mystery which has only deepened with the years, and which the heaviest rewards have not in the slightest degree served to lighten. The Mayor of New York offered a reward of $30,000 for the arrest and conviction of the criminals; $1,000 were offered for the recovery of each of the diamond studs from the bosom of Mr. Nathan's shirt; other rewards were offered for watches, etc., and one of

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$1,000 for the identification of the iron strap found in the vestibule of the house after the tragedy; while the Stock Exchange, of which the deceased was a member, offered $10,000 for the discovery of the perpetrators of the awful crime. Notwithstanding these and other inducements of a monetary character, the criminals have never been brought to justice.

Vessels Underneath the Sea.

A hollow vessel, formed of metal or any other substance, and hermetically sealed, can be made to float under the water a given distance without sinking to the bottom. Copper, for example, is nearly nine times as heavy as water. A cubic foot of copper, made into a hollow, tight vessel of nine cubic feet capacity, would just float. By making it slightly smaller it would float at some depth below the surface. Careful measurements and exact calculations would be necessary to float such a vessel at a required depth. A torpedo boat capable of carrying six persons and remaining a number of hours under water was constructed during the late war, and one of the plans to release Napoleon from St. Helena contemplated the use of a vessel that could be used close to the island under the water.

Velocity of Elevators.

Few persons have any idea of the speed of an elevator. An ordinary guess wouldn't probably come within half a mile a minute of being right. Some elevators run as slowly as eighty feet a minute. The average speed of elevators is about 225 feet a minute. This includes ordinary stoppages. The elevators in the Equitable Building, N. Y., have a run of 135 feet from basement to top of building, and it takes twenty seconds to make that run without stops. In a day of nine hours these elevators run over ten miles. The elevators in the Western Union Telegraph Building, N. Y., are exceedingly lively. They have developed a speed of 500 feet a minute.

History of the Telephone.

The principle of the telephone, that sounds could be conveyed to a distance by a distended wire, was demonstrated by Robert Hook in 1667, but no practical application was made of the discovery until 1821, when Professor Wheatstone exhibited his "Enchanted Lyre," in which the sounds of a music-box were conveyed from a cellar to upper rooms. The first true discoverer of the speaking telephone, however, was Johann Philipp Reis, a German scientist and professor in the institute at Friedrichsdorf. April 25, 1861. Reis exhibited his telephone at Frankfort. This contained all the essential features of the modern telephone, but as its commercial value was not at all comprehended, little attention was paid to it. Reis, after trying in vain to arouse the interest of scientists in his discovery, died in 1874, without having reaped any advantage from it, and there is no doubt that his death was hastened by the distress of mind caused by his continual re-

buffs. Meanwhile, the idea was being worked into more practical shape by other persons, Professor Elisha Gray, and Professor A. G. Bell, and later by Mr. Edison. There is little doubt that Professor Gray's successful experiments considerably antedated those of the others, but Professor Bell was the first to perfect his patent. February 12, 1877, Bell's articulating telephone was tested by experiments at Boston and Salem, Mass., and was found to convey sounds distinctly from one place to the other, a distance of eighteen miles. This telephone was exhibited widely in this country and in Europe during that year, and telephone companies were established to bring it into general use. Edison's carbon "loud-speaking" telephone was brought out in 1878. It is not worth while to go into details of the suits on the subject of priority of invention. The Examiner of Patents at Washington, July 21, 1883, decided that Professor Bell was the first inventor, because he was the first to complete his invention and secure a full patent. Since 1878 there have been many improvements in the different parts of the telephone, rendering it now nearly perfect in its working.

The Sphinx.

The word sphinx is from the Greek, and means the strangler, and was applied to a fabled creature of the Egyptians, which had the body of a lion, the head of a man or an animal, and two wings attached to its sides. In the Egyptian hieroglyphs the sphinx symbolized wisdom and power united. It has been supposed that the fact that the overflow of the Nile occurred when the sun was in the constellations Leo and Virgo gave the idea of the combinations of form in the sphinx, but this idea seems quite unfounded. In Egypt the reigning monarch was usually represented in the form of a sphinx. The most remarkable sphinx is that near the pyramids at Gizeh. It is sculptured from the rock, masonry having been added in several places to complete the form. It is 172½ feet long by 53 feet high, but only the head of this remarkable sculpture can now be seen, the rest of the form having been concealed by the heaped-up sands of the desert. Numbers of smaller sphinxes have been found in Egypt, and also in the sculptures of Assyria, Babylonia, and Phœnicia.

The Egyptian Pyramids.

The great pyramid of Gizeh is the largest structure of any kind ever erected by the hand of man. Its original dimensions at the base were 764 feet square, and its perpendicular height in the highest point is 488 feet; it covers four acres, one rood and twenty-two perches of ground, and has been estimated by an eminent English architect to have cost not less than £30,000,000, which in United States currency would be about $145,200,000. Internal evidences proved that the great pyramid was begun about the year 2170 B. C., about the time of the birth of Abraham. It is estimated that about 5,0[illegible],000 tons of hewn stones were used in its construction, and the

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evidence points to the fact that these stones were brought a distance of about 700 miles from quarries in Arabia.

The Oldest of All the Obelisks

is the beautiful one of rosy granite which stands alone among the green fields upon the banks of the Nile, not far from Cairo. It is the gravestone of a great ancient city which has vanished and left only this relic behind. The city was the Bethshemesh of the Scriptures, the famous On, which is memorable to all Bible readers as the residence of the priest of Potipherah, whose daughter, Assenath, Joseph married. The Greeks called it Heliopolis, the city of the sun, because there the worship of the sun had its chief center and its more sacred shrines.

History of Cleopatra's Needle.

The two obelisks known as Cleopatra's Needles were set up at the entrance of the Temple of the Sun, in Heliopolis, Egypt, by Thothmes III., about 1831 B. C. We have no means of knowing when they were built, or by whom, except from the inscriptions on them, which indicate the above time. The material of which they were cut is granite, brought from Syene, near the first cataract of the Nile. Two centuries after their erection Rameses II. had the stones nearly covered with carvings setting out his own greatness and achievements. Twenty-three years before Christ, Augustus Cæsar moved the obelisks from Heliopolis to Alexandria and set them up in the Cæsarium, a palace which now stands, a mere mass of ruins, near the station of the railroad to Cairo. In 1819 one of these obelisks was presented by the Egyptian Government to England, but as no one knew how to move them, it was not taken to London until 1878. Subsequently the other obelisk was presented to the United States.

How Cleopatra's Needle Was Brought Over from Egypt, and How it Was Handled.

The work of moving the great Egyptian obelisk from Alexandria to New York was managed by Commander H. H. Gorringe, of the United States Navy. The officer reached Alexandria October 16, 1879, and at once began to work with one hundred Arabs, who completed the excavation of the obelisk's pedestal by removing 1,730 cubic yards of earth in about twenty days. The machinery for lowering the monolith was then attached, and the block was laid in a horizontal position. Within the foundation and steps of the pedestal were found stones and implements engraved with emblematic designs, and some delay was caused in order that these might be taken up very carefully to be placed in exactly the same position in the pedestal when re-erected in New York. The obelisk was removed to the wharf and upon the steamer waiting for it by means of cannon balls rolling in metal grooves. The shaft, pedestal, and steps of the obelisk were removed separately, the entire mass weighing 1,470 tons. The steamer bear-

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ing this freight left Alexandria June 12, 1880, and arrived at Staten Island July 20. The iron tracks and cannon balls were adjusted after some delay, and on these the monolith was disembarked September 16. Next the rise and fall of the tide was utilized to float it up the North River and land it at the foot of Ninety-sixth street, where it was moved by steam power on tracks with rollers, along Tenth avenue and across Eighty-sixth street to Central Park. The track was two miles long, and was inclined, the upper part of it being laid on trestle-work, in order to bring the shaft, when it it was to be raised, at a proper height above the pedestal. Pulleys, chains, and ropes were then attached, and the signal being given, the great mass was rapidly and gently raised, and in a short time stood firmly upon the base which had been previously securely put in place.

Curiosities of Marriage.

Goethe said he married to obtain respectability.

Wycherly, in his old age, married his servant girl to spite his relations.

The joining of right hands in ancient times had the solemnity and validity of an oath.

Giving a ring is supposed to indicate the eternity of the union, seeing that a circle is endless.

Under the Roman empire, marriage was simply a civil contract; hence we read of men "putting away" their wives.

Among the Jews the rule was for a maiden to marry on the fourth and a widow on the fifth day of the week—not earlier.

In Jewish marriages the woman is set on the right, but throughout Christendom her place in the ceremony is on the left.

In a Roman marriage the bride was purchased by the bridegroom's payment of three pieces of copper money to her parents.

The custom of putting a vail upon the maid before the betrothal was done to conceal her blushes at the first touch of the man's hand and at the closing kiss.

Kissing the bride the moment the marriage ceremony ended, though not now prescribed by the rubric of the western churches, formerly was an imperative act on the part of the bridegroom.

The early marriage ceremony among the Anglo-Saxons consisted merely of hand-fastening, or taking each other by the hand, and pledging each other love and affection in the presence of friends and relatives.

An old adage thus lays down the proper days for wedlock:

"Monday for wealth, Tuesday for health, Wednesday the best day of all;
Thursday for crosses, Friday for losses, Saturday no luck at all."

Julius Cæsar's Wives.

Julius Cæsar had four wives. The first was named Cossutia, and he must have married her when very young, for when he was 17 years old, in the year 83 B. C., he divorced her in order

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to marry Cornelia, the daughter of Cinna, a leader of the democratic party. His Aunt Julia having married Marius, the foremost chief of the people's party, young Cæsar was doubly allied to that faction. Sulla, the patrician leader endeavored to induce the young man to repudiate his wife, and as he would not do this, took from him both his fortune and his office. Sulla was induced by influence to withdraw his proscription, though unwillingly, remarking that he saw "in that perfumed youth a hundred Mariuses;" but Cæsar did not return to Rome until after the tyrant's death. Cornelia died in 68 B. C., and the following year Cæsar married Pompeia, a relative of Pompey, and a granddaughter of Sulla. She was divorced in B. C. 61, under the following circumstances: The Roman women held annually on the 1st of May a festival to the Goddess of Earth, or the Bona Dea. No men were allowed to be present at these festivals under pain of death. In the year mentioned the matrons met at the house of Cæsar, and a young man, named Publius Clodius, managed to obtain admittance, in the disguise of a female musician. He was, of course, detected, and as Pompeia was known to be friendly toward the young man, it was supposed that she had connived at the sacrilege, and had admitted the youth for criminal purposes. Cæsar made no charge against either his wife or Clodius, and when the latter was brought to trial for impiety, he would not give any testimony against him; nor would he admit to his friends that he believed the parties to be guilty, but he put away his wife, saying: "The wife of Cæsar should be above suspicion." The last wife of the great Roman was Calpurnia, the daughter of Lucius Piso, whom he married B. C. 59, and who survived him.

Three Great Railway Disasters.

The Angola horror occurred December 18, 1867, on the Lake Shore Railroad. It was caused by the breaking of a wheel, which threw the rear passenger car from the track while passing over an embankment twenty feet high. The car fell down the embankment, and was set on fire as it fell. Of the fifty passengers in the car, forty-two were burned to death. The Ashtabula horror also occurred on the Lake Shore Railroad. It was caused by the giving way of the bridge over Ashtabula Creek under the Western bound express train, on the evening of December 29, 1876. The train, which consisted of eleven cars and two engines, with 160 passengers, was precipitated into the creek seventy feet below. The wreck immediately took fire, and many who were not killed by the fall were burned to death. Of less than sixty persons who were rescued, a number died afterward from the effect of their injuries. There was a terrible snow-storm at the time, which prevented help from reaching the scene quickly. From the attendant circumstances, the accident was rendered one of the most terrible railway disasters on record. The Spuyten Duyvel disaster also occurred in the winter, and had the attendant horror of fire, which still continues to enhance the

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frightfulness of a mishap on the railway at that season, although the application of a little science, allied with common sense, might altogether prevent this shocking culmination. The last-named disaster occurred on the New York Central Road, January 13, 1882. The regular train had stopped in a cut to regulate a tightened air-brake, when a special train rushed into it, telescoping two passenger cars. Brakemen had been sent back to signal the special train, but a curve in the road prevented their being seen soon enough to prevent the disaster. Nine passengers were killed and a number of others were severely wounded.

The Famous "Loop" on the Southern Pacific Railroad.

The "loop" of the Southern Pacific is on the Sierra Mountains, between Majore and Caliente. It is one of the most wonderful exhibitions of engineering ingenuity ever known. First, the road runs through a tunnel, then it bridges an abyss, and finally crosses over itself, seemingly tying a bow-knot with its own straps. By these skillful devices it is brought to an elevation of 3,549 feet above the plains. This is the Tehechape Pass, by which Fremont first crossed the mountain ridge between Northern and Southern California.

Railroad Facts.

The cost of railroads in the United States has been nine billion dollars.

One million persons are employed by the railroads of the United States.

The cost of a high-class eight-wheel passenger locomotive is about $8,500.

The cost of a palace sleeping-car is $15,000, or if "vestibuled," $17,000.

The average cost of constructing a mile of railroad in the United States at the present time is about $30,000.

The average daily earning of an American locomotive is about $100.

The "consolidation" locomotive weighs 50 tons, and is able to draw on a level over 2,400 tons.

The longest mileage operated by a single system is that of the Atchison, Topeka, and Santa Fe—about 8,000 miles.

The line of railroad which extends farthest east and west is the Canadian Pacific, running from Quebec to the Pacific Ocean.

There are sixty miles of snow-sheds on the Central Pacific Railroad.

The highest railroad in the United States is the Denver and Rio Grande at Marshall Pass—10,852 feet.

The longest American railroad tunnel is the Hoosac Tunnel on the Fitchburg Railroad—four and three-quarter miles. (The St. Gothard Tunnel in Europe is over nine miles in length.)

There are 208,749 railroad bridges in the United States, spanning 3,213 miles.

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The longest railroad bridge span in the United States is the Cantilever span in the Poughkeepsie bridge over the Hudson River—548 feet.

The highest railroad bridge in the United States is the Kinzua Viaduct on the Erie road—305 feet high.

The Manhattan Elevated Railroad, of New York, carried the largest number of passengers of any American road last year—525,000 per day, or 191,625,000 yearly.

The Illinois Central carried the largest number of commuters—4,828,128 in 1887.

A steel rail lasts, with average wear, about eighteen years.

A Period of Heavy Interest.

When Franklin Pierce became President the public debt aggregated $69,129,987.27, and later was increased by $2,500,000 to liquidate the debt of Texas. In November, 1856, this had been reduced to $30,963,909.64. There was a considerable sum due to the Indian tribes, growing out of the extinction of their title to the public lands. In 1856 this amounted to $21,064,501.36, and was payable at different times. The reduction of the public debt was so rapid that the Government parted the next year with a portion of its revenue. Then came the financial crisis of 1857. The national income speedily decreased, and the public credit likewise declined. After much trouble and great financial distress, money had to be borrowed to meet current obligations. The $20,000,000 Treasury notes issued in December, 1857, payable in a year, could not be met when they matured. The Government tried to float enough of the stock to meet the Treasury notes that would fall due in January, 1861. Finally, Congress authorized the issue of $10,000,000 of Treasury notes in lieu of $11,000,000, redeemable at the end of one year, and bearing 6 per cent. interest until called for redemption. The Secretary of the Treasury was, however, authorized to issue them, after advertisement, at such rates of interest as might be offered by the lowest responsible bidders. Notes were soon afterward issued, under this act, for the following amounts, at the rates specified:

Amount.	Per cent.	Amount.	Per cent.
$70,200	6	$77,000	9¾
5,000	7	1,027,500	10
24,500	8	266,000	10¼
33,000	8¼	623,000	10½
10,000	8¾	1,367,000	10¾
65,000	9	1,432,700	11
10,000	9¼	4,840,000	12
160,000	9½		
		$10,010,900	

Describing the Operations of a Clearing-House.

A clearing-house is an agency established by the banks of a city to which all checks drawn upon one city bank and deposited in another are sent for payment. Every morning

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there is a clearance or settlement of accounts, in which the checks deposited in each bank and the checks drawn upon each bank are separately summed up and compared. If there is more deposited in a bank than there is drawn upon it, the bank receives the difference in cash. If the reverse is the case, the bank pays the balance instead of receiving it. The term clearance means either the act of settlement or the sum of all the checks presented for payment. The amount of business done by the clearing house is a pretty sure index of the general condition of business.

Lincoln's Funeral Car.

A car, which is now used for outfitting purposes by the Union Pacific, has a remarkable record. It was once the property of the Pennsylvania Railroad. It was used to bear the body of Abraham Lincoln from Washington to Springfield. After the remains had been laid to rest at the early home of the honored dead, the Union Pacific Company purchased the car as a memento of the lamented chief. At present the car is on the western section of the Union Pacific, where it recalls only to those who are well-posted the hallowed memories which cluster about its walls.

Durability of Locomotives.

Two engines, Nos. 55 and 422, on the Pennsylvania Railroad, exhibited the following extraordinary durability: No. 55 made 161,476 miles without once being taken off her wheels, at a cost of $1.88 per mile; running two years, ten months, and twenty-five days. The other engine, No. 422, ran three years, six months, nineteen days, and made 153,280 miles, at a cost of $2.44 per mile, without undergoing the slightest repairs.

Rule to Find the Horse-power of a Locomotive.

Multiply the area of the piston by the measure per square inch which should be taken as ⅔ of the boiler pressure; multiply this product by the number of revolutions per minute; multiply this by twice the length of the stroke in feet or inches; if in inches they must be divided by 12; multiply this product by 2 and divide by 33,000; the result will be the power of the locomotive.

Example.—Cylinder, 19 inches; stroke, 24 inches; diameter of drivers, 54 inches; running speed, 20 miles per hour; area of piston, 283¼ square inches; boiler pressure, 130 pounds per square inch; maximum pressure in cylinders, 80 pounds.

Then, $\frac{285\frac{1}{4} \times 80 \times 4 \times 124 \times 2}{33{,}000} = 681.6$ horse-power.

Velocity of Drums—To Find their Required Diameter.

Suppose a drum 30 inches in diameter to make 50 revolutions per minute required the diameter of another to make 100 revolutions per minute, proceed thus: $30 \times 50 = 1500 \div 100 = 15$ inches.

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To Compute the Volume of Square Timber.

When all the dimensions are in feet, multiply the breadth, depth, and length together, and the product will give the volume in cubic feet.

When either of the dimensions are given in inches, multiply as before, and divide the product by 12.

When any two of the dimensions are given in inches, multiply as before, and divide by 144.

Example.—A piece of timber is 15 inches square, and 20 feet in length; required, its volume in cubic feet:

$15 \times 15 \times 20 = 4.500$, and $4.500 \div 144 = 31.25$ feet.

Board and Timber Measure.

Rule.—Multiply the length by the breadth, and the product will give the surface required.

If the dimensions are given in inches, multiply as above, and divide by 12. When all the dimensions are in inches, multiply as before, and divide the product by 144.

Example.—What are the number of square feet in a board 15 feet in length and 16 inches in width?

$15 \times 16 = 240$, and $240 \div 12 = 20$ feet.

To Compute the Volume of Bricks, and the Number in a Cubic Foot of Masonry.

Rule.—To the face dimensions of the particular bricks used add one half of the thickness of the mortar or the cement in which they are laid, and compute the area; divide the width of the wall by the number of brick of which it is composed; multiply this area by the quotient thus obtained, and the product will give the volume of the mass of brick and its mortar, in inches. Divide 1,728 by this volume, and the quotient will give the number of bricks in a cubic foot.

Example.—The width of a wall is to be 12¾ inches, and the front of it laid with Philadelphia brick in courses ¼ of an inch in depth; how many bricks will there be in face and backing in a cubic foot? Proceed thus:

Philad lphia front brick $8\frac{1}{2} \times 2\frac{3}{8}$.

We first reduce all our common fractions to decimals.

Then $8.25 + .25 \times 2 \div 2 = 8.5$ length of brick and joint.

Again, $2.375 + .25 \times 2 \div 2 = 2.625$ width of brick and joint.

Then, $8.5 \times 2.625 = 22.3125$ inches area of face.

Then, $12.75 \div 3$ (number of bricks in width of wall) $= 4.25$ inches.

Hence, $22.3125 \times 4.25 = 94.83$ cubic feet.

And $1728 \div 94.83 = 18.22$, number of bricks in a cubic foot.

Stroke of an Engine.

The stroke of an engine varies according to circumstances, which the designer must take into consideration, but the general rule is to make the stroke about twice the diameter of the cylinder. The diameter of the fly-wheel should be about four times the stroke, and the rim should weigh about three hundred weight per horse-power.

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Rule to Find the Horse-Power of a Stationary Engine.

Multiply the area of the piston by the average pressure in pounds per square inch. Multiply this product by the travel of the piston in feet per minute; divide by 33000, this will give the horse-power. Proper example:

Diameter of cylinder,	12
	12
	144
	7854
Area of piston,	113.0976
Pressure, 70; average 50,	50
	5654.880
Travel of piston in feet per minute	300

35000)1696464.000(51
Horse-power.

Breaking and Crushing Strains of Iron and Steel —Average Calculations.

Breaking strain of wrought iron...	23	tons per sq. in. of sec.
Crushing " " " ...	17	" "
Breaking strain of cast iron	7½	" "
Crushing " "	50	" "
Breaking strain of steel bars.....	50	" "
Crushing " " 166		" "

Temperatures.

Fresh water begins to freeze at 32 deg., called the freezing point, but salt water not till 28½ deg.

Consumption of Fuel in Marine Boilers.

A ship having 40 feet beam and ordinary condensing engines will require 40 tons of coal per day to drive her at 10 knots an hour.

The rule beam squared equals the consumption of fuel for 40, 50 or 60 days, according to whether the engines are ordinary jet, surface condensing, or compound.

Example.—40^2=1,600÷40=40 tons for one day for ordinary condensing.

40^2=1,600÷50=32 tons for surface condensing; 40^2=1,600÷60=26 tons, 8 hundred weight for compound engines. The consumption of fuel in marine boilers will average about 15½ pounds of coal per square foot per hour. In 4 furnaces 3 feet wide by six feet long with 72 square feet of surface, about 12 tons of coal will be burnt per day. Thus, 72 feet × 15½÷112=9.9 hundred weight per hour. Say 10 hundred weight of 112 pounds each per hour, or 12 tons per day. A much simpler and equally correct rule is, that 1 foot in width of bar equals 1 ton of coal per day; so that in the example above the total width of four furnaces is 3 feet×4=12 feet wide, or 12 tons per day as before.

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Velocity of Wheels—To Find Their Required Diameter.

A wheel 84 inches in diameter and making 54 revolutions per minute, is to give motion to a shaft at the rate of 100 revolutions in the same time; to find the diameter of a wheel suitable for that purpose, proceed thus:

Multiply 84, diameter of wheel, by 54, number of revolutions per minute.

Therefore, $84 \times 54 = 4536$.

Again, $4536 \div 100$, proposed number of revolutions, we have 45.36 inches.

How to Calculate the Necessary Power Required to Move a Given Weight on a Level Railroad.

If a train of forty tons' weight is drawn on a level railroad, what power is necessary to overcome the resistance, it being 8 pounds per ton?

2000 pounds (number of pounds in a ton):

Then, $2000 \div 8 = 250$; that is, it will overcome .004 of the weight.

Again, $30 \times 2000 \div 250 = 248$ pounds.

What power would be required to move a load of 100 tons up a grade, supposing the grade to be 2 feet in every 100, the co-efficient of fraction being .004?

Then, $$\frac{2 \times 250 \text{ lbs.} + 100 \times 100 \times 2000}{100 \times 250} = 2800 \text{ lbs.}$$

To compute the power, speed or time of running a locomotive or train upon a railway, proceed thus: Multiply the weight of the train by the rate per hour and this by 1.28, and the product is the necessary horse-power.

Example.—What is the required power of a locomotive to draw a train of 45 tons at the rate of 50 miles per hour?

$$\frac{1.28 \times 45 \times 50}{60} = \frac{2880}{60} = 48 \text{ horses.}$$

In what time will a locomotive of 50 horse-power, drawing a train of 135 tons, run a distance of 80 miles? Proceed thus:

$$\frac{1.28 \times 135 \times 80}{50} = \frac{13824}{50} = 276.24 \text{ minutes.}$$

Velocity of Wheels, Pulleys, Drums, Etc.

When wheels are applied to communicate motion from one part of a machine to another, their teeth act alternately on each other; consequently, if one wheel contains 60 teeth, and another 20 teeth, the one containing 20 teeth will make three revolutions while the other makes but one; and if drums or pulleys are taken in place of wheels, the effect will be the same, because their circumferences, describing equal spaces, render their revolutions unequal; from this the rule is derived, namely: Multiply the velocity of the driver by the number of teeth it contains and divide by the velocity of the

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driver, the quotient will be the number of teeth it ought to contain; or, multiply the velocity of the driven by its diameter, and divide by the velocity of the driven.

Example.—If a wheel that contains 75 teeth makes 16 revolutions per minute, required the number of teeth in another to work into and make 24 revolutions in the same time, then $16 \times 75 \div 24 = 50$ teeth.

To Find the Quantity of Water Necessary for a Steam Boiler.

Rule.—Find the number of pounds of coal consumed per hour, and divide it by 7½, and the quotient will be the desired quantity of water in cubic feet per hour. A cubic foot of water weighs 62½ pounds.

To Preserve Boiler Tubes.

A coating of red-lead and boiled linseed oil applied to iron boiler-tubes acts as an excellent preservative.

A lacquer of linseed oil caoutchouc applied to the walls of a steam boiler prevents the adhesion of sediment so that the scale admits of easy removal.

To Protect Polished Steel or Iron from Rust.

Go over the surface with parafine, or steep the iron for a few moments in a solution of soda acidulated with hydrochloric acid. The result is a blue-black coating, not affected by air or water.

Harmony of Colors.

Every one must have observed that colors, when brought together, mutually set each other off to advantage, while others have altogether a different effect. This must be carefully attended to by every painter who would study beauty or elegance in the appearance of his work.

Whites will set off with any color whatever.
Reds set off best with whites, blacks, or yellows.
Blues set off best with whites or yellows.
Greens set off best with blacks and whites.
Gold sets off best with blacks or browns.

In lettering or edging with gold a white ground has a delicate appearance for a time, but it soon becomes dingy.

The best grounds for gold are Saxon blue, vermilion, and lake.

The Fastest Trains in the World.

The fastest regular express trains in the United States are now in transit daily between Philadelphia and Washington. They run of an average speed of nearly forty-five miles an hour covering the entire run. Of course a part of the distance is made at a much higher rate of speed—not less than sixty-five miles an hour. There is no comfort, not to speak of safety, in traveling faster than sixty miles an hour.

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Cost of a Pennsylvania Railroad Passenger Car.

Detailed cost of constructing one first-class Standard Passenger Car, at the Altoona shops of the Pennsylvania Railroad, the total cost being $4,423.75. The principal items are as follows:

Labor	$1,263	94	
Proportion of fuel and stores	28	61	
2,280 feet poplar	86	80	
3,434 feet ash	127	08	
1,100 feet pine	20	90	
2,350 feet yellow pine	70	50	
500 feet oak	10	00	
450 feet hickory	13	50	
700 feet Mich. pine	49	00	
400 feet cherry	16	00	
439 feet maple veneer	24	14	
4 pairs wheels and axles	332	85	
2 pairs passenger car tracks	533	62	
13 gallons varnish	52	34	
45 lbs. glue	14	33	
2,925 lbs. iron	87	75	
792 lbs. castings	16	99	
Screws	51	88	
Gas regulator and guage	25	25	
2 two-light chandeliers	50	72	
2 gas tanks	84	00	
1 air brake, complete	131	79	
57 sash balances	44	61	
61 lights glasses	65	88	
2 stoves	77	56	
25 sets seat fixtures	50	50	
3 bronze lamps	13	50	
2 bronze door locks, Butts, and hinges.	15	20	
13 basket racks	15	58	
12 sash levers	77	35	
61 bronze window lifts	42	00	
61 window fasteners.	24	40	
238 sheets tin	16	47	
273 lbs galvanized iron	41	44	
96 yards scarlet plush	25	31	
44 yards green plush	228	87	
61 yards sheeting	109	99	
243 lbs. hair	10	30	
12 springs	72	95	
12 spiral elliptic springs	22	96	
1 head lining	20	29	
2 packets gold leaf.	80	63	
Various small items	14	58	
	261	44	
	$4,423	75	

The Fastest Locomotive Ever Built.

The largest and fastest passenger engine ever built was by the Rhode Island Locomotive Works, for the New York, Providence and Boston Railroad Company. The main driving wheels are six feet in diameter, and set but seven feet six inches apart. This arrangement makes her run easily on curves. The cylinders are eighteen inches in diameter, with twenty-four-inch stroke. The boiler is fifty-four inches in diameter at the smoke-stack, with a wagon top. It extends to the very end of the cab, and necessitates the elevation of the engineer's seat to a height far above the fire-door. The fire requires three tons of coal before the engine pulls out of the round-house to make her trips, and four tons will be carried on the tender. The tank of the latter will hold 4,000 gallons of water, and the total weight of the engine proper is 92,000 to 95,000 pounds. The weight on the driving wheel will be 66,000 pounds, or 4,800 more than the Connecticut. She looks to be enormously high as she sets up well in the air, and her short smoke-stack adds to her apparent height. Everything about her is steel. There is not a particle of brass

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or bright work about her. She will make the run from Providence to Groton, Conn., a distance of 62.5 miles, including a dead stop at Mystic drawbridge, as required by the statutes of Connecticut, in just 62.5 minutes, pulling at the same time eight cars, four of which are Pullmans.

Fastest Railrod Time.

1 mile—50¼s., 3 miles in 2m. 36¼s., and 5 miles in 4m. 50s., train which left West Philadelphia for Jersey City (P. R. R.) at 7:35 A. M. (Edward Osmond, engineer) Sept. 4, 1879.

10 miles—8 min., Hamburg to Buffalo, N. Y., Lake Shore and Michigan Southern R. R.; in 9 min., Hudson River road, locomotive and platform car, with steam fire-engine, Peekskill to Sing Sing, N. Y., Feb. 17, 1874.

14 miles—11 min., locomotive Hamilton Davis and six cars, New York Central R. R., 1855.

18 miles—15 min., special train conveying the Duke of Wellington, Paddington to Slough, Eng.

111 miles—98 min., no stop, new Fontaine engine and two coaches, carrying W. H. Vanderbilt and party—Amherstburg to St. Thomas, Canada Southern Railway, May 5, 1881....109 min., special train, consisting of locomotive, baggage car, one coach and one Pullman palace-car, Engineer McComber, carrying Bishop of Detroit and a number of the clergy; the time included 4 min. stoppage at Charing Cross—St. Thomas to Amherstburg, Sept. 13, 1877.

Cost of Building Railroads.

Estimates of cost of a good, first-class single track railroad:

Civil engineering and supervising, average per mile.			$110 00
Two-foot cuts and fills	"	"	242 00
Track and tieing, laid	"	"	4,000 00
Bridging	"	"	317 00
Tunneling	"	"	15 00
Masonry	"	"	500 00
Piling	"	"	10 00
Rock cutting	"	"	400 00
Sidings	"	"	113 00
Telegraph	"	"	100 00
Buildings	"	"	500 00
Snow sheds, fences, and plows	"	"	62 00
Total for track complete, per mile			$6,368 00
Total for equipment, per mile			2,000 00
			$8,368 00
The cost of right of way is not included and not estimated, but it cannot average $100 per mile			100 00
Total average cost per mile			$8,468 00

This estimate is made on the average cost of constructing railroads in the last three to six years.

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Railways and Their History.

The earliest reference to railways on the plan of making a distinct surface and track for wheels is found in Roger North's "Life of Lord Keeper North," where it is stated that at Newcastle-on-Tyne, in 1676, the coals were conveyed from the mines to the banks of the river "by laying rails of timber exactly straight and parallel; and bulky carts were made with four rollers fitting those rails, whereby the carriage was made so easy that one horse would draw four or five chaldrons." One hundred years afterward—viz., about 1776—Mr. Carr constructed an iron railroad at the Sheffield Colliery. Railways or tramways of wood, upon which wagons were propelled by animal power, were thus in use as early as the seventeenth century, but it was not until near the beginning of the present century that iron was substituted for wood. James Watt first conceived the idea of utilizing steam for locomotion. This was probably about 1780. George Stephenson, however, was the first to introduce steam locomotive power into practical use. This was in 1825.

Watering Stocks.

Railroad stocks are said to be "watered" when they are issued in an amount exceeding the market value of the road. That is, suppose the road was worth $10,000,000, and its owners put its stock on the market to an amount aggregating in face value $20,000,000—that would be "watering," a metaphor, no doubt, derived from the method by which the venders of milk are supposed to increase their profits.

Noted American Trees.

The big tree of California.

"Old Liberty Elm," at Boston.

The "Burgoyne Elm," at Albany, N. Y.

The immense ash trees planted by General Washington at Mount Vernon, and now the admiration of visitors.

The weeping-willow over the grave of Cotton Mather in Cop's burying-ground, near Bunker Hill, taken from a tree that shaded the grave of Napoleon at St. Helena.

The Cary tree, planted by the road-side in 1832 by Alice and Phœbe Cary, is a large sycamore, standing on the turnpike from College Hill to Mount Pleasant, Hamilton County, Ohio.

The Washington elm still stands at Cambridge, Mass. It is on Garden street, a short distance from the colleges, and is a large, well-preserved tree. An iron fence is built around it, and on a stone in front is the following inscription: "Under this tree George Washington took command of the American Army, July 3, 1775."

"Uncle Tom's Cabin."

The author of "Uncle Tom's Cabin," Harriet Beecher Stowe, was born in Litchfield, Conn. At the age of 15 she became a teacher in a girls' school at Hartford, and in 1836 became the wife of Prof. Calvin E. Stowe, of the Andover Theological

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Seminary, and became a contributor to the periodicals of the day. But her literary powers were scarcely appreciated until 1851, when she commenced in the *National Era* of Washington the publication of "Uncle's Tom's Cabin." When finished, in 1852, it was republished in Boston in book form, and its popularity was so immediate that it soon sold in four stereotype editions to the extent of 400,000 copies. The English reprint had a circulation of 500,000, and the book was translated into twenty European and Asiatic languages.

Height of Twenty-four of the Loftiest Volcanoes of the World.

Name of Volcano.	Height in feet.	Where located.
Sahama	23,000	Peru.
Llullaillac	21,000	Chili.
Arequipa	20,500	Peru.
Cayambi	19,813	Ecuador.
Cotopaxi	19,500	Peru.
Antisana	19,200	Ecuador.
San Jose	18,150	Chili.
Mt. St. Elias	17,900	Alaska.
Popocatepetl	17,884	Mexico.
Orizaba	17,370	Mexico.
Altar	17,126	Ecuador.
Sangai	17,120	Ecuador.
Klintcheoskaia	16,512	Kamtschatka.
Iztaciluatl	15,700	Mexico.
Toluco	15,500	Mexico.
Shasta	14,400	United States.
Fujiyama	14,000	Japan.
Mauna Kea	13,953	Sandwich Islands.
Mauna Loa	13,760	Sandwich Islands.
Teneriffe	12,236	Canary Islands.
Mt. St. Helens	12,000	United States.
Mt. Hood	11,225	United States.
Peak of Tahiti	10,895	Friendly Islands.
Mt. Etna	10,874	Sicily.

Three of the best known volcanoes of the world, Vesuvius, 3,978 feet; Hecla, 3,970 feet, and Stromboli, 3,000 feet, are of much less elevation than many others altogether unfamiliar.

The Process of Extracting Linseed Oil from Flaxseed.

Flaxseed oil, or linseed oil, is obtained by pressure from the seed of flax. The seeds are usually stripped from the dry flax stalks by a process called "rippling," which is drawing the stalks, a handful at a time, through a set of iron teeth, standing in a row, half an inch at the top and a quarter of an inch at the bottom. The seed-bolls are then well dried, and threshed and winnowed, to remove the outside hull or capsule from the seed. The latter are then ground in mills, and the power is subjected to powerful hydraulic pressure, which

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extracts the oil. Sometimes the seed is roasted before grinding, because the heat destroys the gummy matter in the interior coating of the seeds. The oil is, therefore, secured more free from mucilage, but it is of a higher color and of more acrid taste than that expressed from the raw seed.

Porcelain Tower of China.

The beautiful porcelain tower in Nankin, China, was one of the wonders of the world. It was of octagonal form, 260 feet high, in nine stories, each having a cornice and a gallery without. It cost $4,000,000, and was nineteen years in building, being completed in A. D. 1430. The outer face of this unique structure was covered with slabs of porcelain of various colors, principally green, red, yellow, and white. At every one of its nine stories the projecting roof of the gallery was covered with green tiles, and a bell was suspended from each corner. There were 152 bells in all, which gave sweet sounds when there was a brisk wind. One hundred and twenty-eight lamps were hung on the outside. On the top was a pinnacle in the shape of a pineapple, surmounted by a gilded ball. A spiral staircase led to the summit. This building was constructed for a gift to the empress, and the government kept it in repair. In 1801 it was struck by lightning and its three upper stories broken or thrown down, but the government repaired the injury. In 1856, however, the Taiping rebels blew it up and carried away the materials, fearing that the magic influence of its bells and lamps would work against the success of their cause.

Velocity of Ocean Waves.

The velocity of waves is said to depend primarily upon the power and continuance of the wind, but it is greatly modified by and bears an ascertainable relation to their magnitude and the depth of water over which they travel. It has been calculated by Airy that a wave 100 feet in breadth, and in water 100 feet deep, travels at the rate of about 15 miles an hour; one 1,000 feet broad, and in water 1,000 feet deep, at the rate of 48 miles; one of 10,000 feet in breadth, and in water 10,000 feet deep, will sweep forward with a velocity of not less than 154 miles an hour. Bache stated, as one of the effects of an earthquake at Samoda, on the island of Niphon, in Japan, that the harbor was first emptied of water, and then came an enormous wave, which again receded and left the harbor dry. This occurred several times.

To evaporate water enough annually from the ocean to cover the earth, on the average, five feet deep with precipitation; to transport it from one zone to another; to cause it to fall in the right places, at suitable times, and in the proportions due, is one of the offices of the grand atmospherical machine. This water is evaporated principally from the torrid zone. Supposing it all to come thence, we shall have, encircling the earth, a belt of ocean 3,000 miles in breadth, from which this atmosphere evaporates a layer of water annually 16 feet in

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depth. To hoist up as high as the clouds and lower down again all the water in a lake 16 feet deep, 3,000 miles broad and 24,000 miles long is the yearly business of this invisible machinery. What a powerful engine is the atmosphere! How nicely adjusted must be all the cogs, wheels, springs, and compensations of this exquisite piece of machinery that it never wears out nor breaks down, nor fails to do its work at the right time and in the right way. What a field for investigation, and how singular it is that man is placed at the bottom of this atmospheric ocean from which to commence his research.

The Greatest Depth of the Ocean Ever Measured.

The deepest verified soundings were those made in the Atlantic Ocean, ninety miles off the island of St. Thomas, in the West Indies, 3,875 fathoms, or 23,250 feet. Deeper water has been reported south of the Grand Bank of Newfoundland, over 27,000 feet in depth, but additional soundings in that locality did not corroborate this. Some years ago it was claimed that very deep soundings, from 45,000 to 48,000 feet, had been found off the coast of South America, but this report was altogether discredited on additional investigation in these localities. The ship Challenger, which in 1872-74 made a voyage round the globe for the express purpose of taking deep-sea soundings in all the oceans, found the greatest depth touched in the Pacific Ocean less than 3,000 fathoms, and the lowest in the Atlantic, 3,875 fathoms, as given above.

The Height of Waves.

The story of waves that run mountain high is a very great exaggeration. Many important measurements have been made, all of which show that the common estimate of the height of waves is due to imagination and fear. The measurements of Scoresby, which are regarded as very accurate, proved that during storms waves in the Atlantic rarely exceed forty-three feet from hollow to crest, the distance between the crests being five hundred and sixty feet, and their speed thirty-two and one-half miles an hour. More recent observations taken in the Atlantic give from forty-four to forty-eight as the highest measured waves; but such heights are rarely reached, and, indeed, waves exceeding thirty feet are very seldom encountered. The monsoon waves at Kurrachee breakwater works were found to dash over the wall to the depth of thirteen feet, or about forty feet above the mean sea level. The greatest height of waves on the British coast were those observed in Wick Bay—so famous for the exceptionally heavy seas which roll into it—being thirty seven and one-half to forty feet. Green seas to the depth of twenty-five feet poured over the parapet of the breakwater at intervals of from seven to ten minutes, each wave, it is estimated, being a mass of 40,000 tons of water, and this continually for three days and nights. During severe storms the waves used to ride high above the top of Smeaton Eddystone tower, while

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at the Bell Rock the seas, with easterly storms, envelop the tower from base to balcony—a height of 400 feet.

Annie Laurie.

It is interesting to know that the fair heroine of the ballad of "Annie Laurie" was a real character. She was born at Maxwellton, Dec. 6, 1682, and the records of her birth and baptism are still extant. The following record of the origin of the song is taken from a trustworthy old collection of ballads edited by Charles Kirkpatrick Sharpe, of Hoddam, Eng., who says: "Sir Robert Laurie, first baronet of the Maxwellton family (created March 27, 1685), by his second wife had three sons and four daughters, of whom Annie was much celebrated for her beauty, and made a conquest of Mr. Douglas, of Fingland, who composed the following verses, under an unlucky star—for the lady some time after (in 1709) married Mr. Ferguson, of Craigdarroch." The original words were as follows:

Maxwellton braes are bonnie,
Where early fa's the dew;
Where me and Annie Laurie
Made up the promise true;
Made up the promise true,
And ne'er forket will I,
And for bonnie Annie Laurie,
I'll lay me down and die.

She's backit like the peacock,
She's briestit like the swan,
She's jimp about the middle,
Her waist ye weel micht span,
Her waist ye weel micht span,
And she has a rolling eye,
And for bonnie Annie Laurie,
I'll lay me down and die.

The present accepted version of Annie Laurie and the air are the composition of Lady Jane Scott, whose maiden name was Alicia Anne Spottiswoode. She married in 1836 Lord John Douglas Scott, a son of the Duke of Buccleuch. She was author of both words and music of a number of popular songs of her country. The following is her version of this song:

Maxwellton braes are bonnie
Where early fa's the dew,
And it's there that Annie Laurie
Gie'd me her promise true,
Gie'd me her promise true,
Which ne'er forgot shall be,
And for bonnie Annie Laurie
I'd lay me doon and dee.

Her brow is like the snawdrift,
Her neck is like the swan,
Her face it is the fairest
That e'er the sun shone on,
That e'er the sun shone on,
And dark blue is her e'e,
And for bonnie Annie Laurie
I'd lay me doon and dee.

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Like dew on the gowan lying,
Is the fa' o' her fairy feet;
And like winds in summer sighing,
Her voice is low and sweet,
Her voice is low and sweet,
And she's a' the world to me,
And for bonnie Annie Laurie
I'd lay me doon and dee.

The Desert of Sahara.

The Sahara is a very large country, some parts of which are much depressed, while other parts are very high. In the central and southern parts are mountains and table-lands ranging from 500 to 7,000 feet above the level of the sea. The lowest part of the country is in its northern part, and there is a large tract, filled with salt lagunes, which is from 50 to 100 feet below sea level. This tract was no doubt in remote times a part of the Mediterranean Sea, to which it was joined by the Gulf of Gabes. The deposits on the coast in the lapse of time made the arm of the sea an inland lake, which, being fed by no inlets, in the natural course of things was dried up by evaporation. Another tract, also below sea-level, is in the eastern half of the Sahara, south of the table-land of Barca. This last low country was also probably once a part of the Mediterranean, joining it west of the modern delta of the Nile, at the head of the Gulf of Syrtis Major.

The Coal Area of the World.

The coal area of the world is distributed as follows:

	Sq. Miles.		Sq. Miles.
United States	192 000	Germany	1,800
British America	18,000	Belgium	518
Great Britain	12,000	Rest of Europe	100,000
Spain	4,000	China	2,000
France	2,000	Japan	5,000

When Coal Was Discovered in America.

There is strong reason to believe that the first discovery of coal on this continent was made in Illinois, by the early French explorers, some time between 1673 and 1680. James MacFarlane, author of the "Coal Regions of America," says: "It is remarkable that the first discovery of coal in America, of which there is any account in a printed book, was made so far in the interior as Illinois, by Father Hennepin, more than two hundred years ago." Hennepin's map, accompanying the edition of his journal published in 1698, locates a coal mine in the bluffs of the Illinois River, near Ottawa, where an inferior quality of bituminous coal comes to the surface. Referring to this record left by Hennepin, R. C. Taylor, another high authority in economic geology, says, "This is the earliest notice on record of the existence of coal in America."

History of the Abduction of Charlie Ross.

Charlie Ross was the son of Christian K. Ross, of Germantown, Pa., and at the time of his disappearance was a little

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over 4 years of age. The child and a brother 6 years old were playing, July 1, 1874, in the streets of Germantown, when a couple of men drove up in a buggy and persuaded the children, with promises of toys and candies, to get in and ride with them in the vehicle. After driving around the place for a little time the older brother, Walter Ross, was put out of the conveyance, and the strangers gave him 25 cents, telling him to go to a store near at hand and buy some candy and torpedoes for himself and Charlie. Walter did as he was told, but when he came out of the store the men with Charlie and the vehicle had disappeared. It was believed at first by the relatives and friends of the missing boy that he would be returned in a short time, as they supposed he might have been taken by some drunken men. Time passed, however, but no trace of the child had been discovered. In a few weeks a letter was received by Mr. Ross to the effect that if he would pay $20,000 his son would be returned, but that the parent need not search for Charlie, as all efforts to find the abducted boy or his captor would only be attended with failure; and it was stated that if this amount was not paid Charlie would be killed. The father answered this, and a long correspondence ensued, while the search was prosecuted in all directions. Mr. Ross wanted the child delivered at the time the money was paid, but to this the abductors refused to agree. It is stated that more than $50,000 were expended to recover the child. At one time two gentlemen were two days in the Fifth Avenue Hotel, New York, with the $20,000 ransom money to be given to the child-thieves, but they did not appear. The search was continued, and the officers of the law were looking up any and all evidence, until they had located the two men. These were found Dec. 4, 1874, committing a burglary in the house of Judge Van Brunt, Bay Ridge, L. I. The burglary was discovered, the burglars seen and shot by persons residing in an adjoining residence. One of the men was killed instantly; the other lived several hours, and confessed that he and his companion had abducted Charlie Ross, but that the dead thief, Mosher by name, was the one who knew where the boy was secreted. Walter Ross identified the burglars as the men who had enticed him and Charlie into the buggy. There the case rested. No new fact has been developed. The missing child has never been found. Many times have children been reported who resembled Charlie, and Mr. Ross traveled far and near in his endless search, only to return sadly and report that his boy was still missing. No case in recent years has excited such universal sympathy as that of Charlie Ross.

Why Easter is so Irregular.

The apostolic age had scarcely passed before discussions occurred and dissensions ensued as to the time of celebrating Easter. It was early held by the great majority of Christian churches that much importance should be attached to the day of Christ's resurrection, and it is easy to understand

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how the violent controversies were brought about when differences of opinion grew in reference to the time of year when the feast should be observed. The question was brought before the Council of Nice, and finally settled for the whole church, by adopting the rule which makes Easter day to be always the first Sunday after the full moon, which happens upon, or next after, March 21, and if the full moon happens on Sunday Easter day is the Sunday after; so that, by this arrangement, Easter may come as early as March 22, or as late as April 25.

Height of Principal Monuments and Towers.

Places.	Names.	Feet.
Paris	Eifel	1,000
Washington, D. C.	Washington Monument	555
Egypt	Pyramid of Cheops	486
Belgium	Antwerp Cathedral	476
France	Strasburg Cathedral	474
Egypt	Pyramid of Cephrenes	456
Rome	St. Peter's Church	448
Germany	St. Martin's Church, at Landshut	411
England	St. Paul's Church, London	365
England	Salisbury Cathedral	400
Italy	Cathedral at Florence	386
Lombardy	Cathedral at Cremona	397
Germany	Church at Fribourg	386
Spain	Cathedral of Seville	360
Lombardy	Cathedral of Milan	355
Holland	Cathedral of Utrecht	356
Egypt	Pyramid of Sakkarah	356
Bavaria	Cathedral of Notre Dame, Munich	348
Venice	St. Mark's Church	328
Italy	Assinelli Tower, Bologna	272
New York	Trinity Church	284
Hindostan	Column at Delhi	262
China	Porcelain Tower, Nankin	260
Paris	Church of Notre Dame	224
Massachusetts	Bunker Hill Monument	221
Italy	Leaning Tower of Pisa	179
Baltimore	Washington Monument	175
Paris	Monument, Place Vendome	153
Italy	Trajan's Pillar, Rome	151
Paris	Obelisk of Luxor	110

The Wandering Jew.

There are various versions of the story of "The Wandering Jew," the legends of whom have formed the foundations of numerous romances, poems, and tragedies. One version is that this person was a servant in the house of Pilate, and gave the Master a blow as He was dragged out of the palace to go to His death. A popular tradition makes the wanderer a member of the tribe of Naphtali, who, some seven or eight years previous to the birth of the Christ-child, left his father

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to go with the wise men of the East whom the star led to the lowly cot in Bethlehem. It runs, also, that the cause of the killing of the children can be traced to the stories this person related when he returned to Jerusalem of the visit of the wise men, and the presentation of the gifts they brought to the Divine Infant, when he was acknowledged by them to be the king of the Jews. He was lost sight of for a time, when he appeared as a carpenter who was employed in making the cross on which the Saviour was to be lifted up before the eyes of all men. As Christ walked up the way to Calvary He had to pass the workshop of this man, and when He reached its doors, the soldiers, touched by the sufferings of the Man of Sorrows, besought the carpenter to allow Him to rest there for a little, but he refused, adding insult to a want of charity. Then it is said that Christ pronounced his doom, which was to wander over the earth until the second coming. Since that sentence was uttered he has wandered, courting death, but finding it not, and his punishment becoming more unbearable as the generations come and go. He is said to have appeared in the sixteenth, seventeenth, and even as recently as the eighteenth century, under the names of Cartaphilus, and Ahasuerus, by which the Wandering Jew has been known.

How Sugar is Refined.

The method used by the best sugar refineries is substantially as follows: The raw sugar is dissolved in large cisterns on the ground floor, enough hot water being added to produce a specific gravity of 1.25. The solution is then drawn through a connecting pipe having a coarse wire strainer into large pumps, by which it is pumped into the highest story of the building, usually the seventh or eighth. It there passes into vessels heated by steam coils to a temperature of about 210 F. Milk of lime is added to the solution in these pans for the purpose of neutralizing any acid which it may contain. From these pans the liquid passes down to the next floor, where it is filtered through a series of bags, each made of two thicknesses of cloth, an outer one of coarse and an inner one of fine cotton. The bags are inclosed in boxes to prevent cooling. After leaving these the sirup is run through filters of bone-black, which absorbs all the coloring matter left in it. After leaving these, it is pumped into vacuum pans, large vessels heated by steam and exhausted by air pumps. The pressure being thus reduced the liquid is boiled at a lower and lower temperature until, at 140 degrees, evaporation is complete and the sirup rapidly crystallizes into sugar. This is the process by which the best white sugar is made, while poorer qualities are prepared by a method less complete.

Legal Holidays in the Various States.

January 1. New Year's Day.—In Alabama, Arkansas, California, Colorado, Connecticut, Dakota, Georgia, Idaho, Illinois,

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Indiana, Iowa, Kansas, Louisiana, Maine, Maryland, Michigan Missouri, Nevada, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, Texas, Utah, Vermont, West Virginia, Wisconsin, and Wyoming.

January 8. Anniversary of the Battle of New Orleans.—In Louisiana.

February 22. Washington's Birthday.—In Alabama, California, Colorado, Connecticut, Dakota, Georgia, Idaho, Illinois, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nevada, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Texas, Utah, Virginia, Wisconsin, and Wyoming.

February 14. Mardi Gras.—In Louisiana.

March 2. Anniversary of Texan Independence.—In Texas.

March 4. Firemen's Anniversary.—In New Orleans, La.

April 19. Good Friday.—In Louisiana, Maryland, and Pennsylvania.

April 21. Anniversary of the Battle of San Jacinto—In Texas.

April 26. Memorial Day.—In Georgia.

May 30. Decoration Day.—In California, Colorado, Connecticut, Dakota, Iowa, Illinois, Kansas, Kentucky, Massachusetts, Michigan, Nevada, New Hampshire, New Jersey, New York, Ohio, Oregon, Pennsylvania, Rhode Island, Utah, Vermont, Wisconsin, and Wyoming.

June, 1. Labor Day.—In Oregon.

July 4. Independence Day.—In all the States except Nebraska.

September 2. Labor Day.—In Colorado, Massachusetts, New Jersey, and New York.

November 5. General Election Day. In California, Dakota, Kansas, Maryland, Missouri, New Hampshire, New Jersey, New York, Ohio, Oregon, South Carolina, and Wisconsin.

November (last Thursday), Thanksgiving Day.—Is observed in all the States, though in Nebraska and some others it is not a statutory holiday.

December 25. Christmas Day.—In all the States except Nebraska.

Sundays and Fast Days (whenever appointed) are legal holidays in nearly all the States.

Arbor Day is a legal holiday in Idaho and Kansas, the day being set by the Governor. Arbor Day is also a legal holiday in Rhode Island, but does not affect the payment of notes, etc.

In Minnesota, Washington's Birthday is the only general holiday expressly provided by law. As to the maturity of bills and notes, the following days are by implication holidays: Thanksgiving Day, Good Friday, Christmas, January 1st, and July 4th; as to schools, Christmas, January 1st, July 4th, Memorial Day, and Thanksgiving Day.

In Nebraska there are no legal holidays established by statute. The same is the case in New Mexico.

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Every Saturday after 12 o'clock noon is a legal holiday in New York.

Mode of Execution in Every Country.

Country.	Mode.	Publicity.
Austria	Gallows	Public.
Bavaria	Guillotine	Private.
Belgium	Guillotine	Public.
Brunswick	Ax	Private.
China	Sword or cord	Public.
Denmark	Guillotine	Public.
Ecuador	Musket	Public.
France	Guillotine	Public.
Great Britain	Gallows	Private.
Hanover	Guillotine	Private.
Italy	Sword or gallows*	Public.
Netherlands	Gallows	Public.
Oldenberg	Musket	Public.
Portugal	Gallows	Public.
Prussia	Sword	Private.
Russia	Musket, gallows, or sword	Public.
Saxony	Guillotine	Private.
Spain	Garrote	Public.
Switzerland—		
Fifteen cantons	Sword	Public.
Two cantons	Guillotine	Public.
Two cantons	Guillotine	Private.
United States (other than New York)	Gallows	Mostly Private.
New York	Electricity	Private.

*Capital punishment abolished in 1876.

Divorce Laws of Every State and Territory.

Previous Residence Required. Dakota, ninety days; California, Indiana, Idaho, Nebraska, Nevada, New Mexico, Texas, and Wyoming, six months; Alabama, Arizona, Arkansas, Colorado, Illinois, Iowa, Kansas, Kentucky, Maine, Mississippi, Minnesota, Missouri, Montana, New Hampshire, Ohio, Oregon, Pennsylvania, Rhode Island, Utah, Vermont (both parties as husband and wife), West Virginia, Washington Territory, and Wisconsin, one year; Florida, Maryland, Michigan, North Carolina, and Tennessee, two years; Connecticut and Massachusetts (if, when married, both parties were residents; otherwise, five years), three years.

Causes for Divorce. The violation of the marriage vow is cause for absolute divorce in all the States and Territories, excepting South Carolina, which has no divorce laws.

Physical inability is a cause in all the States, except California, Connecticut, Dakota, Idaho, Iowa, Louisiana, New Mexico, New York, South Carolina, Texas, and Vermont. In most of these States it renders marriage voidable.

Willful desertion, six months, in Arizona.

Willful desertion, one year, in Arkansas, California, Colorado, Dakota, Florida, Idaho, Kansas, Kentucky, Missouri, Montana, Nevada, Oregon, Utah, Wisconsin, Washington Territory, and Wyoming.

Willful desertion, two years, in Alabama, District of Columbia, Illinois, Indiana, Iowa, Michigan, Mississippi, Nebraska, Pennsylvania, and Tennessee.

Willful desertion, three years, in Connecticut, Delaware, Georgia, Maine, Maryland, Massachusetts, Minnesota, New Hampshire, New Jersey, Ohio, Texas, Vermont, and West Virginia.

Willful desertion, five years, in Virginia and Rhode Island, though the court may in the latter State, decree a divorce for a shorter period.

Habitual drunkenness, in all the States and Territories, except Maryland, New Jersey, New York, North Carolina, Pennsylvania, South Carolina, Texas, Vermont, Virginia, and West Virginia.

"Imprisonment for felony" or "conviction of felony" in all the States and Territories (with limitations), except Florida, Maine, Maryland, New Jersey, New Mexico, New York, and South Carolina.

"Cruel and abusive treatment," "intolerable cruelty," "extreme cruelty," "repeated cruelty," or "inhuman treatment," in all the States and Territories except New Jersey, New York, North Carolina, South Carolina, Virginia, and West Virginia.

Failure by the husband to provide: six months in Arizona; one year in California, Colorado, Dakota, Nevada, and Wyoming; two years in Indiana and Idaho; no time specified in Massachusetts, Michigan, Maine, Nebraska, New Mexico, Rhode Island, Vermont, and Wisconsin; willful neglect for three years, in Delaware.

Fraud and fraudulent contract in Arizona, Connecticut, Georgia, Idaho, Kansas, Kentucky, Ohio, Pennsylvania, and Washington Territory.

Absence without being heard from: three years in New Hampshire; seven years in Connecticut and Vermont; separation, five years, in Kentucky; voluntary separation, five years, in Wisconsin and Kentucky. When reasonably presumed dead by the court, in Rhode Island.

"Ungovernable temper," in Kentucky; "habitual indulgence in violent and ungovernable temper," in Florida; "cruel treatment, outrages or excesses as to render their living together insupportable," in Arkansas, Kentucky, Louisiana, Missouri, Tennessee, and Texas; "indignities as render life burdensome," in Missouri, Oregon, Pennsylvania, Tennessee, Washington Territory, and Wyoming. Attempt to murder the other party, in Illinois and Tennessee.

Other causes in different States are as follows: "Husband notoriously immoral before marriage, unknown to wife," in West Virginia; "fugitive from justice," in Virginia; "gross misbehaviour or wickedness," in Rhode Island; "any gross

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neglect of duty," in Kansas and Ohio; "attempt on life," in Illinois; "refusal of wife to remove into the State," in Tennessee; "mental incapacity at time of marriage," in Georgia; "three years with any religious society that believes the marriage relation unlawful," in Massachusetts; "joining any religious sect that believes marriage unlawful, and refusing to cohabit six months," in New Hampshire; "parties cannot live in peace and union," in Utah; "settled aversion, which tends to permanently destroy all peace and happiness," in Kentucky; "insanity for five years," in Wisconsin, and for ten years in Washington Territory; "vagrancy of the husband," in Missouri and Wyoming.

In Georgia an absolute divorce is granted only after the concurrent verdict of two juries, at different terms of the court. In New York absolute divorce is granted for but one cause, adultery. In South Carolina there are no divorce laws.

The granting of divorce for any cause is left to the discretion of the court in Washington Territory. The discretion of the court is also practically allowed by law in Wisconsin.

All of the causes above enumerated are for absolute or full divorce, and collusion and connivance are especially barred, and also condonation of violation of the marriage vow.

Remarriage. There are no restrictions upon remarriage by divorced persons in Arizona, Connecticut, Kentucky, Illinois, and Minnesota. Either party may remarry, but defendant must wait two years and obtain permission from the court in Massachusetts. The decree of the court may restrain the guilty party from remarrying in Virginia. Parties cannot remarry, except by permission of the court, in Maine. In the State of New York the plaintiff may remarry, but the defendant cannot do so during the plaintiff's life-time, unless the decree be modified or proof that five years have elapsed and that complainant has married again and defendant's conduct has been uniformly good. Any violation of this is punished as bigamy, even though the other party has been married. In Delaware, Pennsylvania, and Tennessee, no wife or husband divorced for violation of the marriage vow can marry the *particeps criminis* during the life of the former husband or wife, nor in Louisiana at any time; such marriage in Louisiana renders the person divorced guilty of bigamy.

The courts of every State, and particularly of New York, are very jealous of their jurisdiction, and generally refuse to recognize as valid a divorce against one of the citizens of the State by the court of another State, unless both parties to the suit were subject at the time to the jurisdiction of the court granting the divorce.

Kansas courts grant divorces for the reason that the applicant's husband or wife has obtained a divorce in another State, and the applicant has been forbidden to remarry. If a wife in New York obtains a divorce from her husband, and he is forbidden to remarry, he may go to Kansas and obtain a divorce on that ground. If his wife contests the case, or

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can be served with the papers in Kansas, so that she is brought under the jurisdiction of the Kansas court, the courts of New York must recognize the divorce as valid, and cannot punish the husband for remarrying in New York.

New York permits polygamy and polyandry in certain cases. Desertion for five years, without knowledge that the deserter is living, permits the one deserted to marry again; and the second marriage is valid, though the deserter returns. The second marriage may be declared void, but only from the date of the decree, by a court of competent jurisdiction, upon proper petition; but if no such petition is made, and all parties are satisfied, one husband may live in lawful wedlock with two or more wives, or one wife with two or more husbands. The children will inherit, and both wives will be entitled to dower.

Divorces in Different Countries.

In Australia divorces have never been sanctioned.

Divorces are scarcely ever known to occur in modern Greece.

In Hindostan either party for a slight cause may leave the other party and marry.

In the olden times the Jews had a discretionary power of divorcing their wives.

Divorces are scarcely allowed in Thibet, unless with the consent of both parties. Remarriage is forbidden.

In Cochin China the parties desiring divorce break a pair of chopsticks in the presence of witnesses, and the thing is done.

Two kinds of divorces are granted in Circassia. By the first the parties can immediately marry again, by the second not for a year.

Among some tribes of American Indians the sticks given witnesses of the marriage are broken as a sign of divorce.

If the wife of a Turkoman asks his permission to go out, and he says "Go," without adding "Come back again," they are divorced.

In Siberia if a man is dissatisfied with the most trifling acts of his wife he tears a cap or vail from her face and that constitutes a divorce.

In Siam the first wife may be divorced, but not sold as the others may be. She may claim the first child. The others belong to the husband.

Among the Moors, if the wife does not become the mother of a boy, she may be divorced with the consent of the tribe and can marry again.

In the Arctic region a man who wants a divorce leaves home in anger and does not return for several days. The wife takes the hint and departs.

In China divorces are allowed in all cases of criminality, mutual dislike, jealousy, incompatibility of temperament, or too much loquacity on the part of the wife.

Among the Tartars if the wife is ill-treated she complains to the magistrate, who, attended by the principal people, accompanies her to the house and pronounces a divorce.

Gold and Silver Production in 500 Years—(1380-1880).

Countries.	Gold.			Silver.		
	Tons	Value.	Ratio.	Tons	Value.	Ratio.
Africa	740	$520,000,000	7.1	.....	.....	...
Australia	1,840	1,280,000,000	17.8	.....	.....	...
Austria	460	325,000,000	4.4	7,930	$305,000,000	4.1
Brazil	1,040	725,000,000	10.0	.....	.....	...
Germany	.....	.....	...	8,470	325,000,000	4.4
Mexico	.....	.....	...	78,600	3,040,000,000	42.7
Peru, etc.	.....	.....	...	72,000	2,770,000,000	37.3
Russia	1,235	865,000,000	12.0	3,200	120,000,000	1.7
Spanish America	2,220	1,550,000,000	21.5	.....	.....	...
United States	2,042	1,430,000,000	19.7	11,600	445,000,000	6.0
Other Countries	778	535,000,000	7.5	11,200	430,000,000	5.8
The World	10,355	$7,240,000,000	100.0	193,000	$7,435,000,000	100.0

Ballots Cast at National Convention in Chicago.

June 22-25, 1888, the National Convention of the Republican party, at Chicago, nominated Benjamin Harrison, of Indiana, for President on the eighth ballot. The following is a statement of the ballots:

Candidates	June 22		June 23			June 25		
Ballots	1	2	3	4	5	6	7	8
Harrison	80	91	94	217	213	231	278	544
Sherman	229	249	244	235	224	244	231	118
Alger	84	116	122	135	142	137	120	100
Gresham	111	108	123	98	87	91	91	59
Allison	72	75	88	88	99	73	76	W'n
Depew	99	99	91	Withdrawn.				
Rusk	25	20	16	..	..	..	..	..
Phelps	25	18	5	..	..	..	..	..
Ingalls	28	16	Withdrawn.					
Hawley	13	Withdrawn.						
Fitler	24	Withdrawn.						
McKinley	2	3	8	11	14	12	16	4
Lincoln	3	2	2	1	..	..	2	..
Miller	..	..	2	..	..	..	..	..
Douglass	..	..	..	1	..	..	..	..
Foraker	..	..	..	1	..	1	1	..
Grant	..	..	..	..	..	1	..	..
Haymond	..	..	..	..	..	..	1	..
Blaine	35	33	35	42	48	40	15	5
Total vote	830	830	830	829	827	830	831	830
Necessary for choice	416	416	416	415	414	416	416	416

Levi P. Morton, of New York, was nominated for Vice-President on the first ballot, which was as follows: Morton, 561; William Walter Phelps, of New Jersey, 110; W. O. Bradley, of Kentucky, 93; Blanche K. Bruce, of Mississippi, 11; Walter F. Thomas, of Texas, 1.

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QUALIFICATIONS FOR VOTING IN EACH STATE OF THE UNION.

In all of the States the right to vote at general elections is restricted to males of 21 years of age and upward. Women are entitled to vote at school elections in several States. They are entitled by local law to full suffrage in the Territories of Utah and Wyoming. (See article entitled "Woman Suffrage."

States.	Requirements as to Citizenship.	Previous Residence Required.				Persons Excluded from Suffrage.
		In State	In Co.	In Town	In Pr'ct.	
Alabama.....	Citizen of United States or alien who has declared intention.....	1 yr..	3 mo.	.....	30 dys	Convicted of treason, or other crime punishable by imprisonment, idiots, lunatics.
Arkansas.....	Citizen of United States or alien who has declared intention.....	1 yr..	6 mo.	.....	1 mo.	Idiots, insane, convicted of felony until pardoned.
California	Citizen by nativity, naturalization, or treaty of Queretaro	1 yr..	90 dys	.....	30 dys	Chinese, idiots, insane, convicted of infamous crime.
Colorado.....	Citizen or alien who has declared intention 4 months previous to offering to vote.	6 mo.	90 dys	.....	10 dys	Convicted of felony and unrestored to citizenship.
Connecticut	Citizen of United States, good moral character, and able to read any article of Constitution or statutes	1 yr..	.....	6 mo.	.....	Convicted of bribery, forgery, theft, dueling or other offense for which infamous punishment is inflicted.
Delaware.....	Citizen and paying county tax after age 22	1 yr..	1 mo.	.....	†	Idiots, insane, paupers, felons
Florida	Citizen of United States or alien who has declared intention.	1 yr..	6 mo.	.....	†	Insane, under guardianship, criminals, sending, bringing or accepting dueling challenge.

QUALIFICATIONS FOR VOTING IN EACH STATE OF THE UNION—Continued.

STATES.	Requirements as to Citizenship.	PREVIOUS RESIDENCE REQUIRED.				Persons Excluded from Suffrage.
		In State	In Co.	In Town	In Pr'ct.	
Georgia	Citizen of the United States..	1 yr..	6 mo.	.....	.....	Idiots, insane, convicted of treason against State or crime punishable by imprisonment, non-payers of taxes since 1877.
Illinois	Citizen of the United States..	1 yr..	90 dys	.....	30 dys	Convicted of crime punishable in penitentiary until pardoned and restored to rights, bribery at elections.
Indiana	Citizen of United States or alien who has declared intention and resided one year in United States and 6 months in State.	6 mo.	.....	60 dys	30 dys	Convicted of crime and disfranchised by judgment of the court.
Iowa	Citizen of the United States..	6 mo.	60 dys	.....	5 †	Idiots, insane, convicted of infamous crime, United States soldiers and marines not bona fide residents.
Kansas	Citizen of United States or alien who has declared intention.	6 mo.	.....	.....	30 dys	Idiots, insane, convicts, rebels. (See Woman Suffrage.)
Kentucky	Citizen	2 yrs*	1 yr..	.....	60 dys	Convicted of robbery, forgery, counterfeiting, or like crime.

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QUALIFICATIONS FOR VOTING IN EACH STATE OF THE UNION.—(Continued.)

States.	Requirements as to Citizenship.	Previous Residence Required.				Persons Excluded from Suffrage.
		In State	In Co.	In Town	In Pr'ct.	
Louisiana.....	Citizen of United States or alien who has declared intention	1 yr..	6 mo.	.....	30 dys	Idiots, insane, convicted of treason, embezzlement of public funds, illegal voting, bribery or like crime punishable by hard labor or imprisonment.
Maine.....	Citizen of the United States..	3 mo.	3 mo.	3 mo.	.....	Paupers, persons under guardianship, Indians not taxed.
Maryland.....	Citizen of the United States..	1 yr..	6 mo.	.....	1 day	A person over 21 years convicted of larceny or other infamous crime, unless pardoned, persons under guardianship, as lunatics or *non compos mentis*.
Massachusetts .	Citizen	1 yr..	.....	.....	6 mo.	Paupers (except honorably discharged U. S. soldiers and sailors) and persons under guardianship.
Michigan.....	Citizen or inhabitant who has declared intention under U.S. laws 6 months before election and has resided in State 2 yrs 6 mo	3 mo.	10 dys	.....	10 dys	Aliens who have not declared intention 6 months previous to election. Indians, duelists, and accessories.

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QUALIFICATIONS FOR VOTING IN EACH STATE OF THE UNION.—(Continued.

STATE.	Requirements as to Citizenship.	PREVIOUS RESIDENCE REQUIRED.				Persons Excluded from Suffrage.
		In State	In Co.	In Town	In Pr'ct.	
Minnesota.....	Citizen of United States or alien who has declared intention, and civilized Indians.	4 mo.	10 dys	.....	10 dys	Convicted of treason or felony, unless pardoned, persons under guardianship or insane.
Mississippi	Citizen of the United States..	6 mo.	1 mo.	.....	.....	Idiots, insane, Indians not taxed, convicted of felony.
Missouri.....	Citizen of United States or alien who has declared intention not less than one year or more than five before offering to vote.	1 yr..	60 dys	60 dys	.....	U. S. soldiers and marines, paupers, persons in asylums at public expense, criminals convicted once until pardoned, felons and violators of suffrage laws convicted a second time.
Nebraska.....	Citizen of United States or alien who has declared intention 30 days prior to election.	6 mo.	40 dys	.....	10 dys	Idiots, insane, convicted of treason or felony, unless pardoned.
Nevada.....	Citizen of the United States..	6 mo.	30 dys	.....	.....	Idiots, insane, convicted of treason or felony, unamnestied Confederates who bore arms against the U. S.
New Hampshire	Inhabitant, native, or naturalized	6 mo.	.....	6 mo.	.....	Paupers (except honorably discharged U.S. soldiers and sailors), persons excused from paying taxes at their own request.

QUALIFICATIONS FOR VOTING IN EACH STATE OF THE UNION.—(Continued.)

States.	Requirements as to Citizenship.	Previous Residence Required.				Persons Excluded from Suffrage.
		In State	In Co.	In Town	In Prc't.	
New Jersey	Citizen of the United States..	1 yr..	5 mo.	.....	.....	Idiots, insane, persons convicted of crime (unless pardoned), which exclude them from being witnesses, which crimes exclude blasphemy, treason, murder, rape, sodomy, arson, perjury, etc.
New York.....	Citizen who shall have been a citizen for ten days.....	1 yr..	4 mo.	.....	30 dys	Convicted of bribery or any infamous crime, unless pardoned, betters on result of any election at which they offer to vote, bribers for votes and the bribed.
North Carolina .	Citizen of the United States..	1 yr..	90 dys	.....	.....	Convicted of felony or other infamous crime.
Ohio.....	Citizen of the United States..	1 yr..	30 dys	.....	20 dys	Felony until pardoned and restored to citizenship, idiots, insane.
Oregon.....	Citizen of United States or alien who has declared intention one year preceding election.	6 mo.	.....	.....	.....	Idiots, insane, convicted of felony, United States soldiers and sailors, Chinese.
Pennsylvania...	Citizen of the United States at least one month, and if 22 years old or more must have paid tax within two years...	1 yr*.	.....	.....	2 mo.	Convicted of some offense whereby right of suffrage is forfeited, non-taxpayers.

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QUALIFICATIONS FOR VOTING IN EACH STATE OF THE UNION.—(Continued.)

States.	Requirements as to Citizenship.	Previous Residence Required.				Persons Excluded from Suffrage.
		In State	In Co.	In Town	In Prc't.	
Rhode Island...	Citizen of the United States..	2 yrs..	.....	6 mo.	.....	Paupers, lunatics, persons *non compos mentis*, convicted of bribery or infamous crime until restored to right to vote, under guardianship.
South Carolina .	Citizen of the United States..	1 yr..	60 dys	.....	.....	Convicted of treason, murder or other infamous crime, or of dueling, paupers, insane.
Tennessee	Citizen of the United States..	1 yr..	6 mo.	.....	†	Convicted of bribery or other infamous offense.
Texas	Citizen of United States or alien who has declared intention.	1 yr..	6 mo.	.....	†	Idiots, lunatics, paupers, supported by county, convicted of felony, United States soldiers and seamen in service.
Vermont	Citizen of the United States..	1 yr..	.....	.....	.....	Unpardoned convicts and deserters from United States military or naval service during civil war.
Virginia.....	Citizen of the United States..	1 yr..	3 mo.	.....	†	Idiots, lunatics, convicted of bribery at election, embezzlement of public funds, treason, felony, and petty larceny, duelists and abettors, unless pardoned by Legislature.

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QUALIFICATIONS FOR VOTING IN EACH STATE OF THE UNION.—(Continued.)

States.	Requirements as to Citizenship.	Previous Residence Required.				Persons Excluded from Suffrage.
		In State	In Co.	In Town	In Prc't.	
West Virginia..	Citizen of the State	1 yr..	60 dys	.....	†	Paupers, persons of unsound mind, convicted of treason, felony, or bribery at elections‡ .....
Wisconsin.....	Citizen of United States or alien who has declared intention.	1 yr..	.....	.....	†	Insane, under guardianship, convicted of treason or felony, unless pardoned.

Registration.—The registration of voters is required in the States of Alabama, California, Colorado, Connecticut, Florida, Louisiana, Maine, Maryland, Massachusetts, Mississippi, Nevada, New Hampshire, North Carolina, Pennsylvania, South Carolina, Vermont, and Virginia. In Georgia registration is required in a few counties by local law. In Iowa, Kansas, and Nebraska it is required in all cities.

In Illinois registration is required, but (except in a few cities) a legal voter not registered may vote upon filing an affidavit by himself and another known legal voter that he is a qualified voter and has not already voted. In Minnesota registration is required in all cities of and over 1,200 inhabitants.

In Missouri it is required in cities of 100,000 inhabitants and over, in New Jersey in cities of over 10,000 inhabitants, in Wisconsin in cities having 20,000 inhabitants and over.

In New York it is required in all cities and in all incorporated villages of over 7,000 inhabitants.

In Ohio it is required in the cities of Cincinnati and Cleveland only.

The registration of voters is not required in the States of Arkansas, Delaware, Indiana, Kentucky, Oregon, Tennessee, Texas, and West Virginia. It is prohibited in Arkansas, Texas, and West Virginia by constitutional provision.

*Unless there has been one year's previous residence in the county; or if having previously been a qualified elector or native he shall have removed and returned, then 6 months. †Actual residence in the precinct or district required. ‡No person employed in the military or naval service of the U. S. or of any incorporated company or of the State shall be deemed a resident because of being stationed or employed therein.

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A READY REFERENCE CALENDAR

***For ascertaining** any Day of the Week for any given Time within Two Hundred Years from introduction of the New Style, 1752, to 1952, inclusive.*

YEARS 1753 TO 1952.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1761 1767 1778 1789 1795 1801 1807 1818 1829 1835 1846 1857 1863 1874 1885 1891 1903 1914 1925 1931 1942	4	7	7	3	5	1	3	6	2	4	7	2
1762 1773 1779 1790 1802 1813 1819 1830 1841 1847 1858 1869 1875 1886 1897 1909 1915 1926 1937 1943	5	1	1	4	6	2	4	7	3	5	1	3
1757 1763 1774 1785 1791 1803 1814 1825 1831 1842 1853 1859 1870 1881 1887 1898 1910 1921 1927 1938 1949	6	2	2	5	7	3	5	1	4	6	2	4
1754 1765 1771 1782 1793 1799 1805 1811 1822 1833 1839 1850 1861 1867 1878 1889 1895 1901 1907 1918 1929 1935 1946	2	5	5	1	3	6	1	4	7	2	5	7
1755 1766 1777 1783 1794 1800 1806 1817 1823 1834 1845 1851 1862 1873 1879 1890 .. 1902 1913 1919 1930 1941 1947	3	6	6	2	4	7	2	5	1	3	6	1
1758 1769 1775 1786 1797 1809 1815 1826 1837 1843 1854 1865 1871 1882 1893 1899 1905 1911 1922 1933 1939 1950	7	3	3	6	1	4	6	2	5	7	3	5

A READY REFERENCE CALENDAR

For ascertaining any Day of the Week for any given Time within Two Hundred Years from the introduction of the New Style, 1752, to 1952 inclusive—(Continued).

YEARS 1753 TO 1952.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1753 1759 1770 1781 1787 1798 1866 1877 1883 1894 1900 1810 1821 1827 1838 1849 1855 1906 1917 1923 1934 1945 1951	1	4	4	7	2	5	7	3	6	1	4	6
LEAP YEARS.	...	29	...	...	...	...	...	...	...	...	...	...
1764 1792 1804 1832 1860 1888 1928	7	3	4	7	2	5	7	3	6	1	4	6
1768 1796 1808 1836 1864 1892 1904 1932	5	1	2	5	7	3	5	1	4	6	2	4
1772 ..... 1812 1840 1868 1896 1908 1936	3	6	7	3	5	1	3	6	2	4	7	2
1776 ..... 1816 1844 1872 ..... 1912 1940	1	4	5	1	3	6	1	4	7	2	5	7
1780 ..... 1820 1848 1876 ..... 1916 1944	6	2	3	6	1	4	6	2	5	7	3	5
1756 1784 1824 1852 1880 ..... 1920 1948	4	7	1	4	6	2	4	7	3	5	1	3
1760 1788 1828 1856 1884 ..... 1924 1952	2	5	6	2	4	7	2	5	1	3	6	1

A READY REFERENCE CALENDAR

For ascertaining any Day of the Week for any given Time within Two Hundred Years from the introduction of the New Style, 1752 to 1952 inclusive.*—(Continued).

NOTE.—To ascertain any day of the week, first look in the table for the year required, and under the months are figures which refer to the corresponding figures at the head of the columns of days below. FOR EXAMPLE: To know on what day of the week July 4 will be in the year 1889, in the table of years look for 1889, and in a parallel line, under July, is fig. 1, which directs to col. 1, in which it will be seen that July 4 falls on Thursday.

* 1752 same as 1772, from Jan. 1 to Sept. 2. From Sept. 14 to Dec. 31 same as 1780, (Sept. 3—13 were omitted).

1	2	3	4	5	6	7
Monday 1	Tuesday 1	Wednesd. 1	Thursd'y 1	Friday 1	Saturday 1	Sunday 1
Tuesday 2	Wednesd. 2	Thursd'y 2	Friday 2	Saturday 2	Sunday 2	Monday 2
Wednesd. 3	Thursd'y 3	Friday 3	Saturday 3	Sunday 3	Monday 3	Tuesday 3
Thursd'y 4	Friday 4	Saturday 4	Sunday 4	Monday 4	Tuesday 4	Wednesd. 4
Friday 5	Saturday 5	Sunday 5	Monday 5	Tuesday 5	Wednesd. 5	Thursd'y 5
Saturday 6	Sunday 6	Monday 6	Tuesday 6	Wednesd. 6	Thursd'y 6	Friday 6
Sunday 7	Monday 7	Tuesday 7	Wednesd. 7	Thursd'y 7	Friday 7	Saturday 7
Monday 8	Tuesday 8	Wednesd. 8	Thursd'y 8	Friday 8	Saturday 8	Sunday 8
Tuesday 9	Wednesd. 9	Thursd'y 9	Friday 9	Saturday 9	Sunday 9	Monday 9
Wednesd. 10	Thursd'y 10	Friday 10	Saturday 10	Sunday 10	Monday 10	Tuesday 10
Thursd'y 11	Friday 11	Saturday 11	Sunday 11	Monday 11	Tuesday 11	Wednesd. 11
Friday 12	Saturday 12	Sunday 12	Monday 12	Tuesday 12	Wednesd. 12	Thursd'y 12
Saturday 13	Sunday 13	Monday 13	Tuesday 13	Wednesd. 13	Thursd'y 13	Friday 13
Sunday 14	Monday 14	Tuesday 14	Wednesd. 14	Thursd'y 14	Friday 14	Saturday 14
Monday 15	Tuesday 15	Wednesd. 15	Thursd'y 15	Friday 15	Saturday 15	Sunday 15
Tuesday 16	Wednesd. 16	Thursd'y 16	Friday 16	Saturday 16	Sunday 16	Monday 16
Wednesd. 17	Thursd'y 17	Friday 17	Saturday 17	Sunday 17	Monday 17	Tuesday 17
Thursd'y 18	Friday 18	Saturday 18	Sunday 18	Monday 18	Tuesday 18	Wednesd. 18
Friday 19	Saturday 19	Sunday 19	Monday 19	Tuesday 19	Wednesd. 19	Thursd'y 19
Saturday 20	Sunday 20	Monday 20	Tuesday 20	Wednesd. 20	Thursd'y 20	Friday 20
Sunday 21	Monday 21	Tuesday 21	Wednesd. 21	Thursd'y 21	Friday 21	Saturday 21
Monday 22	Tuesday 22	Wednesd. 22	Thursd'y 22	Friday 22	Saturday 22	Sunday 22
Tuesday 23	Wednesd. 23	Thursd'y 23	Friday 23	Saturday 23	Sunday 23	Monday 23
Wednesd. 24	Thursd'y 24	Friday 24	Saturday 24	Sunday 24	Monday 24	Tuesday 24
Thursd'y 25	Friday 25	Saturday 25	Sunday 25	Monday 25	Tuesday 25	Wednesd. 25
Friday 26	Saturday 26	Sunday 26	Monday 26	Tuesday 26	Wednesd. 26	Thursd'y 26
Saturday 27	Sunday 27	Monday 27	Tuesday 27	Wednesd. 27	Thursd'y 27	Friday 27
Sunday 28	Monday 28	Tuesday 28	Wednesd. 28	Thursd'y 28	Friday 28	Saturday 28
Monday 29	Tuesday 29	Wednesd. 29	Thursd'y 29	Friday 29	Saturday 29	Sunday 29
Tuesday 30	Wednesd. 30	Thursd'y 30	Friday 30	Saturday 30	Sunday 30	Monday 30
Wednesd. 31	Thursd'y 31	Friday 31	Saturday 31	Sunday 31	Monday 31	Tuesday 31

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SOCIAL STATISTICS OF CITIES.

Area, population, streets and cost of repairs. Census of 1890.

Cities.	Area—Square miles.	Population.	Length of Streets in Miles.			Average width of streets—feet.	Per cent of streets paved.	Proportionate width of sidewalks to Sts.	Miles of streets to each sq. mile of area.	Per cent of street area to city area.	Number of population to each mile of streets.	Financial.	
			Total.	Paved.	Graded and curbed only.							Average yearly cost of construction and repairs.	Average yearly cost of street cleaning.
New York	39.57	1,513,501	575	358	45	60	62	25	14.5	17	2,632	$1,024,161	$1,075,200
Chicago	160.57	1,098,576	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Philadelphia	77.65	1,046,252	1,151	750	50	50	65	25	14.9	14	909	637,550	283,909
Brooklyn	19.22	804,377	653	375	3	70	57	25	34.0	87	1,232	393,945	165,165
St. Louis	48.32	460,357	1,061	422	40	60	40	20	21.9	25	434	837,304	126,804
Boston	35.38	446,507	408	408	....	40	100	17	11.6	9	1,094	825,000	136,673
Baltimore	18.33	433,547	780	459	100	66	59	20	42.6	53	556	120,000	110,000
San Francisco	15.46	297,990	342	92	190	69	27	20	22.1	29	871	958,743	58,437
Cincinnati	25.00	296,309	486	254	....	50	52	20	19.4	14	610	855,000	185,000
Cleveland	24.88	261,546	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Buffalo	39.04	254,457	372	194	....	58	52	40	10.0	40	684	573,244	13,000
New Orleans	37.09	241,995	625	89	261	60	14	20	16.8	19	387	35,000	250,000
Pittsburg	6.08	238,473	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Washington	.....	229,296	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	20.59	205,669	400	147	....	57	37	50	19.4	21	514	334,617	.....
Milwaukee	17.00	204,150	419	72	6	75	17	20	24.6	35	487	468,077	.....
Newark	17.77	181,515	186	48	138	60	26	8	10.5	12	976	20,000	30,000
Minneapolis	51.67	164,738	300	95	4	80	3	33	15.5	23	206	200,000	.....

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Omaha	24.50	139,526	508	52	41	66	10	20	20.7	26	275	683,565	22,000
Rochester	15.60	138,327	240	72	72	50	30	....	15.4	15	576	141,803	20,611
St. Paul	51.42	133,156	970	40	325	60	4	17	19.0	21	137	757,909	37,584
Indianapolis	10.07	107,445	400	234	16	75	59	17	39.7	56	269	275,000	50,000
New Haven	13.97	85,981	140	32	....	60	23	20	10.0	11	614	136,416	4,500
Worcester	33.60	84,536	165	195	....	50	100	33	5.8	6	434	140,011	7,600
Toledo	19.72	82,652	438	60	220	66	14	20	22.2	28	189	327,902	8,137
Lowell	11.15	77,605	105	19	1	50	18	19	9.4	9	739	98,712	.....
Nashville	8.44	76,309	251	147	....	50	59	33	29.7	28	384	130,000	.....
Fall River	10.95	74,351	106	2	79	50	2	9	9.7	9	701	66,500	.....
Cambridge	5.83	69,837	79	23	....	50	20	17	13.7	12	884	45,000	25,000
Trenton	3.95	58,488	100	7	50	60	7	20	25.3	28	585	10,000	1,800
Camden	4.34	58,274	100	31	20	60	31	25	23.0	25	583	22,000	11,000
Lynn	10.64	55,684	125	82	30	50	66	17	11.7	11	445	40,000	10,000
Hartford	14.66	53,182	130	80	50	70	62	13	8.9	11	409	46,783	5,633
Evansville	4.42	50,674	136	33	52	70	24	33	30.8	41	373	33,713	76,800
Los Angeles	27.00	50,394	800	83	76	60	10	17	28.9	33	63	.....	.....
Lawrence(Mass.)	6.67	44,559	82	75	....	50	91	17	12.3	12	543	33,209	3,000
Hoboken	1.47	43,561	30	17	3	58	57	25	20.4	22	1,452	20,000	2,000
Dallas	7.68	38,140	523	25	66	60	5	10	69.0	78	72	18,000	.....
Sioux City	30.90	37,862	340	14	75	80	4	17	11.0	17	111	758,157	6,000
Portland, Me	2.51	36,608	56	9	43	50	16	17	22.3	21	654	58,000	.....
Holyoke	3.98	35,528	56	50	....	60	10	17	12.6	14	711	18,000	.....
Binghamton	10.04	35,093	80	4	70	50	5	9	8.0	76	439	15,000	1,000
Duluth	3.23	32,735	224	35	20	66	16	25	69.3	87	146	496,642	5,000
Elmira	4.45	28,070	90	43	5	55	46	25	20.2	21	312	12,000	2,000
Joliet	.37	27,407	98	44	....	65	45	17	26.5	32	280	14,338	1,500
Canton	6.80	26,337	150	5	115	60	3	20	22.0	25	176	32,000	.....
Taunton	13.65	25,389	200	170	20	48	85	14	14.7	11	127	36,000	.....
Davenport	4.41	25,161	140	26	79	70	19	17	31.7	40	180	30,000	5,000
La Crosse	8.19	25,053	125	15	110	66	12	25	15.8	18	200	20,378	.....
Newport, Ky	1.20	24,938	30	27	3	66	90	40	25.0	31	831	15,000	4,000
Rockford	6.37	25,589	120	31	50	66	26	8	18.8	25	197	1,200	2,000

Interest Laws and Statutes of Limitations.

States and Territories.	Interest Rate.		Statutes of Limitations.		
	Legal Rate.	Rate Allowed by Contract.	Judgments Years.	Notes, Years.	Open Accounts, Years
	per ct.	per ct.			
Alabama	8	8	20	6	3
Arkansas	6	10	10	5	3
Arizona	7	Any rate.	5	3	2
California	7	Any rate.	5	4	2
Colorado	10	Any rate.	6	6	6
Connecticut	6	†	...	6	6
Dakota	7	Any rate.	20	6	6
Delaware	6	6	20	6	3
District of Columbia	6	10	12	3	3
Florida	8	Any rate	20	5	2
Georgia	7	8	7	7	4
Idaho	10	18	6	6	3
Illinois	6	8	7	10	5
Indiana	6	8	10	10	6
Iowa	6	10	10	10	5
Kansas	7	10	5	5	2
Kentucky	6	8	15	15	5
Louisiana	5	8	10	5	3
Maine	6	Any rate.	20	6	6
Maryland	6	6	12	3	3
Massachusetts	6	Any rate.	20	6	6
Michigan	6	10	6	6	6
Minnesota	7	10	10	6	6
Mississippi	6	10	7	6	3
Missouri	6	10	20	10	5
Montana	10	Any rate.	6	6	2
Nebraska	7	10	5	5	4
Nevada	7	Any rate.	6	6	4
New Hampshire	6	6	20	6	6
New Jersey	6	6	20	6	6
New Mexico	6	12	15	6	4
New York	6	6*	20	6	6
North Carolina	6	8	10	3	3
Ohio	6	8	5	15	6
Oregon	8	10	10	6	1
Pennsylvania	6	6	5	6	6
Rhode Island	6	Any rate.	20	6	6
South Carolina	7	10	10	6	6
Tennessee	6	6	10	6	6
Texas	8	12	15	4	2
Utah	10	Any rate.	5	4	2
Vermont	6	6	6	6	6
Virginia	6	8	10	5	2
Washington Territory	10	Any rate.	6	6	3
West Virginia	6	†	10	10	5
Wisconsin	7	10	20	6	6
Wyoming	12	Any rate.	5	5	4

*New York has by a recent law legalized any rate of interest on call loans of $5,000 or upward, on collateral security. †No usury, but over 6 per cent. cannot be collected by law.

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The Running Turf.

DISTANCE.	TIME.	NAME.	PLACE.	DATE.

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1 m. 500 yds	2:10½	Bend Or (4 yrs.), 115 lbs.	Saratoga, N. Y.	July 25, 1882
1⅜ miles.	2:20¼	Ormie (4 yrs.), 105 lbs.	Chicago, Ill.	July 7, 1880
1½ "	2:33	Firenzi (6 yrs.), 117 lbs.	Sheepshd Bay, L.I.	June 26, 1880
1⅝ "	2:48	Hindoocraft (3 yrs.), 75 lbs.	Westchest'r, N.Y.	Aug. 27, 1880
1¾ "	3:01	Glidelia (5 yrs.), 116 lbs.	Saratoga, N. Y.	Aug. 5, 1882
1⅞ "	3:20	Enigma (4 yrs.), 90 lbs.	Sheepshd By, L.I.	Sept. 15, 1885
2 "	3:27½	Ten Broeck (5 yrs.), 110 lbs., against time.	Louisville, Ky.	May 20, 1877
2⅛ "	3:44½	Monitor (4 yrs.), 110 lbs.	Baltimore, Md.	Oct. 20, 1880
2¼ "	3:56¼	Preakness(ag.),114lbs.&Sp'gbok(5y)114 lbs.d'd.h	Saratoga, N. Y.	June 29, 1875
2½ "	4:27½	Aristides (4 yrs.), 104 lbs.	Lexington, Ky.	May 13, 1876
2⅝ "	4:58½	Ten Broeck (4 yrs.), 104 lbs.	" "	Sept. 16, 1876
2¾ "	4:53¾	Hubbard (4 yrs.), 103 lbs.	Saratoga, N. Y.	Aug. 9, 1873
3 "	5:24	Drake Carter (4 yrs.), 115 lbs.	Sheepshd By, L.I.	Sept. 6, 1884
4 "	7:15¾	Ten Broeck (4 yrs.), 104 lbs., against time.	Louisville, Ky.	Sept. 27, 1876
10 "	26:18	Mr. Brown (6 yrs.). 160 lbs. C. H. Pell, rider.	Rancocas, N. J.	Mar. 2, 1880

Heat Racing.

¼ mile.	0:21½-0:22¼	Sleepy Dick (aged).	Kiowa, Kan.	Nov. 24, 1888
½ "	0:48 -0:48	Bogus (aged), 113 lbs.	Helena, Mont.	Aug. 22, 1888
⅝ "	1:00 -1:00	Kittie Pease (4 yrs.).	Dallas, Tex.	Nov. 2, 1887
¾ "	1:13¼-1:13¼	Lizzie S. (5 yrs.), 118 lbs.	Louisville, Ky.	Sept. 28, 1883
1 "	1:42 -1:41½	Bounce (4 yrs.), 90 lbs.	Sheepshd By, L.I.	Sept. 8, 1881
1 "	1:42¼-1:41¾	Gabriel (5 yrs.), 115 lbs. Best at weight.	St. Louis, Mo.	June 13, 1881
1⅛ miles.	1:50½-1:48	Slipalong (5 yrs.), 115 lbs.	Chicago, Ill.	Sept. 2, 1885
1⅛ "	1:56 -1:56	Gabriel (4 yrs.), 112 lbs.	Sheepshd By, L.I.	Sept. 23, 1880
1⅛ "	1:56 -1:56⅜	Firenzi (4 yrs.), 125 lbs. Best at weight.	" "	Sept. 15, 1888
1¼ "	2:10 -2:14	Glenmore (5 yrs.), 114 lbs.	" "	Sept. 25, 1880
1½ "	2:42¼-2:43	Bigaroon (4 yrs.).	Lockport, N. Y.	July 4, 1872
2 "	3:33 -3:31¼	Miss Woodford (4 yrs.), 107½ lbs.	Sheepshd By, L.I.	Sept. 20, 1884
3 "	5:27½-5:29½	Norfolk (4 yrs.), 100 lbs.	Sacramento, Cal.	Sept. 23, 1865
3 "	5:28	Brown Dick (3 yrs.), 86 lbs. Best second heat	New Orleans, La.	Apr. 10, 1855
3 "	5:28¾	Mollie Jackson (4 y.), 101 lbs. Best third heat	Louisville, Ky.	May 25, 1861
4 "	7:23½-7:41	Frida (4 yrs.), 108 lbs.	Sheepshd By, L.I.	Sept. 18, 1880
4 "	7:30¼-7:31	Glenmore (4 yrs.), 108 lbs. Best 2d & 3d heats	Baltimore, Md.	Oct. 25, 1879

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The Running Turf—Over Hurdles.

Distance.	Time.	Name.	Place.	Date.
1 mile	1:49	Bob Thomas 5y 140 lbs 4 hurdles.....	Chicago, Ill.....	Aug. 13, 1890.
1 "	1:50¾-1:50¼	Joe Rhodes 5y 141bs 4 hurdles.....	St. Louis, Mo.....	June 4, 1878.
1⅛ mls	2:02¾	Winslow 4y 138lbs 5 hurdles.....	Chicago, Ill.....	Aug. 29, 1888.
1¼ "	2:16	Jim McGowan 4y 127 lbs 5 hurdles.	Br. Beach, C. I.....	Nov. 9, 1882.
1⅜ "	2:35	Guy (aged) 155 lbs 5 hurdles.....	Latonia, Ky.....	Oct. 8, 1885.
1½ "	2:47	Kitty Clark 3y 130 lbs 6 hurdles.....	Br. Beach, C. I.....	Aug. 23, 1881.
1½ "	2:47	Speculation 6y 125 lbs 6 hurdles.....	" "	July 19, 1881.
1⅝ "	3:16	Turfman 5y 140 lbs 7 hurdles.....	Saratoga, N. Y.....	Aug. 7, 1882.
1¾ "	3:17	Kitty Clark 4y 142 lbs 7 hurdles.....	Monmouth Pk, N. J..	July 12, 1882.
2 "	3:47½	Tom Leathers (agd) 117 lbs 8 hrdls.	New Orleans, La.....	April 16, 1875.
2 "	3:48¼	Ventilator (agd) 135 lbs 8 hurdles..	Sheepsh'd Bay, L. I..	June 24, 1880.
1¼ "	4:33	Cariboo 5y 154 lbs 9 hurdles.....	Monmouth Pk, N. J.	Aug. 28, 1875.

Long Distance Riding.

10 mls	20:02	Miss Belle Cook 5 hors ch 5 times...	Minneapolis, Minn..	Sept. 10, 1882.
20 "	40:59	Little Cricket ch horses at will.....	" " ..	Sept. 7, 1882.
50 "	1 50:03½	Carl Pugh 10 h ch at will mtch race.	S. Bernardino, Cal...	July 7, 1883.
60 "	2.30:00	Geo Osbaldiston 11 horses.....	Newmarket, Eng.....	Nov. 5, 1831.
100 "	4.19:40	" " 16 "	" "	Nov. 5. 1831.
101m4971f	4.42:35	Miss Nellie Burke ch hors 54 times	Galveston, Tex.....	Feb. 25, 1884.
155 mls	6.45:07	John Murphy ag time 20 horses.....	New York, N. Y.....	July 3, 1876.
200 "	8 hours.	Nell H Mowry 30 horses.....	Bay V'w Pk, S. F'co.	Aug. 2, 1868.
201 "	52 "	Hesing Jr mtch with G Guyon ped	Chicago, Ill.....	Jan. 9, 10, 11, 1880.
300 "	14.00:00	Nell H Mowry 30 horses..... ..	San Francisco, Cal...	Aug. 2, 1868.
559m734y		Pinafore 6 day race ag men & hors..	" " ...	Oct. 15-20, 1879.
1071½ mls	72 hours.	C M Anderson 12 h daily ch at will.	" " ...	Apr1 5-20, 1884.
1304 "	90 "	" 15 " "	" " ...	May 15, 1880.

Thomas Edison Papers

PEDESTRIANISM—Running.

Amateur performances are designated by an asterisk (*).

DISTANCE.	NAME.	PLACE.	DATE.	TIME.
50 yards	H. M. Johnson	New York City.	Nov. 22, 1884.	5¼ s.
50 "	*L. E. Myers	" "	Dec. 12, 1884.	5⅛ s.
75 "	James Quirk (against time)	Parkhill, Can.	Oct. 30, 1888.	7¾ s.
75 "	*F. G. Saportas	New York City.	Jan. 5, 1878.	7¾ s.
80 "	*Wendell Baker (against time)	Boston, Mass.	July 1, 1886.	8 s.
100 "	H. M. Johnson	Cleveland, O.	July 31, 1886.	9 4-5 s.
100 "	Harry Bethune	Oakland, Cal.	Feb. 22, 1888.	9 4-5 s.
500 "	*L. E. Myers	Staten Island.	May 29, 1880.	58 s.
1,000 "	*L. E. Myers	New York City.	Oct. 8, 1881.	2:13.
1 mile	W. G. George	London, Eng.	Aug. 23, 1886.	4:12¾.
2 miles	Wm. Lang	Manchester, Eng.	Aug. 1, 1863.	9:11½.
3 "	P. Cannon	Govan, Scotland.	May 14, 1888.	14:19½.
4 "	P. Cannon	Glasgow, Scotland.	Nov. 8, 1888.	19:25 2-5.
5 "	J. White	London, Eng.	May 11, 1863.	24:40.
6 "	J. White	" "	" "	29:50.
7 "	J. White	" "	" "	34:45.
8 "	J. Howitt	" "	June 1, 1852.	40:20.
9 "	J. Howitt	" "	" "	45:21.
10 "	W. Cummings	" "	Sept. 18, 1885.	51:06.
20 "	Patrick Byrnes	Halifax, N. S.	Oct. 4, 1879.	1:54:00.
30 "	G. Mason	London, Eng.	March 14, 1881.	3:15:09.
40 "	James Bailey	" "	" "	4:37:27.
50 "	George Cartwright	" "	Feb. 21, 1887.	5:55:04½

72-HOUR RACES—12 HOURS DAILY.—Greatest distance traveled go-as-please in 12 hours, G. Littlewood, at London, Eng., Nov. 24, 1884, 89 miles, 880 yards. 24 HOURS.—G. Littlewood, London, Eng., Nov. 25, 1884, 162 miles, 704 yards. 36 HOURS.—G. Littlewood, London, Eng., Nov. 24-26, 1884, 229 miles, 1,408 yards. 48 HOURS.—G. Littlewood, London, Eng., Nov. 24-27, 1884, 296 miles, 1,056 yards. 60 HOURS.—C. Rowell, London, Eng., April 27 and May 1, 1885, 362 miles, 528 yards. 72 HOURS.—C. Rowell, London, Eng., April 27 and May 2, 1885, 430 miles.

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Best Trotting Records.

DISTANCE	TIME.	NAME.	PLACE.	DATE.
½ mile	1:02½	Sunol against time	Detroit, Mich	July 24, 1890
1 "	2:08¾	Maud S. ag. time, in harn. with run. m.	Glenville, O	July 30, 1885
1 "	2:11 – 2:10¼	J. Eye S. ag. t. with run. m. Fast's 2 trials	Philadelphia, Pa	Aug. 15, 1884
1 "	2:10½	Sunol ag. t. with run. m. Best 3 y. old rec	San Francisco, Cal	Nov. 9, 1889
1 "	2:10¾	Nelson " " Fastest stallion t.	Cambridge City, Ia	Oct. 21, 1890
1 "	2:10½	Sunol " Best 4-year old record	Chicago, Ill	Aug. 26, 1890
1 "	2:13	Palo Alto. Best time against horses	" "	Aug. 22, 1890
1 "	2:13¾	Phallas. Best heat by stal. ag. oth. hrs.	" "	July 14, 1884
1 "	2:13¾	Palo Alto. Third heat	Stockton, Cal	Sept. 26, 1889
1 "	2:14	Allerton, stal. (4 yrs.), kite-shaped tr.	Independence, Ia	Oct. 30, 1890
1 "	2:16	Edgemark " " circular track.	Lexington, Ky	Oct. 18, 1889
1 "	2:15¼	Nelson " ag. time. ½-mile track.	Bangor, Me	Sept. 6, 1890
1 "	2:15½ – 2:13¼	⎫ Palo Alto. Best 4 consec. hts. in stal. ⎭ race. Palo A. t'k 2d & Jack the oth'rs	Detroit, Mich	Aug. 2, 1890
1 "	2:15 – 2:16			
1 "	2:15¾	Great Eastern, under saddle, 3d heat	Morrisonia, N. Y	Sept. 22, 1877
1 "	2:16½ – 2:17	⎫ Hopeful. Best time and best 2d and ⎭ 3d consecutive heats to wagon	Chicago, Ill	Oct. 12, 1878
1 "	2:17			
1 "	2:10¾	Jay Eye See, ag. t. Best 5-year-old rec.	Providence, R. I	Sept. 15, 1883
1 "	2:18	Sunol (2 years), against time	San Francisco, Cal	Oct. 27, 1888
1 "	2:18	Faust. Best 3-year-old record in race	Butte, Mont	Aug. 27, 1889
1 "	2:20¾	Regal Wilkes. Best 2-yr.-old stal. rec.	San Francisco, Cal	Nov. 9, 1889
1 "	2:20¾	Freedom ag. t. Best yrl. & yrl. stal. rec.	Napa, Cal	Oct. 18, 1890
1 "	2:25	Col. Wood. Best English record	Alexand'a Pk., Lond.	Oct. 27, 1890
2 "	4:43	Fanny Witherspoon, against time	Chicago, Ill	Sept. 25, 1885
2 "	4:48½ – 4:51	Steve Maxwell. Best 2 cons. hts. in har.	Rochester, N. Y	Aug. 10, 1880
2 "	4:56½	Gen. Butler, to wagon, 1st heat	Fashion course, L. I.	Oct. 27, 1865
3 "	7:21¼	Huntress, harness	Brooklyn, N. Y	Sept. 21, 1872
3 "	7:32½	Dutchman, saddle	Hoboken, N. J	Aug. 1, 1839
3 "	7:53	Longfellow, wagon	Sacramento, Cal	Sept. 21, 1868
4 "	10:34½	" "	California	Dec. 31, 1869
4 "	10:51	Dutchman, saddle		May —, 1836
4 "	10:52½	Satellite, harness	Keokuk, Ia	Aug. 12, 1887

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5	"	13:00	Lady Mac, "	San Francisco, Cal.	April 2, 1874
5	"	13:43¼	Little Mac, wagon		Oct. 20, 1883
6	"	16:53¾	Satellite, harness	Keokuk, Ia.	Aug. 15, 1889
10	"	27:23¼	Controller, "	San Francisco, Cal.	Nov. 23, 1878
10	"	27:56½	Steel Gray, saddle	Leeming Lane, Eng.	April 14, 1875
20	"	58:25	Gapt. McGowan, harness, ½-mile trk.	Boston, Mass.	Oct. 31, 1865
50	"	3.52:00	Ginger, 15:3 hds., wgn. & dr. wg. 276 lbs.	Bath Road, Eng.	July 10, 1887
50	"	3.55:40½	Ariel, harness, driver weighing 60 lbs.	Albany, N. Y.	1846
100	"	8.55:53	Conqueror, harness	Union Course, L. I.	Nov. 12, 1853

With Running Mate.

1	mile	2:06	H. B. Winship, against time	Providence, R. I.	Aug. 1, 1884
1	"	2:08½	Frank, against another horse	Brooklyn, N. Y.	Nov. 15, 1883
1	"	2:09¾	H. B. Winship in a race. Fasts. 4th ht.	Chicago, Ill.	July 5, 1884
1	"	2:10¼	" Fastest 2d heat	Brooklyn, N. Y.	Nov. 15, 1883
1	"	2:12¾ - 2:10¾ / 2:09¾	" " 3d ht. & 3 conc. hts.	Chicago, Ill.	July 5, 1884

Double Teams.

1	mile	2:13	BelleHamlin & Justina, ag. t. skl. w. ki. tr	Independence, Ia.	Oct. 27, 1890
1	"	2:15	" ag. t., skel. wag., round tr.	Terre Haute, Ind.	Oct. 10, 1889
1	"	2:24¼	Harry Mills & Eddie Medium, ½-m. tr.	Waverly, N. J.	Sept. 22, 1887

Pacing Records.

¼	mile	0:29¼	Johnston, against time	Springfield, Mass.	Sept. 14, 1888
½	"	1:00½	" "	New York, N. Y.	Sept. 21, 1888
1	"	2:07¾	Westmount, ag. time, with run. mate	Chicago, Ill.	July 10, 1884
1	"	2:06¼	Johnston, harness, against time	" "	Oct. 3, 1884
1	"	2:08¼	Roy Wilkes, ag. t. Best stl. rec., k. sh. tr.	Independence, Ia.	Aug. 30, 1890
1	"	2:09¾ - 2:12¾ / 2:13	Hal Pointer. Best time in race and best 3 consecutive heats	Terre Haute, Ind.	Oct. 9, 1890
1	"	2:11½	Adonis. Race between horses	Glenville, O.	July 30, 1890
1	"	2:13	Johnston, saddle	" "	Aug. 3, 1888
2	miles	4:56½	Hero, harness	Union Course, L. I.	May 17, 1853
3	"	7:44	Oneida Chief, saddle	Hoboken, N. J.	Aug. 15, 1843

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Breathing Spots in Cities.

Wherever the population is most dense in American cities there is some provision for fresh air and bright sunlight. The leading European cities present a curious study in this respect. London has a park area of 5 976 acres, of which 1,412 are in one lot. Berlin has 1,697, of which 686 are in one inclosure. Paris has 4,739, of which 2,359 are in one domain. Vienna has 2,534, of which all but 344 acres are in one space. Birmingham has 225 acres, with 57 in one area. Leeds has 538 acres, with a single park including 300. Manchester has 169 acres, with a public garden containing 60. This is a fair, general, and comparative exhibit for the two countries. It is seen that the older European cities are those in which the air spaces are best distributed in view of the needs of the population, and that the older American cities are making increased provision for the denser districts, even when it involves the purchase of land at an enormous valuation.

Eclipse.

A celestial body is said to be eclipsed when it is immersed in the shadow of another. Thus a lunar eclipse is caused by the moon entering the shadow of the earth. Jupiter's satellites are frequently eclipsed by passing through the shadow cast by their primary. A solar eclipse is due to the interposition of the moon between the sun and earth, and the phenomenon is strictly an occultation, but the former term is retained for convenience.

Equator.

The Terrestrial Equator is an imaginary great circle, equally distant from the poles of the earth, and dividing it into two equal hemispheres. The Celestial Equator is simply the Terrestrial Equator extended outward to the heavens.

Equinoxes.

The two points where the equator and ecliptic intersect each other. At these times day and night are equal over the world. Spring equinox occurs on March 21, and autumnal equinox, September 22.

Halley's Comet.

The first periodical comet discovered. It has a period of about 76½ years, and was observed in 1531, 1607, 1682, 1759, and 1835.

Halo.

A colored circle of light, about 45 deg. diameter, round the sun or moon, and formed by the refraction of the rays from the luminaries named.

Harvest Moon.

This term is applied to the full moon, which happens on or nearest to the 21st September, because it rises on several

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consecutive nights more nearly after sunset than any other full moon of the year, and is specially favorable for harvesting work in the evening.

Gravity

is the force or tendency in material bodies to fall toward each other. This force varies inversely as the squares of the distances separating them, and is directly proportional to the mass.

Planet.

A wandering or moving body. Planets are distinguished from fixed stars by their variations of position, and by the comparative steadiness of their luster. Inferior plants are those planets situated within the Earth's orbit—viz., Mercury and Venus. Superior planets are those revolving outside the Earth's orbit—viz., Mars, Jupiter, Saturn, Uranus, and Neptune. There are 8 major planets, 20 Satellites, and 278 planetoids known at the present time. The Earth has 1 satellite, Mars 2, Jupiter 4, Saturn 8, Uranus 4, Neptune 1. The planetoids are small bodies often termed minor planets, revolving between the orbits of Mars and Jupiter.

Neptune.

The farthest known planet from the sun. Discovered by Leverrier and Adams, 1846.

Mean distance from the Sun	2,772,000,000 miles.
Period of revolution	164¾ years.
Real diameter	35,000 miles.

Mars.

A major planet, and the fourth in the order of distance from the Sun:

Mean distance from the Sun	140,000,000 miles.
Period of revolution	687 days.
Period of rotation	24h. 37m. 22⅛s.
Real diameter	5,000 miles.

Mercury.

The nearest planet to the Sun:

Mean distance from the Sun	36,000,000 miles.
Period of revolution	88 days.
Period of rotation	24 or 25 hours (?)
Real diameter	3,000 miles.

Jupiter.

The largest planet of the solar system:

Mean distance from the Sun	484,000,000 miles.
Period of revolution	nearly 12 years.
Period of rotation	9h. 55m. 37s.
Real diameter	88,000 miles.

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Saturn

was regarded as the outermost orb of the solar system before the discovery of Uranus in March, 1781.

Mean distance from the Sun	878,000,000 miles.
Period of revolution	29½ years.
Period of rotation	10h. 14m. 23·8s.
Real diameter	74,600 miles.
Real diameter of luminous ring	166,000 "

Rings of Saturn.

A unique luminous appendage to the planet Saturn. Galileo first saw it, but Hughens, in 1654, was the first to discover its real aspect. It is a very thin structure, though extending a considerable distance in a direction away from the planets, and lies parallel with the equator. It is divided into several separate rings, and becomes practically invisible once in about 15 years, being then turned edgewise toward the earth.

Uranus.

A major planet discovered by W. Herschel in 1781.

Mean distance from the Sun	1,774,000,000 miles.
Period of revolution	84 years.
Real diameter	31,000 miles.

Venus.

The morning and evening star, and the most lustrous object in the sky, the Sun and Moon excepted.

Mean distance from the Sun	67,000,000 miles.
Period of revolution	224 7-10 days.
Period of rotation	23h. 21m. (?).
Real diameter	7,400 miles.

Sun.

The great central luminary of our system, and the source or light and heat.

Mean distance from the Earth	92,393,000 miles.
Real diameter	861,600 miles.
Apparent diameter	32 min. of arc.
Rotation	25½ days.

Sun Spots.

Dark and bright spots are visible on the Sun, and are rapidly variable. They attain a maximum about every 11 years. The dark spots consist of a penumbra with an interior umbra, and sometimes a black nucleus. They are most abundant in zones N. and S. of the equator. Red hydrogen flames are constantly evolved from the solar surface.

Volapuk.

A number of efforts have been made for two centuries past to found a universal language, but these have all seemed to lack some important particular of success. The most recent

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attempt in this line is much more promising than any which has preceded it. Volapuk is the invention of the Rev. Dr. Johan Martin Schleyer, of Baden, Germany, an accomplished linguistic student. He can speak and write, it is said, twenty-eight languages. He had been working upon his universal language scheme for some time when in 1879 he announced it, and he had so far perfected the plan of it in 1880 as to publish a pamphlet concerning it. The name is from vola, of the world, and puk, language. It is founded on the model of the Aryan tongues, the signs representing letters and words, not ideas; and all the root words, or nearly all, are taken from living modern tongues, the English being used to a much greater extent than any other language. The Roman alphabet is used, with some German dotted letters, and the continental sounds are given to all letters. All words are phonetically spelled. The Arabic numerals are used, and the names of the numbers are indicated by the use of the vowels in regular order. All plurals are formed in "s." All verbs are regular, and there is only one conjugation. Tenses are shown by vowels before the verb; preceding these vowels by "p" gives the passive voice. The personal pronoun placed after the root shows the person. One advantage of this language is that it can be learned very quickly. It is estimated that over 10,000 persons in Europe have mastered it, and it has been tried to some extent in this country also. If it could be adopted in commercial transactions between nations speaking different languages it would, no doubt, prove a very great advantage and saving of expense.

Varnish Formulas Worth Preserving.

VARNISHING ARTICLES OF IRON OR STEEL.—The following varnish will maintain its transparency and the metallic brilliancy of the articles will not be obscured: Dissolve ten parts of clear grains of mastic, five parts of camphor, five parts of sandarach and five parts of elemi in a sufficient quantity of alcohol, and apply without heat.

MORDANT VARNISHES.—One of the simplest of these varnishes, which are chiefly used when a coating of some other substance, such as gold leaf, is to be entirely or in part laid over them, is that procured by dissolving a little honey in thick glue. It has the effect of greatly heightening the color of the gold.

A BRILLIANT BLACK VARNISH for cooking and gasoline stoves: Asphaltum, two pounds; boiled linseed oil, one pint; oil of turpentine, two quarts. Fuse the asphaltum in an iron pot, boil the linseed oil, and add while hot; stir well and remove from the fire. When partially cooled add the oil of turpentine. Some makers add driers.

VARNISH FOR COATING METALS.—One part of copal, one part of oil of rosemary, in two or three parts of absolute alcohol, supplies a clear varnish as limpid as water. It should be applied hot. When dry it will prove hard and durable.

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VARNISH FOR GILDED ARTICLES.—Gum-lac turgrain, 125 parts; gamboge, 125; dragon's blood, 125; annotto, 125; saffron, 32. Each resin must be dissolved in 1,000 parts by measure of alcohol of 90 per cent.; a separate tincture must be made of dragon's blood, another of annotto in 1,000 parts of such alcohol, and a proper proportion of each added to the varnish according to the shade of golden color wanted.

BEFORE VARNISHING CARDWORK it must receive two or three coats of size to prevent absorption of the varnish and injury to the design. The size may be made by dissolving a little isinglass in hot water, or by boiling some parchment cuttings until dissolved. Strain through muslin and clarify with white of egg. Apply with light, delicate touch lest the colors be started or smothered.

A GOOD LACQUER FOR BRASS can be prepared as follows: One quart of alcohol, 98 per cent., one and one-half ounce of best orange shellac, one-quarter ounce gum sandarach, one-quarter ounce gum elemi. Mix and keep gently warm for two or three days, stirring occasionally, and strain; give it a wine color with dragon's blood. Warm the article before applying the lacquer.

A Good Washing Fluid.

A very good recipe for washing-fluid: Cost of materials, 25 cents. One pound of concentrated lye, one pound of borax, one pound of salts of tartar, one pound of ammonia (dump, not fluid), one gallon of rain water. Dissolve the borax, salts of tartar, and ammonia, each separate; put the lye in the gallon of water, and when cool put in the others when well dissolved. Be sure and put the lye in cold water. Put in a stone crock to dissolve, and when done, in a gallon jug. Allow one tablespoonful to a pail of water. Have the water very hot, fix your suds in the boiler, and add your fluid and clothes. Stained clothes should be first washed out in cold water. If very dirty, put the clothes in two tubs, and pour your suds over them and let them soak till you get work done up or till cool enough to rub. You will say it is the easiest washing you ever have done.

Artificial Rubies.

The specimens prepared by MM. Fremy and Verneuil, and exhibited in February last at the Academy of Sciences in Paris, are stated to have all the characteristics of the real jewels, although as yet the stones produced are but of small size, not larger than the head of a small pin, and are not likely to commercially affect the price of the natural article, owing to the excessive care and attention required in the manufacture. The process consists in causing flourides, and especially barium flouride, to react at a red heat upon alumina containing traces of potassium bichromate, which supplies the coloring matter. The regularity of crystallization is especially due to the regulation of the fire, which determines and modifies the chemical reaction.

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Atomic Weight of Oxygen.

This very important constant has been lately re-determined by several observers. The values obtained are given as compared with hydrogen taken as unity—15·872 (E. H. Keiser); 15·884 (Lord Rayleigh); 15·953 (J. P. Cooke and T. W. Richards). It is probable that the most exact of these values is 15·884.

Cost of Children.

The average cost of bringing children to maturity is $600. To bring a child to the age of five years requires on the average $300. In the United States 35 per cent. of the males fail to reach the age of 20 years. Of course, the mortality among infants is much higher than among older children or adults. For every person dead there are two persons sick. It costs less to develop a Norwegian than to raise to adult years an individual of any other nationality. There is less general sickness in this century than in the centuries past. Where the average age of a citizen is now 50 years, in the days of ancient Rome the citizens lived but thirty years. As many live now to be 70 years old as three centuries ago lived to reach the age of 50 years.

Miles of Postage-Stamps.

Up to 1884 the English post-office had issued 31,302,000,000 postage-stamps. That would cover 3,762 square miles, and would reach to the moon and back if placed end to end.

The Origin of the Shot-Tower.

A mechanic in Bristol, England, whose name was Watts, by trade a shot-maker, invented the shot-tower. Watts had to take bars of lead and pound them out into sheets of thickness about equal to the diameter of the shot he desired to make; then he cut the sheets into little cubes, which he rolled in a revolving barrel until the corners were worn off from the constant friction. One night he dreamed he was out, when it began to rain shot—beautiful globules of lead falling at his feet. In the morning when he arose he remembered his dream, and wondered what shape molten lead would take in falling a distance through the air. At last he carried a ladelful of the hot metal up into the steeple of the church of St. Mary of Redcliff, and dropped it into the mote below. Descending, he took from the shallow pool several handfuls of perfect shot. He had conceived the idea of a shot-tower.

How Baccarat is Played.

Baccarat is a very simple game. The dealer and each side of the table have two or three cards. The object is to get as near nine as possible, and tens and court cards do not count. If the two first cards dealt do not together amount to five the player asks for another. If above five, he does not. The sole question in doubt is whether a player whose two cards

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together make five ought to draw a third card or not. Because of this doubt, it has been ruled by French courts that baccarat is not a game of chance, and yet it is a mathematical certainty that either the chances of bettering the hand are improved by drawing a third card or diminished. Considering, therefore, the large sums that are risked at this game, it is somewhat curious that no one has ever taken the trouble to work out the probabilities.

How It Feels to Drop 3,000 Feet.

"How does it feel to let go of the balloon when you are two or three thousand feet in the air?" said Thomas F. Grinley, the parachute jumper. "I'm sure I cannot tell. One comes down so rapidly he has hardly time to analyze his feelings. Macclain, my partner, compares the sensation to that of being upset in the river. We cut loose from the balloon almost mechanically, and before we realize we are loose we have shot down a couple of hundred feet, and thereafter the remainder of the d scent is easy. It does not jar you until when you strike the ground, if you strike on your feet. In fact there is less jarring to the system than if you jumped off of a six-foot high fence. Neither is there any appreciable difference in the air to the height which we attain. It is a great deal purer, though, but not as rarified as you would suppose."

Formation of Alloys.

Mr. W. Hallock finds that many alloys may be prepared by submitting their constituent metals to a temperature slightly above the m lting point of the alloy which may be expected to result from their union. Wood's fusible alloy of bismuth, lead, tin, and cadmium may thus be made by heating to 98° or 100° Centigrade the finely-divided metals just pressed together so as to ensure the contact of the constituents.

Great Mines.

The most extensive mines in the world are those of Freyburg, Saxony. They were begun in the twelfth century, and in 1835 the galleries, taken collectively, had reached the unprecedented length of 123 miles. A new gallery, begun in 1838, had reached a length of eight miles at the time of the census of 1878.

The deepest perpendicular mining shaft in the world is located at Przilram, Bohemia. It is a lead mine; it was begun in 1832. In January, 1880, it was 3,280 feet deep.

The deepest coal mine in the world is near Tourney, Belgium; it is 3,542 feet in depth, but, unlike the lead mine mentioned above, it is not perpendicular.

The deepest rock salt bore in the world is near Berlin, Prussia; it is 4.185 feet deep.

The deepest hole ever bored into the earth is the artesian well at Pottsdam, which is 5,500 feet deep.

The deepest coal mines in England are the Dunkirk collieries of Lancashire, which are 2,824 feet in depth.

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The deepest coal shaft in the United States is located at Pottsville, Pa. In 1885 it had reached a depth of 1,576 feet. From this great depth 400 cars, holding four tons each, are hoisted daily.

The deepest silver mine in the United States is the Yellow Jacket, one of the great Comstock system at Virginia City, Nev. The lower levels are 2,700 feet below the hoisting works.

Value of Metals.

Fully ninety-nine persons in every hundred, if asked to name the most precious metals, would mention gold as first, platinum as second, silver as third. If asked to name others a few might add nickel, and a very few aluminum to the list.

Let us see how near the truth they would be. Gold is worth about $240 per pound, troy; platinum, $130, and silver about $12. Nickel would be quoted at about 60 cents and pure aluminum $8 to $9 to the troy pound.

We will now compare these prices with those of the rarer and less well known of the metals. To take them in alphabetical order, barium sells for $975 a pound when it is sold at all, and calcium is worth $1,800 a pound, while cerium is a shade higher—its cost is $160 an ounce, or $1,920 a pound. Chromium brings $200; cobalt falls to about half the price of silver, while didymium is the same price as cerium, and cerium $10 cheaper on the ounce than calcium, or just $1,680 per pound.

If the wealth of the Vanderbilts be not overestimated, it amounts to nearly $200,000,000. With this sum they could purchase 312 tons of gold and have something left over, but they couldn't buy two tons of gallium, that rare metal being worth $4,250 an ounce. With this metal the highest price is reached, and it may well be called the rarest and most precious of metals.

Glucinum is worth $250 per ounce; indium, $158; irinium, $658 per pound; lanthanium, $175, and linthium, $160 per ounce. Niobium costs $128 per ounce; asmium, paladium, platinum, potassium and rhodium bring, respectively, $540, $400, $39, $32 and $512 per pound. Strontium costs $128 an ounce; tantium, $144; tellurium, $9; athorium, $273; vanadium, $320; vitrium, $144, and ziconium, $250 an ounce.

Barium is more than four times as valuable as gold, and gallium more than 162 times as costly, while many of the metals are twice and thrice as valuable.

Aluminum, which now costs $8 to $9 a pound, will eventually be produced as cheap as steel. When this can be done it will push the latter metal out of a great many of its present uses, as it possesses great strength, toughness and elasticity, with extreme lightness of weight. Its sources of supply are inexhaustible, and its present high cost arises from the difficulty of its extraction in a metallic form.

Iridium seems to be chiefly used for pointing gold pens, and many of the metals mentioned have but a limited sphere of usefulness.

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How to Compute the Quantity of Water Required for a Boiler.

Add fifteen to the pressure per square inch in pounds on a given boiler, and divide this sum by 18, and then multiply the quotient by .24, the resulting product will be the number of gallons of water required by that boiler per horse-power per hour.

Horse-power of Boilers.

Admitting a good natural draught for the furnace, for the evaporation of one cubic foot of water per hour, the boiler should have ten feet square of heating surface. This evaporation per hour may be taken to represent one horse-power. The coal required to effect this degree of evaporation will generally be about eight pounds, and the grate surface needed for the combustion of this amount of coal per hour is about half a square foot. Estimates of horse-power in boilers, therefore, take into account ten square feet of heating surface, half a square foot of grate surface, eight pounds of good coal, and one cubic foot of water per hour for each unit of horse-power that the boiler is expected to develop.

Steam Power.

It is supposed that the steam power now utilized is almost equivalent to the hand labor of the whole population of the world. Its actual amount is estimated at 46,000,000 horse-power. The United States heads the list with 7,500,000, and Great Britain comes next with 7,000,000. Among other nations Germany has 4,000,000, France 3,000,000, and Austria-Hungary 1,500,000.

Converting Iron Into Steel.

M. Robert, of Stenay, France, has patented a rapid mode of converting iron into steel by providing means for maintaining constant relations throughout the whole period of conversion, which is effected by varying the position and volume of the blast. He applies a blast of air to a body of molten metal at a maximum pressure at the beginning of the operation, and after thus overcoming the inertia of the metal and imparting to it the proper speed of gyratory motion he lowers the level of the blast, without carrying it into the body of the metal, and varies its pressure and volume in accordance with the requirements caused by the reduction in the combustible elements of the iron and the increased fluidity of the metal.

What We Know of Color.

All that we know of color, its causes and effects, is in connection with the wave theory of light. Color depends upon the number of light waves reflected from any object impinging upon the retina of the eye. In red there are about 40,000 waves to the inch, and these will strike the eye at the rate of 447 millions of millions of pulsations per second. In violet there are 57,000 waves to the inch and 690 millions of

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millions of pulsations per second. The other colors have wave light intermediate between these two. Color does not, therefore, exist either in the object, or in the brain, or in the mind of the observer. It is an effect. There can be no appearance of a fire on a desert island where there is no eye within seeing distance. The chemical process called combustion goes on, but there is no appearance of the flame save when its waves strike upon the retina of an eye.

Duration of Dreams.

It is very certain that the majority of dreams are only of momentary duration, though extended occasionally to the length of a minute.

In proof of this Dr. Sholz tells the following story from his experience: "After excessive bodily fatigue and a day of mental strain of a not disagreeable kind, I betook myself to bed after I had wound my watch and placed it on the night table. Then I lay down beside a burning lamp. Soon I found myself on the high sea on board a well-known ship. I was again young, and stood on the lookout. I heard the roar of water, and golden clouds floated around me. How long I stood so I did not know, but it seemed a very long time.

"Then the scene changed. I was in the country, and my long-lost parents came to greet me; they sent me to church, where the loud organ sounded. I was delighted, but at the same time wondered to see my wife and children there. The priest mounted the pulpit and preached, but I could not understand what he said for the sound of the organ, which continued to play. I took my son by the hand, and with him ascended the church tower, but again the scene was changed. Instead of being near my son I stood near an early-known but long-dead officer. I ought to explain that I was an army surgeon during the maneuvers. I was wondering why the major should look so young, when quite close in my ears a cannon sounded.

"Terrified, I was hurrying off, when I woke up and noticed that the supposed cannon shot had its cause in the opening of the bedroom door through some one entering. It was as if I had lived through an eternity in my dream, but when I looked at my watch I saw that since I had fallen asleep, not more than one minute had elapsed—a much shorter time than it takes to relate the occurrence."

A Costly Private Mansion.

The largest and costliest private mansion in the world is that belonging to Lord Bute, called "Monstuart," and situated near Rothesay, England. It covers nearly two acres, is built in gothic style, the walls, turrets and balconies being built of stone. The immense tower in the center of the building is 120 feet high, with a balcony around the top. The halls are constructed entirely of marble and alabaster; all the rooms are finished in mahogany, rosewood, and walnut; the fireplaces are all carved marbles of antique designs. The exact

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cost of this fairy palace is not known, but it has never been estimated at less than $8,000,000.

Table Etiquette for Children.

Here are a few good old rules that can safely be followed:
Give the child a seat that shall be strictly its own.
Teach it to take its seat quietly.
To use its napkin properly.
To wait patiently to be served.
To answer promptly.
To say "thank you."
If asked to leave the table for a forgotten article, or for any purpose, to do so at once.
Never to interrupt and never to contradict.
Never to make remarks about the food.
Teach the child to keep his plate in order.
Not to handle the bread nor to drop food on the cloth and floor.
To always say "excuse me, please," to the mother when at home, and to the lady or hostess when visiting, if leaving the table before the rest of the party.
To fold its napkin and to put back its chair or push it close to the table before leaving.
And after leaving the table not to return.
Children who observe every one of these rules are well-behaved, delightful companions, and owe it to their mother's careful training.

Salaries Paid to Heads of Governments.

Various governments pay their chiefs as follows: The United States, $50,000 a year; Persia, $30,000,000; Russia, $10,000,000; Siam, $10 000,000; Spain, $3,900,000; Italy, $3,000,000; Great Britain, $3,000,000; Morocco, $2,500,000; Japan, $2,300,000; Egypt, $1,575,000; Germany, $1,000,000; Saxony, $700,000; Portugal, Sweden and Brazil, each $600,000; France, $200,000; Hayti, $240,000; Switzerland, $3,000.

The Smallest Republic in Europe.

The honor which was claimed for Gersau belongs to the independent hamlet of Foust. This pretty group of huts, situated a few hours distance from Oleron, in the department of the lower Pyrenees, belongs neither to France nor Spain. It has somewhat over 100 citizens. They have no mayor or other civil official. They have not even an established church or priest of their own but attend at a neighboring village.

How to Tell Any One's Age.

Girls of a marriageable age do not like to tell how old they are, but you can find out by following the subjoined instructions, the young lady doing the figuring. Tell her to put down the number of the month in which she was born; then to multiply it by two; then to add five; then to multiply

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by 50; then to add her age; then to substract 365; then to add 115; then tell her to tell you the amount she has left. The two figures to the right will denote her age, and the remainder the month of her birth. For example, the amount is 892, she is twenty-two years old, and was born in the eighth month (August). Try it.

There is a good deal of amusement in the following magical table of figures. It will enable you to tell how old the young ladies are. Just hand this table to a young lady, and request her to tell you in which column or columns her age is contained, and add together the figures at the top of the columns in which her age is found, and you have the great secret. Thus, suppose her age to be 17, you will find that number in the first and fifth columns; add the first figures of these two columns. Here is the magic table:

1	2	4	8	16	32
3	3	5	9	17	33
5	6	6	10	18	34
7	7	7	11	19	35
9	10	12	12	20	36
11	11	13	13	21	37
13	14	14	14	22	38
15	15	15	15	23	39
17	18	20	24	24	40
19	19	21	25	25	41
21	22	22	26	26	42
23	23	23	27	27	43
25	26	28	28	28	44
27	27	29	29	29	45
29	30	30	30	30	46
31	31	31	31	31	47
33	34	36	40	48	48
35	35	37	41	49	49
37	38	38	42	50	50
39	39	39	43	51	51
41	42	44	44	52	52
43	43	45	45	53	53
45	46	46	46	54	54
47	47	47	47	55	55
49	50	52	56	56	56
51	51	53	57	57	57
53	54	54	58	58	58
55	55	55	59	59	59
57	58	60	60	60	60
59	59	61	61	61	61
61	62	62	62	62	62
63	63	63	63	63	63

Playing Cards.

The first pack of playing cards of which any copy is preserved was in use in Venice in 1125, and contained seventy-eight cards in all, twenty-two of which were picture cards of

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very quaint character. One picture card represented the devil, another death, a third the moon, a fourth the sun, while the fifth depicted the judgment day. The Venetians called it the game of tarots, and it was no doubt the original parent of the modern card pack, with its kings, queens, knaves, etc. The French developed the game greatly, and it became the standard pastime of all the royal courts of the sixteenth century. Cards became so prominent a feature of social life in France that when the revolution came new card packs were devised in which kings and queens were done away with, philosophers and popular heroes and heroines taking their places.

Foundations of Fortunes.

Senator Farwell began life as a surveyor.
Cornelius Vanderbilt began life as a farmer.
Wanamaker's first salary was $1.25 a week.
A. T. Stewart made his start as a school-teacher.
Jim Keene drove a milk-wagon in a California town.
Cyrus Field began life as a clerk in a New England store.
Pulitzer once acted as stoker on a Mississippi steamboat.
"Lucky" Baldwin worked on his father's farm in Indiana.
Dave Sinton sold sugar over an Ohio counter for $1 a week.
Moses Taylor clerked in Water st., New York, at $2 a week.
George W. Childs was an errand boy for a bookseller at $4 a month.
J. C. Flood, the California millionaire, kept a saloon in San Francisco.
P. T. Barnum earned a salary as bartender in Niblo's Theatre, New York.
Jay Gould canvassed Delaware County, New York, selling maps at $1.50 apiece.
C. P. Huntington sold butter and eggs for what he could get a pound and dozen.
Andrew Carnegie did his first work in a Pittsburgh telegraph office at $3 a week.
Whitelaw Reid did work as correspondent of a Cincinnati newspaper for $5 a week.
Adam Forepaugh was a butcher in Philadelphia when he decided to go into the show business.
Senator Brown made his first money by plowing his neighbor's fields with a pair of bull calves.

A Business Lesson.

Peter Cooper was one of the most successful, careful, and prudent business men of his time. He was strongly opposed to the methods of many merchants who launched out into extravagant enterprises on borrowed money, for which they paid exorbitant rate of interest. The following anecdote illustrates this point very forcibly:

Once, while talking about a project with an acquaintance, the latter said he would have to borrow the money for six months, paying interest at the rate of 3 per cent. per month.

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"Why do you borrow for so short a time?" Mr. Cooper asked.

"Because the brokers will not negotiate bills for longer."

"Well, if you wish," said Mr. Cooper, "I will discount your note at that rate for three years."

"Are you in earnest?" asked the would-be borrower.

"Certainly, I am. I will discount your note for $10,000 for three years at that rate. Will you do it?"

"Of course I will," said the merchant.

"Very well," said Mr. Cooper; "just sign this note for $10,000 payable in three years, and give your check for $800, and the transaction will be complete.

"But where is the money for me?" asked the astonished merchant.

"You don't get any money," was the reply. "Your interest for thirty-six months at three per centum per month amounts to 108 per centum, or $10,800; therefore your check for $800 just makes us even."

The force of this practical illustration of the folly of paying such an exorbitant price for the use of money was such that the merchant determined never to borrow at such ruinous rates, and he frequently used to say that nothing could have so fully convinced him as this rather humorous proposal by Mr. Cooper.

Avoid Debt.

Every man who would get on in the world should, as far as possible, avoid debt. From the very outset of his career he should resolve to live within his income, however paltry it may be. The art of living easily as to money is very simple—pitch your scale of living one degree below your means. All the world's wisdom on the subject is most tersely epitomized in the words of Dickens' Micawber: "Annual income, twenty pounds; annual expenditure, nineteen six; result, happiness. Annual income, twenty pounds; annual expenditure, twenty pounds naught and six; result, misery." Many a man dates his downfall from the day when he began borrowing money. Avoid the first obligation, for, that incurred, others follow, one necessitating the other; every day the victim will get more entangled; then follow pretexts, excuses, lies, till all sense of shame is lost, the whole life becomes a makeshift, and the debtor in despair finally resolves to live by indirect robbery and falsehood.

Getting Rich by Small Inventions.

The New Jersey man who hit upon the idea of attaching a rubber erasing tip to the end of the lead pencil is worth $200,000.

The miner who invented a metal rivet or eyelet at each end of the mouth of coat and trowsers pockets, to resist the strain caused by the carriage of pieces of ore and heavy tools, has made more money from his letters patent than he would have made had he struck a good vein of gold-bearing quartz.

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Every one has seen the metal plates that are used to protect the heels and soles of rough shoes, but every one doesn't know that within ten years the man who hit upon the idea has made $250,000.

As large a sum as was ever obtained for any invention was enjoyed by the Yankee who invented the inverted glass bell to hang over gas-jets to protect ceilings from being blackened by smoke.

The inventor of the roller skate has made $1,000,000, notwithstanding the fact that his patent had nearly expired before the value of it was ascertained in the craze for roller skating that spread over the country a few years ago.

The gimlet-pointed screw has produced more wealth than most silver mines, and the Connecticut man who first thought of putting copper tips on the toes of children's shoes is as well off as if he had inherited $1,000,000, for that's the amount his idea has realized for him.

The common needle threader which every one has seen for sale, and which every woman owns, was a boon to needle users. The man who invented it has an income of $10,000 a year from his invention.

A minister in England made $50,000 by inventing an odd toy that danced by winding it with a string.

The man who invented the return ball, an ordinary wooden ball with a rubber string attached to pull it back, made $1,000,000 from it.

An Island that Floats.

One of the most picturesque and remarkable bodies of water in the world is Henry's Lake, in Idaho. It is situated on the dome of the continent in a depression in the Rocky Mountains called Targee's Pass. It has an area of forty square miles, and all around it rise snow capped peaks, some of them being the highest of the continent's backbone. In the lake is a floating island about 300 feet in diameter. It has for its basis a mat of roots so dense that it supports large trees and a heavy growth of underbrush. These roots are covered with several feet of rich soil. The surface is solid enough to support the weight of a horse anywhere, and there are places where a house could be built. The wind blows the island about the lake, and it seldom remains twenty-four hours in the same place.

A Popular Fiction About Steel.

Many people imagine that by blowing their breath on the blade of a knife they can tell whether the blade is steel or pot-metal. Now, a person's breath will adhere to a pot-metal blade and fade away the same as on steel, but nine out of ten men don't know this, and that is the reason why so many people carry inferior pocket-knives.

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American Millionaires.

There are seventy-two men in the United States whose combined wealth equals the National debt. Following are the names:

Weston Dobson.....	$5,000,000	P. T. Barnum.....	5,000,000
E. B. Coxe.....	20,000,000	John T. Davis.....	15,000,000
L. Z. Liter.....	10,000,000	Charles McClure....	5,000,000
L. P. Morton.....	10,000,000	Ex-Gov. English....	5,000,000
Cauldwell Cole.....	6,000,000	Andrew Carnegie..	40,000,000
A. M. Cannon.....	5,000,000	D. W. Bishop.....	15,000,000
Ex-Senator Palmer.	6,000,000	George W. Westinghouse.....	20,000,000
A. J. Drexel.....	20,000,000	W. D. Sloan.....	18,000,000
Claus Spreckels....	28,000,000	George Laufer.....	15,000,000
Philip Armour.....	25,000,000	G. G. Haven.....	12,000,000
J. J. Hill.....	15,000,000	George S. Croker...	12,000,000
John I. Blair.....	40,000,000	W. H. Bradford.....	10,000,000
Robert Bonner.....	6,000,000	Anson P. Stokes....	8,000,000
James McMillan....	10,000,000	Brayton Ives.....	5,000,000
The Astor family...	200,000,000	J. W. Mackay.....	30,000,000
C. P. Huntington...	40,000,000	James G. Fair.....	20,000,000
Montgomery Sears.	12,000,000	Leland Stanford....	40,000,000
George M. Pullman.	5,000,000	Charles Pratt.....	6,000,000
E. P. Hutchinson...	8,000,000	Samuel A. Scott....	10,000,000
George Ebret.....	5,000,000	George W. Childs..	15,000,000
Russell A. Alger....	5,000,000	D. W. Bruce.....	12,000,000
John P. Jones.....	15,000,000	John Wanamaker.	15,000,000
Marshal Field.....	15,000,000	Warner Miller.....	5,000,000
John D. Rockefeller	60,000,000	W. H. Windom.....	5,000,000
H. A. Flagler.....	15,000,000	Sidney Dillon.....	15,000,000
John J. Jennings...	5,000,000	David Sinton.....	20,000,000
Cornelius Vanderbilt	110,000,000	John Hay.....	5,000,000
Wm. K. Vanderbilt	85,000,000	J. H. Wade.....	5,000,000
F. W. Vanderbilt...	16,000,000	Senator Gorman...	6,000,000
Geo. W. Vanderbilt.	15,000,000		
Jay Gould.....	75,000,000		

Sailing Round the World—How Days are "Lost" and "Picked Up."

There are 360 degrees of longitude in the entire circle of the earth. As the world rotates on its axis in 24 hours, 1 24th of 360 degrees, which equals 15 degrees, corresponds to a difference of one hour in time. Now, imagine a ship sailing from New York eastward. When it has reached a point 15 deg. east of New York, the sun will come to the noon line (or meridian) one hour sooner than at New York. When it has reached to 30 deg. of longitude east of New York, it will be noon on shipboard two hours earlier than at New York, and so on, until when it is 180 deg. east of that city, when it will be noon on shipboard twelve hours earlier than at New York. Now, imagine another ship sailing from New York westward. It is easy to comprehend that for every 15 deg. in that direction there will be a difference of one hour later in the time of

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the sun's coming to the noon line, and at 180 west of New York it will not be noon on the ship until twelve hours after it was noon in New York. If the two ships meet at this point, the one will have gained twelve hours and the other will have lost twelve hours, and if there were no rule of navigation to regulate their calendars, one crew would insist on calling the time noon of one day, while the other would insist that it was noon of the day before or day after. The rule of the calendar-makers and all navigators is to drop out a day for the lost day when a ship crosses the 180 deg. of longitude sailing westward (that is, the 180th deg. from Greenwich, near London), and to add a day to the week, or double the day on which they reach the same degree in sailing eastward. For example, when a ship reaches the 180th deg. sailing eastward on Wednesday it calls both that day and the next day Wednesday. When a ship comes to this same meridian, sailing westward, on Wednesday, instead of calling it Wednesday they call it Thursday. The one ship's crew has two Wednesdays together in the same week, and the other ship's crew has a week without any Wednesday in it. The sailors say that the Wednesday the one ship "lost" the other "picked up."

The Greatest of Valleys.

The Valley of the Amazon is larger than that of the Mississippi, the former river draining 2,330,000 square miles, the Mississippi 1,244,600 square miles. The Amazon drains a greater area than any other river on the globe.

How to Make Sandpaper.

Common window glass—that having a green tint is best—is powdered and sifted through sieves of varying fineness, for coarse and fine sandpaper. Then any coarse paper is covered with thin glue and the powdered glass is sifted upon it. After standing a day or two, the refuse sand is shaken off, and the paper is ready for use.

The World's Principal Tin Mines.

Pure tin is an elementary metal, as much so as lead, iron, silver, or gold. The principal tin-producing country is England. The Phœnicians traded with England for tin 1,100 years before the Christian era. There is reason to believe that they got tin from Spain also; but England was depended on for nearly all the tin used in Europe until this ore was discovered in Germany in 1240. It was discovered in Northern Africa, in the Barbary States, in 1640, in India in 1740, in New Spain in 1782. Tin was mined in Mexico before the Spanish conquest, and used in T shaped pieces for money, and in a bronze composition for sharp tools, the principal mines being at Tasco. Peru has valuable mines of this metal, so have New South Wales, Australia, and Banca, and Malacca in the Malay peninsula. Tin has been discovered in Pennsylvania, Missouri, California, Dakota, and other States of the Union,

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but not in quantities to tempt capital to engage in mining it, with the exception of Dakota, where the Illinois Steel Mill Company h ve larger interests. The chief tin-producing countries are the following, arranged in the order of importance: England, about 10,000 tons a year; Malacca, about 8,500 tons; Australia, about 6,000 tons; Banca, about 4,000 tons; and Billiton, about 3,000 tons. Both of these last-named places are islands of the Dutch East Indies.

What Causes Water to Flow Out of an Artesian Well.

The theoretical explanation of the phenomenon is easily understood. The secondary and tertiary geological formations often present the appearance of immense basins, the boundary or rim of the basin having been formed by an upheaval of adjacent strata. In these formations it often happens that a porous stratum, consisting of sand, sandstone, chalk, or other calcareous matter, is included between two impermeable layers of clay, so as to form a flat porus U tube, continuous from side to side of the valley, the outcrop on the surrounding hills forming the mouth of the tube. The rain filtering down through the porous laver to the bottom of the basin forms there a subterranean pool, which, with the liquid or semi-liquid column pressing upon it, constitutes a sort of huge natural hydrostatic bellows. Sometimes the pressure on the superincumbent crust is so great as to cause an upheaval or disturbance of the valley. It is obvious, then, that when a hole is bored down through the upper impermeable layer to the surface of the lake, the water will be forced up by the natural law of water seeking its level to a height above the surface of the valley, greater or less, according to the elevation of the level in the feeding column, thus forming a natural fountain on precisely the same principle as that of most artificial fountains, where the water supply comes from a considerable height above the jet.

Territory Purchased From France.

In 1800 Louisiana was retroceded to France, which, in 1803, sold it to the United States for $15,000,000. The region comprehended in this purchase included all the country west of the Mississippi River not occupied by Spain, as far north as British territory, and comprises the whole or part of the present States of Arkansas, Iowa, Kansas, Louisiana, Minnesota, Missouri, Nebraska, Oregon, Colorado, Dakota, Montana, Washington, the Indian Territory, and the Territories of Idaho and Wyoming.

"Oh, Why Should the Spirit of Mortal be Proud?"

We obtained the following copy of the poem, so highly prized by Abraham Lincoln, from Mr. B. F. Carpenter, the artist, to whom the former once recited it. Mr. Carpenter

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wrote it down at the time, word for word, from the martyred President's lips:

Oh, why should the spirit of mortal be proud?
Like a swift-fleeting meteor, a fast-flying cloud,
A flash of the lightning, a break of the wave,
He passeth from life to his rest in the grave.

The leaves of the oak and the willow shall fade,
Be scattered around and together be laid;
And the young and the old, and the low and the high
Shall molder to dust and together shall lie.

The infant a mother attended and loved,
The mother that infant's affection who proved,
The husband that mother and infant who blessed,
Each, all, are away to their dwellings of rest.

The hand of the king that the scepter hath borne,
The brow of the priest that the miter hath worn,
The eye of the sage and the heart of the brave,
Are hidden and lost in the depths of the grave.

The peasant, whose lot was to sow and to reap,
The herdsman, who climbed with his goats to the steep,
The beggar, who wandered in search of his bread,
Have faded away like the grass that we tread.

So the multitude goes, like the flower or the weed
That withers away to let others succeed;
So the multitude comes, even those we behold,
To repeat every tale that has often been told.

For we are the same our fathers have been;
We see the same sights our fathers have seen—
We drink the same stream and view the same sun—
And run the same course our fathers have run.

The thoughts we are thinking our fathers would think;
From the death we are shrinking our fathers would shrink;
To the life we are clinging they also would cling,
But it speeds from us all, like a bird on the wing.

They loved, but the story we cannot unfold;
They scorned, but the heart of the haughty is cold;
They grieved, but no wail from their slumber will come;
They joyed, but the tongue of their gladness is dumb.

They died!—ay, they died; we things that are now,
That walk on the turf that lies over their brow,
And make in their dwellings a transient abode,
Meet the things that they met on their pilgrimage road.

Yea! hope and despondency, pleasure and pain,
We mingle together in sunshine and rain;
And the smile and the tear, the song and the dirge,
Still follow each other, like surge upon surge.

'Tis the wink of an eye, 'tis the draught of a breath,
From the blossom of health to the paleness of death,
From the gilded saloon to the bier and the shroud;
Oh, why should the spirit of mortal be proud?

This beautiful poem, according to Mr. Carpenter, was written by Knox, a contemporary of Sir Walter Scott.

Sam Patch's Great Leaps.

Sam Patch made his first leap at Niagara Falls, Oct. 6, 1829, from a rock seventy feet above the water. The second leap

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was in the same year, Oct. 17, from a scaffold at the foot of the Biddle staircase. This was erected that year and was named after a Philadelphian, Nicholas Biddle, who contributed a sum of money toward its construction. The shaft is eighty feet high, and the stairs are spiral, winding around it from top to bottom. Near the foot of these stairs, at the water's edge, "the distinguished Beotian, Mr. Samuel Patch, who wished to demonstrate to the world that 'some things could be done as well as others,' set up a ladder 100 feet high, from which he leaped into the water below." Patch then went to Genesee Falls, N. Y., and made a leap Nov. 6, 1829, and then made his fatal plunge Nov. 13, less than a week after his first attempt. The last time he jumped 120 feet.

Origin of "The Old Oaken Bucket."

Samuel Woodworth was the author of "The Old Oaken Bucket." A printer by trade, who served his apprenticeship at Boston, in the office of Major Russell, the publisher of the *Centinel*. The beautiful and popular ballad had its origin under the following circumstances: He was employed in an office on the corner of Chestnut and Chambers streets, New York. One day, with a group of typos, he dropped into Mallory's on Franklin street, for the purpose of taking "some brandy and water," for which the place was noted. The liquor was excellent, and Woodworth seemed inspired by it, for, after taking a draught, he set his glass upon the table, and smacking his lips, declared that Mallory's *eau de vie* was superior to anything he had ever tasted. "No," said a comrade, "you quite mistake; there was one thing which in both our estimations far surpassed this in the way of drink." "What was that?" asked Woodworth, dubiously. "The draught of pure, cold water that we used to drink from the old oaken bucket which hung in the well, after our return from the labors of the field on a sultry day in summer." The tear-drop glistened for a moment in Woodworth's eye. "True, true," he replied, and soon after quitted the place. He returned to the office, grasped his pen, and in half an hour "The Old Oaken Bucket," one of the most delightful compositions in our language, was ready in manuscript to be embalmed in the memories of succeeding generations.

Cost of Steamships.

Those of the lines running on the Atlantic Ocean cost—many of them—from $600,000 to $800,000. Some of the vessels of the Pacific Mail Steamship from $900,000 to $1,200,000.

Three Great Panics.

Within the past fifty years there have been three great panics, namely in 1837, in 1857, and in 1873. In the month of May, 1837, the New York banks suspended, and a crash was precipitated which had been impending for some time. The condition of firms and houses of high credit was alarming; many corporations closed up their works, hundreds of busi-

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ness firms were ruined, even States became bankrupt, and the President of the United States could not always obtain his salary when it fell due. The panic was immediately traceable to a fever of speculation, and there had been large importations of foreign goods under the compromise tariff act, and much American capital had been driven out of business. The panic of 1857 began with the failure of the "Ohio Life Insurance and Trust Company;" the number of bank failures was very large; public confidence was greatly shaken; land speculation had assumed reckless proportions; "paper" cities were numerous, and many unproductive railroads were undertaken. The panic of 1873 opened Sept. 19, by the failure of Jay Cooke & Co., and it required nearly four years to restore public confidence.

Three Black Fridays.

September 24, 1869, Jay Gould and James Fisk, Jr., attempted to create a corner in the gold market by buying all the gold in the banks of New York city, amounting to $15,000,000. For several days the value of gold rose steadily, and the speculators aimed to carry it from 144 to 200. Friday the whole city was in a ferment, the banks were rapidly selling, gold was at 162⅛ and still rising. Men became insane and everywhere the wildest excitement raged, for it seemed probable that the business houses must be closed, from ignorance of the prices to be charged for their goods. But in the midst of the panic it was reported that Secretary Boutwell, of the United States Treasury, had thrown $4,000,000 on the market, and at once gold fell, the excitement ceased, leaving Gould and Fisk the winners of $11,000,000. The day noticed above is what is generally referred to as Black Friday in this country, but the term was first used in England, being applied in the first instance to the Friday on which the news reached London that the young Pretender, Charles Edward, had arrived at Derby, creating a terrible panic; and finally to May 11, 1866, when the failure of Overend Guerney & Co., London, the day before, was followed by a widespread financial ruin.

The South Sea Bubble.

The "South Sea bubble," as it is generally called, was a financial scheme which occupied the attention of prominent politicians, communities, and even nations in the early part of the eighteenth century. Briefly, the facts are: In 1711, Robert Hartley, Earl of Oxford, then Lord Treasurer, proposed to fund a floating debt of about £10,000,000 sterling, the interest, about $600,000, to be secured by rendering permanent the duties upon wines, tobacco, wrought silks, etc. Purchasers of this fund were to become also shareholders in the "South Sea Company," a corporation to have the monopoly of the trade with Spanish South America, a part of the capital stock of which was to be the new fund. But Spain, after the treaty of Utrecht, refused to open her commerce to

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England, and the privileges of the "South Sea Company" became worthless. There were many men of wealth who were stockholders and the company continued to flourish, while the ill success of its trading operations was concealed. Even the Spanish war of 1718 did not shake the popular confidence. Then in April, 1720, Parliament, by large majorities in both houses, accepted the company's plan for paying the national debt, and after that a frenzy of speculation seized the nation, and the stock rose to £300 a share, and by August had reached £1,000 a share. Then Sir John Blunt, one of the leaders, sold out, others followed, and the stock began to fall. By the close of September the company stopped payment and thousands were beggared. An investigation ordered by Parliament disclosed much fraud and corruption, and many prominent persons were implicated, some of the directors were imprisoned, and all of them were fined to an aggregate amount of £2,000,000 for the benefit of the stockholders. A great part of the valid assets was distributed among them, yielding a dividend of about 33 per cent.

A Rule for Determining the Weight of Live Cattle by Measurement.

There are many rules for estimating the weight of cattle by measurement, but one of the authorities on the subject says that "There is no rule that comes nearer than good guessing," and that no two animals will weigh alike according to measurement." The same authority further remarks that a rule, as good as any, is to find the superficial feet by multiplying the girth, just behind the shoulder-blade, by the length from the fore part of the shoulder-blade to the root of the tail. Thus an ox girthing seven feet nine inches, and measuring six feet in length, would contain seven and three-fourths times six or 46½ superficial feet. For cattle, grass fed, the following is given as the weight per superficial foot:

Girth less than 3 feet	11 pounds.
Girth 3 to 5 feet	16 pounds.
Girth 5 to 7 feet	23 pounds.
Girth 7 to 9 feet	31 pounds.

Thus the steer, as per above measurements, should weigh 46.50 by 31, or 1,441 pounds, gross. Under this rule it is usual to deduct one pound in twenty on half-fatted cattle, from fifteen to twenty pounds on a cow having had calves, and if not fat an equal amount. The author of this rule suggests its use only when the scale is wanting, as the scale is the only true standard.

The World's Great Bells.

Russia is in the lead in the line of bells, some of her manufacture being the most famous of the world. It is said that in Moscow alone, before the great fire, there were no fewer than 1,706 large bells. One called the Giant, which was cast in the sixteenth century and broken by falling from its support, and recast in 1654, was so large that it required twenty-

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four men to ring it; its weight was estimated at 288,000 pounds. It was suspended from an immense beam at the foot of a bell-tower, but it again fell during the fire of June 19, 1706, and was a second time broken to fragments, which were used with additional materials in 1732 in casting the King of Bells, still to be seen in Moscow. Some falling timbers in the fire of 1737 broke a piece from its side, which has never been replaced. This bell is estimated to weigh 443,732 pounds; it is nineteen feet three inches high, and measures around the margin sixty feet nine inches. Its value in metal alone is estimated to amount to upward of $300,000. St. Ivan's, also in Moscow, is forty feet nine inches in circumference, sixteen and one-half inches thick, and weighs 127,830 pounds. The bells of China rank next to those of Russia in size. In Pekin there are seven bells, each of which, according to Father Le Compte, weighs 120,000 pounds. The weight of the leading great bells of the world may be seen in the following:

	Pounds.
King of Bells (Moscow)	443,732
St. Ivan's (Moscow)	127,830
Pekin	120,000
Vienna	40,200
Olmutz (Bohemia)	40,000
Rouen (France)	40,000
St. Paul's	38,470
"Big Ben" (Westminster)	30,350
Montreal	28,560
St. Peter's (Rome)	18,600

Finest Harbors on the Globe.

San Francisco may fairly claim to have the most capacious natural harbor of any of the world's great trading marts. It is also one of the very safest. It is entered through the Golden Gate, a passage a mile wide and thirty-five feet deep at low tide—admitting the largest ships afloat without danger of grounding. The landlocked bay of which this harbor is part is fifty miles long, and averages five miles in width. There all the shipping of the entire globe could anchor in perfect safety. Port Philip Bay, the chief harbor of Victoria, Australia, is larger than the bay of San Francisco, being about thirty-eight miles long by thirty-three broad, but its very breadth, with its surroundings, leaves it exposed to storms from certain quarters. Port Jackson, on which Sydney, New South Wales, Australia, is located, is a magnificent harbor, completely landlocked, extending inland in some places fully twenty miles, and having ample depth of water for vessels of the heaviest burden. The harbors of New York City, Rio Janeiro, Brazil, and Havana, Cuba, are capacious and secure. Next come those of Boston, Norfolk, Va., Portland, Me., Halifax, N. S., Copenhagen, Constantinople, Hong Kong, Yokohama, and Nagasaki. The great ports situated on the banks of rivers, such as London, Liverpool, Glasgow, Lisbon, Philadelphia, New Orleans, Quebec, Shanghai, Can-

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ton, Calcutta, etc., are not included in the definition of harbors as here considered.

How to Make Liquid Glue.

Take soft water, 1 quart; best pale glue, 2 pounds; dissolve in a covered vessel by the heat of a water bath or in a vessel immersed in boiling water; cool, and add, gradually, of nitric acid (specific gravity 1,335) 7 ounces; when cold put it into bottles. It is very strong, and does not gelatinize.

The following formula, known as "Chinese cement," produces a cement for porcelain, glass, fancy work, jewelry, etc., so strong that wood or porcelain can be joined together so firmly that they will break anywhere else rather than where cemented: Take of finest pale orange shellac (broken small) 4 ounces; strongest rectified spirits, 3 ounces, and digest them together in a corked bottle in a warm place until dissolved. It should have about the consistency of molasses.

The Oldest Architectural Work Known to Exist.

It is the remarkable rock-cut temples at Ipsambul or Abousambul, in Nubia, on the left bank of the Nile. The largest temple contains fourteen apartments hewn out of the solid rock. The first and largest of these is 57 feet long and 52 feet broad, and is supported by two rows of massive square pillars, four in each row, and 30 feet high. To each of these pillars is attached a standing colossus, or human figure, of enormous proportions, reaching to the roof, overlaid with a kind of stucco and painted with gaudy colors, apparently as brilliant now, after the lapse of over 4,000 years, as when first laid on. In front of this temple are seated four still larger human figures, two of them being 65 feet in height—presumed to represent Rameses the Great, more frequently termed Sesostris, whose marvelous military exploits are depicted in drawings and paintings on the temple walls.

How to Tell the Age of a Horse by His Teeth.

At 3 years old the horse should have the central permanent nippers growing, the other two pairs wasting, six grinders in each jaw above and below, the first and fifth level, the others and the sixth protruding. The sharp edges of the new incisors will be very evident, compared with the old teeth. As the permanent nippers wear and continue to grow, a narrow portion of the cone-shaped tooth is exposed by the attrition of the teeth on each other. The mark will be wearing out, and the crowns of the teeth will be sensibly smaller than at 2 years. Between 3½ and 4 years the next pair of nippers will be changed, the central nippers will have attained nearly their full growth, a vacuity will be left where the second stood, and the corner teeth will be diminished in breadth, worn down, and the mark in the center of the tooth will become faint. The second pair of grinders will be shed. At 4 years the central nippers will be fully developed, the sharp edge somewhat worn off, and the mark somewhat

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wider and rather. The next pair will be up, but they will be small, with a mark deep and extending quite across them. The corner nippers will be larger than the inside ones, but smaller than before and flat, and the mark nearly effaced. The sixth grinders will have risen to a level with the others, and the tushes will begin to appear. At 5 the horse's mouth is almost perfect. The corner nippers are quite up, the long, deep mark irregular in the inside, and the other nippers will bear evident tokens of increased wear. The tushes are nearly grown, the sixth molar is up, and the third molar is wanting. This last circumstance will prevent the deception of attempting to pass a late 4-year-old as a 5-year-old. At 6 the mark on the central nippers is worn out. At 7 the mark is worn out in the four central nippers, and fast wearing away in the corner teeth. The tushes are rounded at the points and edges, and beginning to get round inside. At 8 years old the tushes are rounded in every way, the mark is gone from all the bottom nippers. There is nothing remaining in them that can afterward clearly show the age of a horse. After this the only guides are the nippers in the upper jaw. At 9 the mark will be worn from the middle nippers, from the next pair at 10, and from all the upper nippers at 11. At 9 the center nippers are round instead of oval. At 10 the others begin to become rounded, at 11 the second pair are much rounded, at 13 the corner ones have the same appearance, at 14 the faces of the center nippers become somewhat triangular, at 17 they are all so.

Discovery of Gold in California.

On January 19, 1848, John W. Marshall was building a mill for himself and Sutter on the south fork of the American River, fifty-four miles east of Sutter's Fort. This mill, it was expected, would supply the ranches and settlements with pine lumber. On this particular morning Marshall picked up from the bed-rock of the race of the mill a small piece of yellow metal which weighed about seventeen grains. It was malleable, heavier than silver, and in all respects resembled gold. Marshall showed the piece in the afternoon to those who were working at the mill. The result of the discussion which ensued was the rejection of the gold theory. Marshall, however, was not satisfied, and afterward tested it with nitric acid, and found it was actually gold. He discovered pieces like it in all the surrounding gulches wherever he dug for it. The news of the discovery soon spread, and in April reports of the find were published. Sutter's mill became the district of attraction, which was afterward named Coloma, or Colluma, from a tribe of Indians who lived in the neighborhood. The prospectors from there scattered in all directions, and by the month of June the discoveries had extended to all the forks of the American, Weber Creek, Hangtown Creek, the Cosumnes, the Mokelumne, Tuolumne, the Yuba, and Feather River, and the news had gone almost to the ends of the earth.

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Mottoes of the States.

The following is a list of those States which have mottoes upon their great seals:

Arkansas—Regnant Populi.
California—Eureka.
Colorado—Nil Sine Numine.
Connecticut—Qui Transtulit Sustinet.
Delaware—Liberty and Independence.
Georgia—Constitution.
Illinois—State Sovereignty—National Union.
Indiana—Constitution.
Iowa—Our Liberties We Prize. Our Rights We Will Maintain.
Kansas—Ad Astra per Aspera.
Kentucky—United We Stand, Divided We Fall.
Louisiana—Justice.
Maine—Dirigo.
Maryland—Crescite et Multiplicamini.
Massachusetts—Ense Petit Placidam Sub Libertate Quietum.
Michigan—E Pluribus Unum—Teubor—Siquels Peninsulam Amœnam—Circumspice.
Minnesota—L'Etoile du Nord.
Missouri—United We Stand, Divided We Fall. Salus Populi Suprema Lex Esto.
Nebraska—Equality before the Law.
Nevada—All for Our Country.
New York—Excelsior.
Ohio—Imperium in Imperio.
Oregon—The Union.
Pennsylvania—Virtue—Liberty—Independence.
Rhode Island—Hope.
Tennessee—Agriculture—Commerce.
Vermont—Freedom and Unity.
Virginia—Sic Semper Tyrannis.
West Virginia—Montani Semper Liberf.
Wisconsin—Forward.

Chronological History of General U. S. Grant.

The following gives in a condensed form the leading events in the life of General Grant:

Born at Point Pleasant, Ohio, April 27, 1822.
Entered West Point, May, 1839.
Graduated, June, 1843.
Breveted Second Lieutenant, 4th Infantry, U. S. A., July, 1843.
Went to Jefferson Barracks, St. Louis, Sept., 1843.
Ordered to Corpus Christi, Texas, June, 1845.
Commissioned as Second Lieutenant, Sept. 30, 1845.
At Palo Alto (first battle), May 8, 1846.
At Resaca de la Palma, May 9 1846.
At capture of Monterey, Sept. 23, 1846.
Appointed Regimental Quartermaster, April, 1847.

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Before Vera Cruz, March 22-27, 1847.
At Cero Gordo, April 18, 1847.
Entered Pueblo, May 15, 1847.
At Contreras, Aug. 20, 1847.
At Malino del Rey, Sept. 8, 1847.
Promoted First Lieutenant on the field for bravery, Sept. 8, 1847.
At Chapultepec, Sept. 13, 1847.
Breveted captain for gallantry in this battle to date from Sept. 13, 1847.
Entered City of Mexico, Sept. 14, 1847.
Married Miss Julia Dent, of St. Louis, Aug. 22, 1848.
Stationed at Detroit, Sept., 1848.
Stationed at Sackett's Harbor, 1849.
Ordered to the Pacific Coast to Fort Vancouver, June, 1852.
Commissioned captain in Regular Army, Aug. 5, 1853.
Resigned his commission, July 31, 1854.
Settled on a farm, near St. Louis, 1854.
Entered real estate business in St. Louis, 1858.
Removed to Galena, Ill., March, 1860.
Began drilling a company of volunteers at Galena, April 19, 1861.
Went to Springfield, Ill., April 23, 1861.
Commissioned Colonel 21st Illinois Volunteers, June 17, 1861.
Sent to Mexico, Mo., July 31, 1861.
Commissioned by President Lincoln as Brigadier General of Volunteers, commission to date from May 17, 1861, Aug. 7, 1861.
Transferred to Ironton, Mo., Aug. 8, 1861.
Transferred to Jefferson City, Mo., Aug. 22, 1861.
Put in command of District of South-east Missouri, Sept. 1, 1861.
Headquarters at Cairo, Sept. 4, 1861.
Seized Paducah, at mouth of Tennessee, Sept. 6, 1861.
Took Smithland, at mouth of the Cumberland River, Sept. 25, 1861.
Fought Battle of Belmont, Nov. 7, 1861.
Put in command of the District of Cairo, Dec. 21, 1861.
Left Paducah with 15,000 men for Fort Henry, Feb. 3, 1862.
Captured Fort Henry, Feb. 6, 1862.
Assigned to new military district of West Tennessee, Feb. 15, 1862.
Captured Fort Donelson, Feb. 16, 1862.
Commissioned Major General of Volunteers to date from Feb. 16, Feb. 18, 1862.
Removed headquarters to Savanna, Tennessee, March 17, 1862.
Fought battle of Shiloh, April 6-7, 1862.
Headquarters moved to Memphis, June 12, 1862.
Put in command of the Department of West Tennessee, July 11, 1862.
Headquarters removed to Jackson, Tennessee, Sept. 23, 1862.
Department enlarged and called Department of the Tennessee, Oct. 16, 1862.

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Movement toward the river begun Nov. 1, 1862.
Holly Springs taken Nov. 29, 1862.
Van Dorn's raid on Holly Springs, Dec. 20, 1862.
Headquarters moved back to Memphis, Jan. 10, 1863.
Assumed command of Vicksburg expedition, Jan. 30, 1863.
Army concentrated at Milliken's Bend, La., March 29, 1863.
Crossed back to east bank of Mississippi at Bruinsburg, April 30, 1863.
Battle of Port Gibson, May 1, 1863.
Grand Gulf taken May 3, 1863.
Battle of Raymond, May 12, 1863.
Battle of Jackson, May 14, 1863.
Battle of Champion Hills, May 16, 1863.
Battle of Black River Bridge, May 17, 1863.
Before Vicksburg, May 18, 1863.
First assault on works at Vicksburg, May 19, 1863.
Second assault on works at Vicksburg, May 22, 1863.
Surrender of Vicksburg, July 4, 1863.
Commissioned Major General of the Regular Army, July 12, 1863.
Put in command of Department of the Mississippi, Oct. 18, 1863.
Took charge of forces before Chattanooga, Oct. 22, 1863.
Battle of Lookout Mountain, Nov. 24, 1863.
Battle of Mission Ridge, Nov. 25, 1863.
Gold medal voted by Congress, Dec. 17, 1863.
Headquarters at Nashville, Jan. 13, 1864.
Commissioned Lieutenant General, March 10, 1864.
First general order, March 17, 1864.
March to Richmond begun May 3, 1864.
Battles of the Wilderness, May 5-7, 1864.
Battles of Spottsylvania, May 8-18, 1864.
Battles of North Anna River, May 23-27, 1864.
Battles of Cold Harbor, May 31-June 12, 1864.
Assault on Petersburg, June 17-18, 1864.
Siege of Petersburg, June 19, 1864, to April 2, 1865.
Battle of Five Forks, April 1, 1865.
Petersburg evacuated night of April 2, 1865.
Pursuit of Lee, April 3-8, 1865.
Surrender of Lee's army, April 9, 1865.
Commissioned General of the United States Army, July 25, 1866.
Appointed Secretary of War, ad interim, Aug. 12, 1867, Jan. 14, 1868.
Nominated for President, May 21, 1868.
Elected Nov. 3, 1868.
First inauguration, March 4, 1869.
Second nomination for President, June 5, 1872.
Second election, Nov. 5, 1872.
Second inauguration, March 4, 1873.
Sailed for Europe, on tour round the world, May 17, 1877.
Reached San Francisco on return, Sept. 20, 1879.
Placed on the retired list of army as General, March 4, 1885.

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Died at Mount McGregor, N.Y., July 23, 1885.

General Grant, at the close of the war, received many expressions of the public confidence in and respect and enthusiasm for him. Among these was the fine residence at Galena, Ill., and several in other parts of the country. He was also the recipient of a present of $100,000. The fund called by his name was for the purpose of providing for him in such a manner as would correspond with the services he rendered the country, and show the high esteem entertained for him by this Republic. It was wholly voluntary, and was a handsome expression of the people's regard for the foremost American of his time.

White House Expenses.

The bulk of the expenses of the White House are paid by the President from his salary. There is, however, a contingent fund, appropriated annually by Congress, which meets part of them. This is understood to cover all repairs and furnishing of the mansion, the care of the grounds, greenhouses, etc., and the salaries of such employees as a night watchman, a doorkeeper, janitor, and policeman; also the President's private secretary and assistant clerks, and finally such expenses as stationery, postage stamps, etc. But it depends somewhat on the President's wish what shall be included under this "contingent fund."

White House Weddings.

There have been nine weddings in the President's mansion. The first of this list of weddings was during President Madison's administration, when Miss Todd, a relative of Mrs. Madison, was the bride, and John G. Jackson, of Virginia, who was then a Member of Congress, was the groom. The first East Room wedding was that of Elizabeth Tyler, whose father was then President, and William Waller, of Williamsburg, Va. Miss Tyler was just 19, as was also Nellie Grant when married. President Adams' son, John Quincy, Jr., married his cousin, Miss Johnson, in 1826. The wedding took place in the White House in President Adams' administration. When General Jackson was President there were two weddings in the White House. Miss Easten, his niece, and Mr. Polk, of Tennessee, and a relative of Jackson, were married. The other was that of Miss Lewis, of Nashville, and Mr. Paqueol, who was afterward French Minister to this country. Martha Monroe married Samuel Gouverneur, who was for a while President Monroe's private secretary. The wedding took place in the East Room, and the bride was just turned 17. Perhaps the wedding of Nellie Grant and Algernon Sartoris was the most brilliant of all these White House weddings. The ceremony took place in the East Room and the pair stood under an immense floral bell, with a background of flowers filling the big east window. There were six bridesmaids and a distinguished company. It was a morning wedding, and General Grant gave away his daughter with tearful eyes and ill-concealed emotion. During Presi

dent Hayes' term, his niece, Miss Emily Platt, and Genera Russell Hastings were married. The wedding was in the blue parlor, decorated with flowers, and here also the bride stood under a bell of flowers. Though Mr. Cleveland's wedding was the ninth that occurred in the mansion, it was the first wedding of a President that took place there. President Tyler, the only other President who was married during his term of office, went to the home of his bride, Miss Gardner, in New York, for the ceremony.

How Fire-Crackers Are Made.

The manufacture of fire-crackers is a very simple matter, but because it requires the handling of that dangerous element—gunpowder—it is only carried on in the regularly licensed establishments for the manufacture of fire-works. There are two or three establishments for their manufacture in this country, and others in England, and it may safely be asserted that but a small proportion, if any, of the instruments of destruction scattered about by the small boy on our national holiday are now brought from the Celestial Kingdom, where they were first made and used. Fire-crackers are made of strips of soft pasteboard, impregnated with some combustible or explosive material. These strips are doubled over several times, and then rolled closely around a small piece of composition; that is, powder mixed with sulphur and other things in a paste that will burn readily with a hissing sound. Usually a little pure bursting powder is put in before the composition, so that the burning of the cracker is finished by an explosion. A priming string is attached to one end; this is a cord that has been soaked in a solution of saltpeter or similar substance, so that it will burn readily.

The Wonders of the New World.

The group of natural objects that have been classed as the seven wonders of the new world are Niagara Falls, Yellowstone Park, the Mammoth Cave, the Canons and Garden of the Gods, Colorado, the Giant Trees, California, the Natural Bridge, Virginia, and the Yosemite Valley.

Largest Islands in the World.

	Area Sq. miles.	Population.
New Guinea	325,000	690,000
Borneo	290,000	1,846,000
Madagascar	228,570	3,000,000
Sumatra	168,000	5,000,000
Great Britain	83,826	29,710,000
Celebes	66,750	4,000,000
Java	50,260	17,500,000
Saghalien (used as a penal settlement only)	47,500	13,500
New Zealand— North Island	44,750	570,000
New Zealand— South Island	55,224	
Cuba	45,700	2,000,000
Niphon (Japan)	42,000	27,250,000
Newfoundland	40,200	180,000
Luzon (Philippines)	40,000	4,500,000
Iceland	40,000	72,438
Jesso	35,000	163,355
Ireland	31,874	5,174,836
Hayti or San Domingo	29,830	393,200
Tasmania	26,215	130,541
Ceylon	25,635	3,000,000
Terra del Fuego	21,260	2,000

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Perhaps Nova Zembla and Spitzbergen, and other Arctic islands, would properly come in this list; but they have not been sufficiently explored to have their areas even approximated, and they have no permanent inhabitants.

Cabinet Facts.

There were six Secretaries of State who afterward became Presidents, namely, Jefferson, Madison, Monroe, John Quincy Adams, Van Buren, and Buchanan. Monroe was Secretary of War for a short time after he had served in the State Department, and General Grant was Secretary of War ad interim. There have been no Secretaries of the Treasury, the Navy, or the Interior, nor any Postmasters or Attorney Generals who have become President. Jeff Davis was Secretary of War under President Pierce.

Religion of the Presidents.

Washington, Garfield, and Harrison were the only Presidents who were church members, but all, one excepted, were men who revered Christianity. Adams married a minister's daughter, and was inclined to Unitarianism. Jefferson was not a believer, at least while he was Chief Magistrate. Madison's early connections were Presbyterian. Monroe is said to have favored the Episcopal Church. John Quincy Adams was like his father. Jackson was a Presbyterian and died in the communion of that church. Van Buren was brought up in the Reformed Dutch Church, but afterward inclined to the Episcopal Church. Harrison leaned toward the Methodist Church, and Tyler was an Episcopalian. Polk was baptized by a Methodist preacher after his term of office expired. Taylor was inclined to the Episcopal communion. Fillmore attended the Unitarian Church, and Franklin Pierce was a member, but not a communicant, of a Congregationalist Church, at Concord. Buchanan was a Presbyterian, as is also Benjamin Harrison. General Grant attended the Methodist Church, and President Garfield the Church of the Disciples.

Presidents of the United States Inaugurated on Other than the 4th of March.

George Washington, April 30, 1789; James Monroe, second term, March 5, 1821; John Tyler, April 6, 1841; Zachary Taylor, March 5, 1849; Millard Fillmore, July 10, 1850; Andrew Johnson, April 15, 1865; R. B. Hayes, March 5, 1877.

The White House.

The residence of the President of the United States is officially known as the Executive Mansion, which means that it is the residence of the head of the Executive branch of the Government; but it is seldom called, in ordinary talk, either by those who live in it, or by the American people in general, anything but the White House. This is a very un-

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pretentious title, and it is interesting to note how the residence of the President, in a country which is full of white houses, came to bear this simple name as its special property.

The explanation is easily found. The first Executive Mansion at Washington was occupied in 1800. It was built of freestone, and was unpainted; but in 1814 the British Army occupied Washington, and burned, with other public buildings, the President's house, leaving it a blackened ruin.

The house was rebuilt on the same site, and the same walls were used in its construction; but they were so discolored by smoke that, on the suggestion of General Jackson, they were painted white, not only to improve their appearance, but in token of the successful defiance of British fire by the American Republic.

The mansion soon became the "White House" in the mouths of the people on account of its dazzling color, and from that day to this it has been repainted white every ten years. Its name commemorates a patriotic feeling, therefore, as well as serves to describe the appearance of the mansion, for the original coat of white paint was a sort of protest against the vandalism of the British, and every subsequent coat has served to perpetuate the protest.

The Graves of the Presidents.

There are now living two Presidents—Hayes and Cleveland. It has been noted as somewhat remarkable that all who have died while in active service as Chief Magistrate have passed away in the early part of their term. General Harrison filled the office only a month. General Taylor died after having served sixteen months. Mr. Lincoln died a little over a month after his second inauguration, and General Garfield filled the office but six months and fifteen days, half of which he was on the very threshold of the grave.

George Washington died Dec. 14, 1799, at Mount Vernon, Va., of acute laryngitis, and was buried at Mount Vernon. His remains were placed in the present receptacle in 1827.

John Adams died July 4, 1826, of old age, at Quincy, Mass., and all that is mortal of the second President lies beneath the Unitarian Church. The church was completed in 1828, and the body was removed to the family vault in the cemetery across the way into a room beneath the church.

Thomas Jefferson died July 4, 1826, in the course of nature, say the chroniclers, at Monticello, Va., and was buried in a thick growth of woods near a road leading from that place to Charlotteville.

James Madison died June 28, 1836, at Montpelier, Va., of old age, and was buried in the center of a large level field at that place.

James Monroe died July 4, 1831, at New York, of old age, and in 1858 his remains were removed by the State of Virginia to Hollywood Cemetery, at Richmond, Va.

John Quincy Adams died at Washington, D. C., Feb. 21,

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1848, from a stroke of paralysis, and is buried in the same place with his father, beneath the Unitarian Church at Quincy, Mass.

Andrew Jackson died June 8, 1845, from an attack of dropsy, at the Hermitage, his famous home, on the Lebanon pike, eleven miles from Nashville, Tenn., and was interred there.

Martin Van Buren died near Kinderhook, N. Y., July 24, 1862, of old age, and rests in the family lot in the little cemetery there.

William Henry Harrison died at Washington, D. C., from the effects of the fatigue and excitement of the campaign, April 4, 1841, and his body was buried at North Bend, about fifteen miles from Cincinnati.

John Tyler died at Richmond, Va., Jan. 8, 1862, and was buried in Hollywood Cemetery, where Monroe lies.

James K. Polk died June 5, 1849, at Nashville, Tenn., of cholera, and was buried in the garden of the old family homestead in that city.

Zachary Taylor died at Washington, D. C., of a bilious disorder, July 9, 1850. His remains were removed several times; first they were placed in a cemetery at Washington, then in a lot on the Taylor homestead, near Louisville, then to Cave Hill Cemetery, and they are now in the cemetery at Frankfort, Ky.

Millard Fillmore died at Buffalo, N. ., March 8, 1874, and was buried at Forest Lawn Cemetery, hree miles from that city.

Franklin Pierce died at Concord, N. H., Oct. 8, 1869, and his remains rest in the old cemetery on Maine street.

James Buchanan's death occurred at Wheatland, Pa., June 1, 1868, and his remains rest at Woodward Hill Cemetery, a mile or so west of Lancaster, on the Marietta turnpike.

Abraham Lincoln died at Washington, D. C., April 15, 1865, shot to death by John Wilkes Booth, and his resting-place is Oak Ridge Cemetery, Springfield, Ill., where stands probably the finest monument ever erected to a President of the United States.

Andrew Johnson passed away at Greenville, Tenn., of paralysis, July 31, 1875, and was buried there on a spot selected by himself.

General U. S. Grant died at Mt. McGregor, N. Y., July 23, 1885, aged 63. Remains deposited in a temporary tomb at Riverside Park, N. Y.

James A. Garfield died Sept. 19, 1881, and was buried in Lake View Cemetery, Cleveland, Ohio.

Chester A. Arthur died in New York Nov. 18, 1886, of kidney troubles, and is buried at Albany, N. Y.

It will be noticed that Massachusetts has given a last resting-place to two Presidents, New Hampshire to one, New York to three, Pennsylvania to one, Ohio to two, Illinois to one, Kentucky to one, Tennessee to three, and Virginia—the "mother of Presidents"—to five.

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Education of Presidents.

Washington—Fair English education.
Adams—Harvard.
Jefferson—William and Mary.
Madison—Princeton.
Adams, J. Q.—Harvard.
Jackson—Limited education.
Van Buren—Academic course.
Harrison, W. H.—Hampden College.
Tyler—William and Mary.
Polk—University of North Carolina.
Taylor—Slight rudiments.
Fillmore—Limited education.
Pierce—Bowdoin.
Buchanan—Dickinson.
Lincoln—Education limited.
Johnson—Self-educated.
Grant—West Point.
Hayes—Kenyon College.
Garfield—Williams College.
Arthur—Union College.
Cleveland—Hamilton College.
Benj. Harrison—Miami University.

Monroe and W. H. Harrison did not graduate. Monroe left college to join the revolutionary army. Financial embarrassment prevented W. H. Harrison from pursuing a full course. Polk graduated at 23; Tyler at 17. The majority graduated at 20.

Type-Writers.

Perhaps the earliest form of a type-writer is a rude machine invented in England in 1714, without any practical fruits. M. Foucault sent to the Paris Exposition of 1855 a writing machine for the blind, but the first of what are now popularly known as type-writers was patented in 1868 by C. L. Sholes, of Wisconsin. This has been improved until now it is possible to attain a speed of seventy-five to eighty words a minute in writing with this machine, which is fast enough for reporting speeches. The principal advantages gained are rapidity of execution and legibility. A type-writer can write with both hands and several fingers in instant succession, every letter being made with a single light touch instead of requiring from three to seven distinct strokes and dots, as in ordinary script.

Wood for Fuel.

In regard to the relative values of woods as heat-producers, different woods vary some by different methods of experimenting. The most accurate would be their value as steam-producers. The following test was made from a fire tubular, horizontal boiler:

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Shellbark hickory	100	Hard maple	59
Pignut hickory	95	White elm	58
White oak	84	Red cedar	56
White ash	77	Wild cherry	55
Dogwood	75	Yellow pine	54
Shrub oak	73	Chestnut	52
White hazel	72	Yellow poplar	51
Apple tree	70	Butternut	43
Red oak	67	White birch	43
White beech	65	White pine	30
Yellow oak	60		

These figures are from air-dried wood. No accurate result could be obtained from greenwood, as it is not in a proper condition, and would vary considerably from any figures that might be made.

Politics of the Presidents.

The subjoined table will be found interesting as a reference to many of our readers. Of course the name of Washington heading the list does not mean that he was the candidate of any party or faction, but is placed there to complete the roll:

Name.	Inauguration.	Politics.
George Washington	April 30, 1789	Unanimous.
John Adams	March 4, 1797	Federal.
Thomas Jefferson	March 4, 1801	Democrat.
James Madison	March 4, 1809	Democrat.
James Monroe	March 4, 1817	Democrat.
John Quincy Adams	March 4, 1825	Federal.
Andrew Jackson	March 4, 1829	Democrat.
Martin Van Buren	March 4, 1837	Democrat.
William Henry Harrison	March 4, 1841	Whig.
John Tyler	April 6, 1841	Whig.
James K. Polk	March 4, 1845	Democrat.
Zachary Taylor	March 5, 1849	Whig.
Millard Fillmore	July 9, 1850	Whig.
Franklin Pierce	March 4, 1853	Democrat.
James Buchanan	March 4, 1857	Democrat.
Abraham Lincoln	March 4, 1861	Republican.
Andrew Johnson	April 15, 1865	Republican.
U. S. Grant	March 4, 1869	Republican.
R. B. Hayes	March 5, 1877	Republican.
James A. Garfield	March 4, 1881	Republican.
Chester A. Arthur	Sept. 20, 1881	Republican.
Grover Cleveland	March 4, 1885	Democrat.
Benj. Harrison	March 4, 1889	Republican.

The Seven Wise Men of Greece.

The names generally given are Solon, Chilo, Pittacus, Bias, Periander (in place of whom some give Epimenides), Cleobulus, and Thales. They were the authors of the celebrated mottoes inscribed in later days in the Delphian Temple. These mottoes were as follows:

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"Know thyself."—Solon.
"Consider the end."—Chilo.
"Know thy opportunity."—Pittacus.
"Most men are bad."—Bias.
"Nothing is impossible to industry."—Periander.
"Avoid excesses."—Cleobulus.
"Suretyship is the precursor of ruin."—Thales.

Water Rates in Various Cities.

The meter rate for water per 1,000 gallons is as follows in the several cities specified: Chicago, 8 cents per 1,000 gallons; Burlington, Vt., 40 cents; Cambridge, Mass., 30 cents; Cincinnati, 15 cents; Columbus, Ohio, 20 cents; Evansville, Ind., 20 cents; Fall River Mass., 30 cents; Hartford, Conn., 30 cents; Holyoke, Mass, 15 cents; Lynn, Mass, 25 cents; Lawrence, Mass., 30 cents; Louisville, Ky., 15 cents; Marshalltown, Iowa, 40 cents; Ottumwa, Iowa, 30 cents; New Albany, Ind., 15 cents; Newark, N. J., 13 cents; Portland, Me., 50 cents; Providence, R. I., 30 cents; Rochester, N.Y., 25 cents; St. Paul, Minn., 50 cents; Syracuse, N. Y., 40 cents; Utica, N. Y., 20 cents.

Annual Salaries of Principal United States Officers.

LEGISLATIVE.

President	$50,000
Vice-President	8,000
Secretary of State	8,000
Secretary of Treasury	8,000
Secretary of Interior	8,000
Secretary of Navy	8,000
Secretary of War	8,000
Secretary of Agriculture	8,000
Postmaster-General	8,000
Attorney General	8,000
Speaker of House of Representatives	8,000
United States Senators	5,000
Representatives in Congress	5,000

UNITED STATES MINISTERS TO

England	$17,500
Germany	17,500
France	17,500
Russia	17,500
China	12,000
Brazil	12,000
Spain	12 000
Japan	12,000
Mexico	12,000
Central America	10,000
Chili	10,000
Peru	10,000
Venezuela	7,500
Turkey	7,500

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Sweden and Norway	7,500
Netherlands	7,500
Denmark	5,000
Greece	5,000
Uruguay	5,000
Portugal	5,000
Switzerland	5,000
Liberia	4,000
JUDGES.	
Chief Justice U. S. Supreme Court	$10,500
Associate Judges	10,000
United States Circuit Judges	6,000
U. S. District Judges ..... from $3,500 to	4,500
Judge of U. S. Court of Claims	4,500
HEADS OF DEPARTMENTS.	
Director of Geological Surveys	$6,000
Auditor of Railroad Accounts	5,000
Superintendent of Census	6,000
Superintendent of Naval Observatory	5,000
Commissioner of Patents	5,000
Director of the Mint	4,500
Commissioner of General Land Office	4,000
Superintendent of Signal Service	5,500
Commissioner of Pensions	5,000
Superintendent of Nautical Almanac	4,400
Commander of Marine Corps	4,500
Commissioner of Indian Affairs	4,000
Commissioner of Education	3,000

The Great Catastrophes of History.

In China, where some of the greatest rivers in the world flow between artificial banks at an elevation considerably above the surrounding country, there have been overflows that caused the destruction of hundreds of thousands of lives. There have been similar disasters in India, where, as in China, the rivers had made beds for themselves with alluvial banks higher than the plains across which they flowed. But aside from these the colossal calamity at Johnstown, Pa., in June, 1889, and through the fated Conemaugh valley, leads all disasters in this country in the appalling muster roll of the dead. In past centuries the greatest loss of life has been by earthquake, and the following list embraces the loss in historic calamities:

Year. Place.	Persons Killed.	Year. Place.	Persons Killed.
1137—Sicily	15,000	1784—Ezinghian, Asia Minor	5,000
1158—Syria	20,000		
1288—Cilicia	50,000	1792—Country between Santa Fe and Panama	40,000
1456—Naples	40,000		
1531—Lisbon	40,000	1805—Naples	6,500
1626—Naples	70,000	1822—Aleppo	20,000
1667—Schamaki	80,000	1829—Murcia	5,000
1692—Jamaica	3,000	1830—Canton	6,000
1693—Sicily	100,000	1842—Cape Haytien	4,000

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Year. Place	Persons Killed.	Year. Place.	Persons Killed.
1703—Aquila, Italy	4,000	1857—Calobria	10,000
1703—Yeddo, Japan	200,000	1859—Quito	5,000
1706—The Abruzzi	15,000	1860—Mendozi, South America	7,000
1716—Algiers	20,000		
1726—Palermo	6,000	1868—Towns in Peru and Ecuador	25,000
1731—Pekin	100,000		
1746—Lima and Calloa	18,00	1875—San Jose de Cucuta, Colombia	14,000
1754—Grand Cairo	40,000		
1755—Kashan, Persia	40,000	1881—Scio	4,000
1759—Syria	20,000	1886—Charleston	96

The list of losses by great floods and freshets in history is as follows:

Year. Place.	Lives Lost.	Year. Place.	Lives Lost.
1871—China	3,000	1879—Marcia, Spain	1,000
1874—Mill River, Mass.	150	1887—Yellow River, China	100,000
1878—Egypt, the Nile	250	1889—Johnstown, Pa.	6,111

One instance shows how the human race has been depleted from this cause. In the Kingdom of Naples, from 1783 to 1857, a period of 75 years, the loss of life by earthquakes was 111,000 or at the rate of more than 1,500 a year, out of a population of 6,000,000. The country surrounding the Mediterranean and the inter-tropical area from which the American Cordillieras spring, may be regarded as the centers of earthquake activity, though some of the greatest earthquakes of all time have occurred in Eastern Asia and the East Indies.

A Great War Ship.

The great battle ship Benbow, thought by some to be the most powerful vessel afloat, has just been completed at all points, and added to the British Mediterranean Squadron. Her heaviest guns are two of 111 tons, throwing 1,800-pound shells with a propulsive charge of 850 pounds of powder, and capable of piercing armor a yard in thickness. These guns are 43 feet 8 inches in length, and the projectiles over 41 inches long, with a diameter of 17 inches. The tonnage of the Benbow is 10,000 and her speed over 17 knots. The Italia, the largest vessel so far completed in Italy, has greater displacement by nearly 4,000 tons than the Benbow, somewhat exceeds the latter in speed, very nearly equals her in the power of her guns carried, and has very similar armor protection. It is not easy to see, therefore, why the Benbow should be regarded as the most powerful ship.

Historical Disasters to War Ships.

The Wateree, a magnificent ship, was lying in the harbor of Arica, Peru, in the year 1868, when a tidal wave picked her up, and carrying her over houses and tree tops, deposited her eight miles inland, into the middle of a tropical forest, where she ended her days as a hotel. The same tidal wave caught the steamship Fredonia lying at anchor, rolled her over and sunk her instantly, with every soul on board.

The Albany left Bombay, India, in the spring of 1856, and

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was last seen in West Indian waters. She is supposed to have gone down in a cyclone, with every soul of her crew, 210 officers and men, as she was never heard from after she sailed on her last cruise.

In the same year the brig of war Porpoise, with 100 people aboard, went down in the China Sea without leaving a trace of her ruin.

The Monongahela, in the year 1867, was caught up by a tidal wave, carried over a number of large buildings on the island of Santa Cruz, West Indies, and deposited in the streets of a city. Subsequently workmen were sent there who blocked her and launched her again.

Again, in 1858, the Levant disappeared from the face of the globe in the waters of the Pacific, drowning 200 men. In 1863 the brig-of-war Bainbridge met a cyclone off Cape Hatteras. A colored cook, picked up a day or two afterward on a bit of wreckage, told the story of the loss of every one of his shipmates.

The old Yorktown was blown ashore near the Cape de Verde Islands, on the African coast, some years later, but the crew escaped.

The Huron was wrecked in 1870 upon Currituck beach, North Carolina, and few of her crew escaped.

The loss of the German man-of-war Grosser Kurfurt off Folkestone, near Dover, in the English Channel, on the night of May 31, 1878, was a terrible one. Her crew jumped into the water as she went down. Many must have been scalded by the escaping steam, for out of her complement of 500 men only 23 officers and 160 men were rescued, and of these two died of exhaustion.

A British iron-clad, the Sultan, was stranded on the rocks of Comino, a small island not far from Malta, on March 7, 1888. For four days she lay on the rock, and then, her guns and stores having been removed, she was considerably lightened, but it was still impossible to get her afloat. Several British men-of-war were in the neighborhood and also a German iron-clad, but they were utterly unable to render any assistance beyond the rescue of the captain and crew.

The British ship Bombay ran into the United States corvette Oneida in the harbor of Yokohama on January 24, 1870, causing the loss of the Oneida and of the lives of 112 of her men.

Origin of Vegetation.

Spinach is a Persian plant.
Horseradish is a native of England.
Melons were found originally in Asia.
Filberts originally came from Greece.
Quinces originally came from Corinth.
The turnip originally came from Rome.
The peach originally came from Persia.
Sage is a native of the south of Europe.
Sweet marjoram is a native of Portugal.

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The bean is said to be a native of Egypt.
Damsons originally came from Damascus.
The nasturtium came originally from Peru.
The pea is a native of the south of Europe.
Ginger is a native of the East and West Indies.
The gooseberry is indigenous to Great Britain.
Coriander seed came originally from the East.
Apricots are indigenous to the plains of America.
The cucumber was originally a tropical vegetable.
The walnut is a native of Persia, the Caucasus and China.
Capers originally grew wild in Greece and northern Africa.
Pears were originally brought from the East by the Romans.
The clove is a native of the Malacca Islands, as is also the nutmeg.
Cherries were known in Asia as far back as the seventeenth century.
Garlic came to us first from Sicily and the shores of the Mediterranean.
Asparagus was originally a wild sea-coast plant, and is a native of Great Britain.
The tomato is a native of South America, and it takes its name from a Portuguese word.
Parsley is said to have come from Egypt, and mythology tells us it was used to adorn the head of Hercules.
Apples were originally brought from the East by the Romans. The crab apple is indigenous to Great Britain.
The onion was almost an object of worship with the Egyptians 2,000 years before the Christian era. It first came from India.
Cloves came to us from the Indies, and take their name from the Latin clauvis, meaning a nail, to which they have a resemblance.
The cantaloupe is a native of America, and so called from the name of a place near Rome, where it was first cultivated in Europe.
Lemons were used by the Romans to keep moths from their garments, and in the time of Pliny they were considered an excellent poison. They are natives of Asia.

A Petrified Bible.

While cleaning an old swamp, Mr. Martin Flush, living near Pleasant Valley, Ind., discovered quite a curiosity. Several feet beneath the leaves and muck he unearthed what appeared to be a stone book. Close inspection showed it to be a family Bible, bearing the date 1773 plainly lettered. It is now solid limestone. Those who have examined the book state that it was originally a real book and is now petrified.

Curiosities of the Bible.

The Bible contains 3,566,480 letters, 773,746 words, 31,173 verses, 1,189 chapters, and 66 books. The word "and" occurs 27 7 times. The word "Lord" occurs 1,855 times. The word "reverend" occurs but once, which is in the 9th verse of the

111th Psalm. The middle verse is the 8th verse of the 118th Psalm. The 21st verse of the 7th chapter of Ezra contains all the letters of the alphabet except the letter J. The 19th chapter of II Kings and the 37th chapter of Isaiah are alike. The longest verse is the 9th verse of the 8th chapter of Esther. The shortest verse is the 35th verse of the 11th chapter of St. John. There are no words or names of more than six syllables. In the original Hebrew manuscripts of the Old Testament a division of the matter into paragraphs was early introduced for convenience in reading. Larger divisions into sections suitable for Sabbath readings were made about the middle of the fifteenth century. The gospels were divided into sections for a similar purpose as early as the third century. The present arrangement of the Scriptures into chapters, however, originated in the thirteenth century with Cardinal Hugo, who devised it while making a Latin concordance. The division into verses was introduced by the celebrated printer, Robert Stephens, in his Greek Testament (1551), and in his Latin Bible (1556-7).

The word heaven occurs the following number of times in each of the books of the New Testament:

Book.	Times.	Book.	Times.
Matthew	70	Philippians	2
Mark	17	Colossians	5
Luke	30	I Thessalonians	2
John	18	II Thessalonians	1
Acts	24	Hebrews	5
Romans	2	James	2
I Corinthians	2	I Peter	3
II Corinthians	2	II Peter	1
Galatians	1	I John	1
Ephesians	3	Revelations	56

The word "heaven" occurs several times with the meaning of sky, and in a similar sense, but the above list gives the number of times "heaven" is used as meaning the abode of the blest or the immediate presence of the Lord.

A Description of Mount Ararat.

Ararat is divided into two peaks, Great Ararat on the northwest and Little Ararat on the south-west, whose bases blend while their summits are seven miles apart. The summit of Great Ararat is placed at 17,323 feet above the level of the sea, and 14,320 above its base; and for more than 3,000 feet below the summit it is always covered with ice and snow. Little Ararat is 13,000 feet above the sea level. The apex of Great Ararat was visited by Parrot, October 9, 1829. Dr. Schaff, in common with Smith, says that Ararat in Scripture refers to the lofty plateau or mountain—highlands which overlook the plain of the Araxes. The same authority states that the mountains of Ararat (Gen. viii. 4) more properly refer to the entire range of elevated tableland in that portion of the Armenia, and that upon some lower part of this range, rather than upon the high peaks, the ark more probably rested; and

the following reasons are given in support of this view: This plateau or range is about 6,000 or 7,000 feet high; it is equally distant from the Euxine and the Caspian Seas, and between the Persian Gulf and the Mediterranean, and hence a central point for the dispersion of the race; the region is volcanic in its origin, does not rise into sharp crests, but has broad plains separated by subordinate ranges of mountains; and the climate is temperate, grass and grain are abundant, and the harvests are quick in nature. These facts, he believes, illustrate the Bible narrative.

The Profits of Preaching.

The great body of the clergymen of the United States receive salaries of $1,000 or less a year. There are many, of course, in the larger cities who are paid $2,000, $3,000, $4,000 and $5,000, and in Philadelphia there are several who are paid from $6,000 to $10,000, Dr. Harper, for instance. New York and Brooklyn are most generous with their preachers. Dr. John Hall is paid $20,000 by his church; he receives $5,000 more as Chancellor of the University of New York, and probably makes from $2,000 to $3,000 more a year from his writings. Dr. Talmage does quite as well; Dr. Wm. M. Taylor's salary is $15,000; Dr. Lyman Abbott's, $10,000, and Drs. C. H. Parkhurst and Morgan Dix from $2,500 to $5,000 more. Very wealthy congregations are by no means the most liberal with their pastors.

The Roman Catholic Bible.

The translations of the Bible by the Protestants at the Reformation were soon followed by translations at the hands of Roman Catholic scholars, intended for those who still adhered to the Roman Church. Accordingly the New Testament appeared at Rheims, in France, in 1582; and the Old Testament at Douai in 1609-10, although it had been prepared before the New Testament. The first complete edition of the entire Bible, according to this recension, was published at Rouen in 1633-35. Says Dr. Schaff; "Its translators were good scholars, but were obliged to take the Latin Vulgate as the basis, and to adhere closely to it." A revision was made about the middle of the last century.

Valuable Bibles.

A copy of the Mazarin Bible was recently sold at auction in London, and brought an even $10,000. This is the fourth of these volumes which has been sold inside of sixteen years, and the price it brought was also lower than those of the other three. One sold for $19,500, another for $13,450, and the other for $13,250. This edition of the Bible was the work of Gutenburg and Faust, and was the first book ever printed with movable types. As an artistic production, it is claimed to have never been surpassed.

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The Various Names of Satan Used in the Bible.

The Greek word "diabolos" is the one we derive the popular (!) name of the devil from, and its meaning is "slanderer." It corresponds to the Hebrew "Satan," which signifies "adversary," as that being or power is understood to be the adversary of God or man, the foe of goodness and the author of evil. The references to Satan in the Scriptures are numerous, but this name only occurs five times in the Old Testament and twenty-five times in the New Testament. The word "devil" occurs twenty-five times; "the prince of this world" three times; "the wicked one" six times; "the tempter" twice, and in the twelfth chapter of Revelations ninth verse, "old serpent," "the devil," and "Satan" occur, a most remarkable grouping of epithets, as also in Rev. xx. 1, 2, and 3. The names "evil one," "god of this world," "prince of the power of the air," "the dragon" going about "like a roaring lion" occur, and the Master Himself describes him as a "murderer and liar." He is a "strong man" (Matt. xii. 29), and his subtlety (Gen. iii., 1) is exhibited in treacherous snares (II. Tim., ii. 26), wiles (Eph., vi. 11), and devices (II. Cor., ii. 11), and the delusive shift of transforming himself into an angel of light (II. Cor. xi. 14). He became an apostate (John, viii. 44), and fell from heaven (Luke, x. 18, and Jude 6), and from his place of power he will eventually be overthrown (Revelation, xx. 1, 2, 3, and 10. The name of Beelzebub was also in common use among the Jews in the time of Christ, as a title of Satan, or "the prince of the demons."

Oldest Church in the United States.

The Church of San Miguel was erected at Santa Fe, New Mexico, seventy-seven years before the landing of the Pilgrims on Plymouth Rock, twenty years before the founding of St. Augustine, Florida, and fifty three years after the landing of Columbus.

How the Twelve Apostles Died.

According to the generally received traditions of the church Andrew suffered martyrdom at Patræ, in Achaia, on a cross of the form known as St. Andrews' cross; Bartholomew was crucified at Albanopolis in Armenia: James, the elder, son of Zebedee, was beheaded; James, the brother of our Lord, was probably stoned to death; Matthew died a natural death; Philip died a violent death at Hierapolis, but by what mode is uncertain; Simon Peter was crucified at Rome; Thaddeus, or Jude, probably suffered martyrdom in Persia; John, the beloved disciple, lived, according to Jerome, to be about 100 years old, and died at Ephesus; Simon Zelotes was crucified at 129 years of age; Thomas was put to death in India, and Judas Iscariot hung himself.

Originals of the New Testament.

The New Testament was originally written in Greek. It is not claimed that any of the manuscripts written by the Apos-

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\les themselves are in existence, but numerous early copies in use in the Christian churches in Europe, Asia, and Africa, from which the New Testament was translated into Latin and other languages, are preserved in the Vatican library, at Rome, in various monasteries, and other places.

The Bible Printed in 300 Tongues.

The British and Foreign Bible Society reports that the sacred Scriptures were last year translated into six fresh languages. The number of tongues in which this society now publishes the Bibles is thus increased to 300. Fifty years ago it was published in 150 tongues. The society distributed four million two hundred and six thousand volumes during the year.

Discount Your Bills.

Merchants in general should give this matter more serious consideration than they have done. It can be followed with profit by both large and small traders. Jobbers always favor cash buyers, will sell them on closer margins, give better bargains and terms. Bills taken up in advance, even if it be at the cost of unusual exertions, save money and anxiety, and the merchants will feel the beneficial effects in the freer swing given to business, quickened energies, and lighter heart resulting from forestalled obligations. This is a better way of using money in hand than that of putting capital into outside schemes, which merchants are often tempted into doing. No business thrives so well as the one which receives a man's undivided attention. A man with a keen, shrewd mercantile spirit is not necessarily equally keen in matters foreign to merchandising, and the larger part of those who go into Wall street or venture into speculation schemes in their anxiety to get rich fast, prove the most fallible of lambs in the hands of unscrupulous operators. And the worst feature of failure in these outside ventures is their bad effect upon legitimate merchandising. Let those merchants who have spare time and money turn them to the advantage of their own legitimate vocation. Make money by meeting bills in advance, thus clinching your credit and securing a margin for enlarged operations.

Origin of "Uncle Sam."

Speculation has arisen regarding the origin of the term "Uncle Sam" as applied to the United States Government.

In the war of 1812, between this country and Great Britain, Elbert Anderson, of New York, purchased in Troy, N. Y., a large amount of pork for the American Army.

It was inspected by Samuel Wilson, who was popularly known as "Uncle Sam." The barrels of pork were marked "E. A., U. S.," the lettering being done by a facetious employee of Mr. Wilson.

When asked by fellow-workmen the meaning of the mark (for the letters U. S., for United States, were then almost en-

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tirely new to them), he said "he did not know, unless it meant Elbert Anderson and Uncle Sam," alluding to Uncle Sam Wilson.

The joke took among the workmen, and passed currently, and "Uncle Sam" himself being present, was occasionally rallied on the increasing extent of his possessions. Soon the incident appeared in print, and the joke gained favor rapidly, till it penetrated and was recognized in every part of the country, and will, no doubt, continue so while the United States remains a nation.

What a Copyright Protects.

A title may be entered, but the copyright covers the book and not the title. A title alone cannot be copyrighted; it can be protected solely as a trade mark. What is a copyrighted manuscript? Copyright pertains to a published book only. So long as a book is in manuscript it is protected by a common law of property; no one can print it without authority unless he steals it. It is when a book is published that the copyright law steps in to protect it. Every day we have evidence that authors have wrong notions of copyright; they make a point of having obtained copyright as if it were something difficult—like a patent—and think they have in some way secured their book and their title by entering the latter. They have secured nothing. Nothing whatever is gained by entering a title unless a preliminary step to be followed by filing copies of the book.

A Stupendous Flume.

The recently completed San Diego (Cal.) flume is the most stupendous ever constructed in the world, being only a little short of thirty-six miles long. The amount of lumber consumed was more than nine millions of feet, or, allowing the very considerable yield of 1,000 feet to each tree, not less than 9,000 trees were required. In the course of the flume there are some 315 trestles, the longest of these being 1,700 feet in length, eighty five feet high, and containing one quarter of a million feet in lumber. Another trestle is of the same height, and 1,200 feet long, the main timbers used in both of these being ten by ten and eight by eight, being put together on the ground and raised to their position by horse power. The number of tunnels in the course of the flume is eight, the longest of which is 2,100 feet, the tunnels being in sizes six by six feet, with convex-shaped roofing; each mile of the flume required an average of one-fourth of a million feet of lumber for its construction, and the redwood used entirely in the box is two inches in thickness throughout.

A Valuable Cement.

A new cement has been used to renovate many stone buildings of Paris, and is likely to prove useful for various purposes. A powder is made of two parts of oxida of zinc, two of crushed hard limestone, and one of pulverized grit, with a

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certain proportion of colors as coloring agent. A liquid to use with powder consists of six parts of zinc dissolved in commercial muriatic acid, with one part of sal ammoniac, the whole diluted with two-thirds of its volume of water. A pound of powder to two and a half pints of liquid gives a very strong cement.

Origin of Visiting Cards

As is the case in many other instances, we owe the invention of visiting cards to the Chinese. So long ago as the period of the Tong dynasty (618-907), visiting cards were in common use in China, and that is also the date of the introduction of the "red silken cords" which figure so conspicuously on the engagement cards of that country. From very ancient times to the present day the Chinese have observed the strictest ceremony with regard to the paying of visits. The cards which they use for this purpose are very large, and usually of a bright red color. When a Chinaman desires to marry, his parents intimate that fact to a professional "match-maker," who thereupon runs through a list of her visiting acquaintances, and selects one whom she considers a fitting bride for the young man; and then she calls upon the young woman's parents, armed with the bridegroom's card, on which are inscribed his ancestral name and the eight symbols which denote the day of his birth. If the answer is an acceptance of his suit, the bride's card is sent in return; and should the oracles prophesy good concerning the union, the particulars of the engagement are written on two large cards, tied together with the red cords.

The Great Kansas Salt Bed.

The recently discovered salt bed in Kansas is 350 feet below the surface, over 300 miles long, twenty-five feet wide, and 400 feet thick. It is composed of the purest quality of rock salt. The present method of procuring the salt is to bore a hole down into the salt, insert a double pipe, and pump down water through the inner tube, which returns through the outer one in the form of concentrated brine, and is then evaporated in enormous open tanks. The salt is being sold in Kansas City for $4 a ton.

A Figure Puzzle.

Open a book at random, and select a word within the first ten lines, and within the tenth word from the end of the line. Mark the word. Now double the number of the page, and multiply the sum by 5.

Then add 20.

Then add the number of the line you have selected.

Then add 5.

Multiply the sum by 10.

Add the number of the word in the line. From this sum subtract 250, and the remainder will indicate in the unit column the number of the word; in the ten column the num-

ber of the line, and the remaining figures the number of the page.

The Coaling Ocean Steamers.

As time goes on the daily consumption of coal increases on all the Atlantic steamers, which must make the voyage now in seven days or under if they would hold their own and attract custom. To do this a vessel must burn from 200 to 300 tons of coal daily, making this item of expense over $1,500 every twenty-fours, requiring more men to handle it and taking up additional room in the hold of the ship. The Umbria burns twelve tons of coal per hour, and on every vessel of her size the journals and bearings of the machinery require 130 gallons of lubricating oil per day. The Cunard Line employs 4,500 hands, including 1,100 of a shore gang, 900 stewards, 34 captains, and 146 officers.

A Ring Thirty-five Hundred Years Old.

The Smithsonian Institution has received a gift of great antiquity from the Chinese Minister. It is a "jade" ring, about ten inches in diameter and one-eighth of an inch in thickness, with a hollow center about four inches in diameter. It is of a pale hue.

The ring is known as the "Han Pek" jewel of the dynasty of Han, an old time monarch of 3,500 years ago. Court officers of that day, when an audience was accorded them by the emperor, held the ring with both hands and thrust their fingers into the opening to guard against moving their hands while addressing the throne, the emphasizing of their remarks by flourishes of the hands presumably being contrary to official etiquette. The ring was used as an emblem of submission or respect for the sovereign. It was recently unearthed from a sepulcher, having been buried with the owner.

St. Peter's and Cologne Cathedrals.

The dimensions of St. Peter's at Rome, the largest cathedral in the world, are as follows: Length of the interior, 613½ English feet; of transept, 446½ feet; height of nave, 152½ feet; and the diameter of cupola, 193 feet. The height of the dome from the pavement to the top of the cross is 448 feet. Cologne cathedral is 511 feet long, and 231 feet broad. The towers are 511 feet high. This famous building founded by Archbishop Conrad, designed by Architect Gerhard Von Riehl, and commenced Aug. 15, 1248, was not completed until Aug. 14, 1880. It was solemnly opened, with august ceremonies, Oct. 15, of the same year.

Value of Rare American Coins.

Dollar—The rarest of all is that of 1804, price $400 to $500, according to condition. Half-dollar—That of 1796, with sixteen stars, price $20 to $27.50, although that of 1796, with only fifteen stars, and that of 1797, each command nearly the same premium, $20 to $25. Quarter-dollar—Those of 1823 and

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1827, each quoted at $15 to $25. Dime—That of 1804, quoted at $4 to $6. Half-dime—That of 1802, worth $25 to $40. The rarest of all the cents is that of 1799, quoted at $4 to $6. Half-cent—1796, worth $5 to $8, or from one thousand to sixteen hundred per cent. more than its face.

The following are the United States cents that are worth 50 cents apiece and upward:

Year.	Description.	Good.	Fine.
1793	Cent, wreath, stars, and bars on edge	$3.00	$3.50
1793	Cent, with chain America	2.75	5.00
1793	Cent, chain, America on the reverse	1.75	3.75
1793	Cent, clover leaf under bust	1.50	2.50
1793	Cent, liberty cap, rare	3.00	6.00
1793	Cent, dot after date, and legend "Liberty"	3.00	5.00
1795	Cent, thick planchet, edge lettered	75	1.00
1799	Cent, the rarest of the cents	4.00	6.00
1804	Cent, very rare	3.00	5.00
1839	Cent, over date of 1836	....	75
1856	Pattern cent, flying eagle, copper	60	70
1856	Nickel cent, flying eagle	1.50	2.00
1858	Nickel cent	....	50
1873	Two-cent piece	50	75

United States half-cents, valued at 50 cents and upward:

Year.	Description.	Good.	Fine.
1793	Half-cent, rare	$1.75	$2.50
1793	Half-cent of smaller planchet	1.50	3.00
1794	Half-cent of several varieties	40	50
1795	Half-cent, lettered edge	75	1.00
1795	Half-cent of thin planchet	40	60
1796	Half-cent, the rarest of all	5.00	8.00
1797	Half-cent, several varieties	50	75
1802	Half-cent	50	75
1811	Half-cent	60	75
1831	Half-cent	2.50	3.50
1836	Half-cent	2.50	3.50
1840 to 1848	inclusive—Half-cent	2.50	3.50
1849	Half-cent, small date	2.50	3.50
1849	Half-cent, large date	05	10
1852	Half-cent	2.50	3.50

The coins minted by any of the American colonies and now at a high premium are as follows:

Year.	Description.	Good.	Fine.
1786	Cent, Vermontensium Respublica	$0.40	$0.68
1786	Cent, Vermons Respublica	30	50
1788	Cent, Nova Cesarea, horse head to left	75	1.25
1788	Mass. half-cent	40	65
1787	New York "Excelsior" cent	2.00	3.00
1783	Chalmer's Annapolis shilling and sixpence	2.50	3.00
1652	Oak Tree shilling and sixpence	3.00	4.00
1652	Pine Tree shilling and sixpence	3.00	4.00
1722	Rosa American half-cent	60	75

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The Wives of Columbus.

Christopher Columbus was twice married. His first wife was Felipa Munnis Perestrelle, daughter of an able Captain of Prince Henry Portugal, called the "Navigator." He married her in 1471. His father-in-law's charts, globes, etc., helped to mature his plans of discovery. Diego, who accompanied his father on the occasion when they were reduced to such straits that Columbus begged at the monastery of La Rabida for bread and water for the child, was the only issue of this marriage. This wife died in 1483 or thereabout. He next married Beatriz Enriquez, at Cordova in 1487. She was the mother of his second son, Fernando Columbus, who in time became his father's biographer.

Dimensions of Bartholdi's Statue of Liberty.

The figure of this statue, which is made of repousse, or hammered work—that is, thin sheets of copper beaten into shape and fastened about an iron skeleton—is 110½ feet high and weighs 100,000 pounds. The uplifted torch, however, is raised 26 feet, and adding to this the pedestal, the tip of the torch is raised 220 feet from the ground. The pedestal is of stone, 82 feet high. Some idea of the enormous proportions of the statue may be given by the fact that the forefinger is 8 feet long, and 4 feet in circumference at the second joint. The head is 14 feet high and 40 persons can stand in it.

The Dimensions of the Great Wall of China, and of What It is Built.

It runs from a point on the Gulf of Liantung, an arm of the Gulf of Pechili in North-eastern China, westerly to the Yellow River, thence makes a great bend to the south for nearly 100 miles, and then runs to the north-west for several hundred miles to the Desert of Gobi. Its length is 1,500 miles. For the most of this distance it runs through a mountainous country, keeping on the ridges, and winding over many of the highest peaks. In some places it is only a formidable rampart, but most of the way it is composed of lofty walls of masonry and concrete, or impacted lime and clay, from 12 to 16 feet in thickness, and from 15 to 30 or 35 feet in height. The top of this wall is paved for hundred of miles, and crowned with crenallated battlements, and towers 30 to 40 feet high. In numerous places the wall climbs such steep declivities that its top ascends from height to height in flights of granite steps. An army could march on the top of the wall for weeks and even months, moving in some places ten men abreast.

Longest Street-Car Line.

The longest street-car line in the world is in the Argentine Republic. It is so much longer than any other line that it quite dwarfs the eight and ten mile roads of our cities. It is also the only street-car line in the world which uses sleeping-cars. The road has 200 miles of track, connecting a number

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of towns in the vicinity of Buenos Ayres. Horses are used there as motive power instead of steam, because fuel is dear, horses cheap, and the people are slow. Two tons of coal will buy a horse and harness. The equipment for this road has been entirely furnished by a Philadelphia car company. The sleeping cars are a curiosity. They are four in number, eighteen feet in length, and are furnished with four berths each, which are made to roll up when not in use. The cars are furnished with lavatories, water-coolers, linen presses, and other conveniences, and are finished throughout with mahogany. The other cars are four double-decked open cars, twenty platform cars, twenty gondola cars, six refrigerator cars, four poultry cars, furnished with coops, eight cattle cars, two derrick cars for lifting heavy material, and 200 box cars.

To Prevent Scars from Burns.

In the healing of burns and scalds, where there is danger of contracting scars, rub the new skin several times a day with good sweet oil. Persist in this rubbing until the skin is soft and flexible.

Weight of Eggs.

The following table of the weight of eggs per pound of various breeds of fowls, and the number of eggs laid in a year, is approximately fair, though it may vary under exceptionally adverse or favorable conditions:

Varieties.	Eggs Per lb.	No. Eggs Per year.	Varieties.	Eggs Per lb.	No. Eggs Per year.
Light Brahmas ..	7	130	Creve Cœurs.....	8	145
Dark Brahmas....	8	130	Black Spanish....	8	155
Partridge Cochins	7	130	Leghorns	8	160
Black, White, Buff Cochins.....	7	120	Hamburgs.....	9	150
Plymouth Rocks.	8	150	Dominiques.....	8	135
Houdans	8	155	Games	9	140
La Fleche	7	135	Bantams 16		90

Food in an Egg.

An egg contains as much nourishment as a pound and an ounce of cherries, a pound and a quarter of grapes, a pound and a half of russet apples, two pounds of gooseberries and four pounds of pears, and 114 pounds of grapes, 127 pounds of russet apples, 192 pounds of pears, and 327 pounds of plums are equal in nourishment to 100 pounds of potatoes.

Safe Method of Removing Superfluous Hair on the Hands and Face.

The use of pumice-stone is safer and to be preferred to caustic, though it is not permanent, and may need to be repeated. Procure a piece of pumice-stone of a fine grain and not very porous. Prepare for use by cutting the stone into a small square with rounded edges. Then rub it on a hard stone or file until its whole surface is quite smooth. When this is done, rub gently with it the part where the hairs grow, at first once a day, previously dipping the pumice-

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stone in warm water. One minute's rubbing will generally suffice to remove the hair. If any irritation of the skin ensues, apply a little salad-oil to the part. The rubbings may be made as often as convenient, care being taken not to scrape the skin by too rough application.

The Tunnel Under the Hudson.

This tunnel is going quietly forward. There has been expended on it $1,000,000, and $2,500,000 is in hand to proceed with. The distance is 5,600 feet. One of the two passages is completed a third of this length and the other more than a tenth of it.

Other Tunnels.

In a length of only 78 miles, a railway on the French Island of Reunion has four tunnels aggregating nearly seven miles, with many deep cuttings and high embankments; 43 large bridges, including one of 1,640 feet and one of 1,312 feet, together with 200 bridges and culverts of less than 33 feet.

An eight-mile tunnel, sixteen feet in diameter, is to be dug through a mountain in Norway, through which water will flow carrying logs from the forest to the other extremity.

Facts as to Sound.

In air, sound travels from 1,130 to 1,140 feet per second. In water, it passes at the rate of 4,700 feet per second. A bell sounded under water may be heard under water at 1,200 feet distance. Sounds are distinct at twice the distance on water that they are on land. On Table Mountain, a mile above Cape Town, every noise in it, and even words may be heard distinctly. Dr. Jamieson says that in calm weather he heard every word of a sermon at the distance of two miles. The sound of a tuning-fork may be distinctly heard at the distance of 200 yards, by connecting the stem by pack-threads with the ear.

To Prevent Lamp Explosions.

Mix your petroleum carefully, and you need not fear an explosion. You have only to be cautious as to the amount of atmospheric air you blend with the explosive vapor. Experiments made since the explosion of a petroleum vessel in a French harbor show that a mixture of one part of petroleum vapor to five or less of air does not explode. With six parts of air the mixture is feebly explosive; with seven to twelve, violently so; with sixteen parts, feebly explosive; and with twenty parts of air is not likely to explode.

How Wire is Made.

Wire is now being manufactured—whether iron, copper, or brass—by a new and greatly improved process, and at a greatly reduced cost. The machine devised for this purpose consists of a series of rolls in a continuous train, geared with a common driver, each pair of rolls having a greater speed than the pair preceding it, with an intervening friction clutch adapted to graduate the speed of the rolls to the speed of the

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wire in process of rolling. The entire operation of producing the smallest sized wires from rods of one-half inch is done cold. It is alleged that this method obviates the danger of unequal annealing and of burning in the furnaces—in addition to this the wire being more flexible and homogeneous than that made by any ordinary method, and capable of sustaining greater longitudinal strain; in the case of copper wire there is said, to be a greatly increased electrical conductivity.

Simple Tests for Impure Water.

The presence of organic impurity in water can be detected by dissolving some loaf sugar in it, and then, after putting in a tight stopper, allowing it to stand in a warm, well-lighted room for a few days. If it becomes turbid, there are certainly organic impurities in it; if it remains clear it is pure and safe to drink. To test the presence of earthy matters, take litmus paper dipped in vinegar, and if, on immersion, the paper returns to its true shade, the water does not contain earthy matter or alkali. If a few drops of sirup be added to water containing an earthy matter, it will turn green. To ascertain if the water contains iron, boil a little nut gall and add to the water. If it turns gray or slate black iron is present. Or dissolve a little prussiate of potash, and if iron is present it will turn blue. The presence of carbonic acid may be ascertained, even in very small quantities, thus: Take equal parts of water and clear lime water. If combined or free carbonic acid is present, a precipitate is formed, to which, if a few drops of muriatic acid be added, an effervescence commences. To detect magnesia, boil the water to a twentieth part of its weight, and then drop a few grains of neutral carbonate of ammonia into a glass of it, and a few drops of phosphate of soda. If magnesia be present it will fall to the bottom. We can ascertain the presence of even a very small quantity of lime if into a glass of water we put two drops of oxalic acid and blow upon it. If it gets milky lime is present. The presence of any acid can be shown by dipping into the water a piece of litmus paper. If it turns red there must be acid. If it precipitates on adding lime water it is carbonic acid. The unfailing test for hard or soft water is to take a little good soap and dissolve it in alcohol. A few drops of this in a vessel of water will turn it quite milky if it is hard; if it is soft it will remain clear.

A Recipe for Making India Ink, also Recipes for Making Yellow and Brown Inks.

Pure India ink, or sepia, is made only in China, but a good imitation and common substitute is made as follows: Ivory black, ground into an impalpable powder, is made into a paste with weak gum-arabic water, perfumed with a few drops of essence of musk and half as much essence of ambergris. This is pressed into cakes, ready for use. Brown ink may be made with a strong decoction of catechu. The shade can be varied by cautiously adding a little weak solution of

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bichromate of potash. A yellow ink may be made with a strong decoction of yellow dyeing ingredient with alum and gum-arabic.

Antidotes to Poisons.

In nearly all cases of poisoning the first thing to do is to excite copious vomiting by means of a powerful emetic, the action being promoted by large draughts of lukewarm water, tickling the throat with the finger, etc. If the vomiting can not be brought on by this means the stomach-pump must be resorted to, but not till the simple methods have been tried. The vomiting should be kept up by giving albuminous liquids such as milk and water, barley water, or similar substances, always administered when lukewarm. After the vomiting has removed the poisonous substance, a mild aperient draught may be given, and nervous exhaustion allayed by very small doses of ether or ammonia, or draughts of wine or hot spirits and water. Generally speaking, a tablespoonful of the flour of mustard mixed with warm water will serve as an effective emetic. Whenever medical aid is accessible it should be called immediately to a case of poisoning. For special antidotes, we take the following directions from a chemical journal, giving the substances most useful in counteracting the effects of poisonous chemicals: "For phenic, sulphuric, muriatic, nitric or nitro-muriatic acids, creosote, tincture of iodine, or phosphorus, use the white of an egg well beaten up in water, and a teaspoonful of mustard in warm water In case sulphuric, nitric, or muriatic acid has been swallowed, it is necessary to take lime mixed with as small a quantity of water as possible. For chromic acid, the chromates and colors that have chromium for a base, the compounds of copper, and such preparations as have antimony for a base (such as tartar emetic), and the compounds of mercury and zinc, use the white of eggs in abundance, and as an emetic mustard, which, however, is useless if the poisoning has been done by tartar emetic. For ammonia, soda, potassa, the silicates, and the alkaline hydrosulphates, use vinegar, and afterward oil or milk. For prussic acid and its salts, the cyanides of potassium and mercury, the sulphocyanides, oil of bitter almonds, or nitrobenzine, pour water on the patient's head or spinal column, and put mustard plasters on the feet and the stomach. Do not let the patient go to sleep. For ether, petroleum, benzole, fruit essences, and concentrated alcohol, take strong mustard as an emetic, with much warm water, cold baths, and fresh air. Keep the patient awake. For the compounds of baryta or lead, use mustard as an emetic, with warm water, Epsom salts or Glauber's salts in water. For arsenic and its compounds, use mustard and dialyzed iron with magnesia, and afterward oil, mild, or mucilaginous liquids. For oxalic acid and its salts, use lime or lime water, and afterward castor oil. For nitrate of silver, use kitchen salt dissolved in water, and mustard as an emetic. For the nitrous fumes from the manufacture of the nitrate of iron, or of sulphuric acid, take acetic

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acid as strong as can be endured, in small quantities at a time."

The Bunker Hill Monument.

The monument is a square shaft, built of Quincy granite, 221 feet high, 31 feet square at the base, and 15 at the top. Its foundations are inclosed 12 feet under ground. Inside the shaft is a round hollow cone, 7 feet wide at the bottom, and 4 feet 2 inches at the top, encircled by a winding staircase of 224 stone steps, which leads to a chamber immediately under the apex, 11 feet in diameter. The chamber has four windows, which afford a wide view of the surrounding country, and contains two cannons, named respectively Hancock and Adams, which were used in many engagements during the war. The corner-stone of the monument was laid on the fiftieth anniversary of the battle, June 17, 1825, by Lafayette, who was then visiting America, when Webster pronounced the oration. The monument was completed, and June 17, 1843, was dedicated, Webster again delivering the oration.

The Facts and Fables of the Upas Tree.

The upas is a tree belonging to the breadfruit family, which grows on the Island of Java. It grows to about 100 feet in height, with a straight trunk and rounded head. The leaves are oblong, about five inches in length. The tree has small white flowers and a small purple fruit, like a plum. When this tree was first made known, extraordinary stories were told of it by a surgeon in the service of the Dutch East India Company, who published a narrative concerning his experience on the island, in 1783. He said that the emanations of the tree killed all living things near it, even the birds that flew over it falling dead; that criminals condemned to death were sent to the tree to gather its poisons, and but two out of twenty ever returned. He declared that those fortunate enough to come back alive assured him that the tree grew in a valley, with no other living thing, not even a plant or blade of grass within miles of it, and that of 1,600 persons who had been forced by a civil war to encamp about fourteen miles from the tree, all but 300 died. These stories were accepted and repeated, until they were altogether disproved in 1810. Evidently, Dr. Foersch must have strangely confounded the upas tree with the poison valley, a locality rendered deadly by emanations of carbonic acid from rocks in the vicinity. The upas actually grows in the forest with other trees, and no animals show any especial fear of it. Its emanations are somewhat poisonous to the skin of human beings, but not more so than those of the sumach or other similar plants, and like these are poisonous to some persons and not to others. The juice or sap of the tree is poisonous to the blood, and has been used by the Javans from time immemorial to poison the points of their arrows and spears. The substance, when introduced into the circulation, acts directly on the principal blood-vessels, causing death in a short time by congestion.

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How to Make an Æolian Harp.

It may be composed of a rectangular box made of thin boards, five or six inches deep and about the same width, and of a length sufficient to extend across the window it is to be set at, so that the breeze coming in can sweep over it. Its strings are made as follows: At the top of each end of the box a strip of wood is glued about a half inch in height; the strings are then stretched lengthwise across the top of the box, and may be either catgut or wire. For the purpose of making a fine-toned harp, the strings should be tuned in unison by means of pegs constructed to control their tension, as in the case of a violin. The instrument is then ready to be placed at the window, which, when partly raised, will admit a current of air, and this passing over the strings produces very pleasant sounds which vary with the breeze. It receives its name from Æolus, the god or ruler of the winds.

The Jewish Religion, Its Days of Observance, Customs, Etc.

In their religious observances modern Jews adhere to the rules of the Mosaic dispensation. Their service consists chiefly in reading the law in their synagogues, together with a variety of prayers. They abstain from the meats prohibited by the Levitical law, and they continue to observe the ceremonies of the Passover, as nearly as possible. They offer prayers for the dead, because they believe that the souls of the wicked go to a place of temporary punishment, where they remain under trial a year, and they think that very few will be condemned to suffer eternally. We give a summary of the confession of faith, in which all orthodox Jews must live and die. It is made up of thirteen articles, and was drawn up in the eleventh century by a celebrated rabbi named Maimonides. These articles declare in substance: (1) That there is one God, creator of all things, who may exist without any part of the universe, but without whom nothing can maintain existence; (2) that God is uncompounded and indivisible, but different from all other unities; (3) that God is an immaterial being, without any admixture of corporeal substance; (4) that God is eternal, but everything else had a beginning in time; (5) that God alone ought to be worshiped, without mediators or intercessors; (6) that there have been inspired prophets, and may be more; (7) that Moses was the grandest prophet that ever appeared; (8) that the law of Moses was, in every syllable, dictated by the Almighty, not only in its written letter but in traditionary exposition; (9) that this law is immutable, neither to be added to nor diminished; (10) that God knows all our actions and governs them as He will; (11) that the observance of the law is rewarded and its violation punished in this world, but in a greater degree in the next; (12) that a Messiah is yet to appear, the time of whose coming may not be prescribed or foretold; and (13) that God will raise the dead at the last day and pass judgment upon all.

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Introduction of Postage Stamps.

The use of postage stamps, one of the great reforms advocated by Rowland Hill, was introduced into England through his efforts May 6, 1840. They began to be used in this country in 1847.

Times That Try Men's Souls.

Thomas Paine, professed to believe that men had no souls. During the Revolutionary war, soon after the British captured Philadelphia, and when the cause of independence was shrouded in gloom, Paine, who was certainly one of the most spirited, brilliant, and effective knights of the pen that championed independence, wrote in "The American Crisis," "These are times that try men's souls."

How Oil-Cloth Is Made.

Oil-cloth for floors is made on stout hemp canvas, which is woven very wide so as to have no seams in it. This canvas is first stretched tight over a frame; then is covered with thin glue, or size, and rubbed down with pumice. This is to fill in the spaces between the threads, and make the whole very smooth. Then a coating of thick paint is spread over the surface and rubbed in with a trowel. When this is dry another thick coat is put on, and after that another, and then a coat of thin paint, laid on with a brush. All of these are of one color, and after they have been put on and dried, the pattern of the oil-cloth is printed on by means of wooden blocks. The outline of the design is cut on these blocks and for different colors different blocks are used. Oil-cloth for table covers is made of light cloth or canvas, on which two coats, or perhaps three, of common paint are laid on, and the design is then printed in the same way that calico is printed.

Origin of the Aztec Race.

The Aztecs trace their origin to the legendary land of Aztlan, where they dwelt in seven caverns of the earth. After a cataclysm and distribution of tongues the Aztecs wandered away from their fellows, and traveled southward. It is said that the seven tribes halted many times before they finally reached the Valley of Mexico, so that the journey occupied from fifty-three to one hundred and sixty-three years. The emigration occurred in the thirteenth century.

How Far the Naked Eye Can See an Object on the Ocean or on the Western Plains.

The limits of vision vary with elevation, conditions of the atmosphere, intensity of illumination, and other modifying elements in different cases. On a clear day an object one foot above a level plain may be seen at the distance of 1.31 miles; one ten feet high, 4.15 miles; one twenty feet high, 5.86 miles; one 100 feet high, 13.1 miles; one a mile high, as the top of a mountain, 95.23 miles. This allows seven inches (or, to be exact, 6.99 inches) for the curvature of the earth, and assumes

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that the size and illumination of the object are sufficient to produce an image. Five miles may be taken as the extreme limit at which a man is visible on a flat plain to an observer on the same level.

The Highest Single Fountain Jet in the World.

The highest single fountain jet in the world is on the estate of 200 acres given by the late Trenor W. Park as a Home for Destitute Children and Women, at Bennington, Vt. This jet rises to the height of 198 feet.

The Life of Eugene Aram.

Eugene Aram, whose story has been immortalized by Sir Bulwer Lytton, was born at Ramsgill, in Yorkshire, in 1704. At an early age he married and continued his work as a teacher, living at Knaresborough. The sudden and mysterious disappearance of a shoemaker named Clark caused excitement, and finally the conviction of foul play became prevalent, the more because Aram's wife frequently dropped remarks to the effect that Eugene and a man named Housemen knew more about the affair than they cared to admit. In 1759 a skeleton was exhumed near Knaresborough, which was suspected to be Clark's, and Houseman was at once confronted with some of the bones; but he denied vehemently that they were Clark's. Finally, upon Houseman's testimony that Aram and Terry were the murderers, the former was arrested, after the skeleton of Clark had been found in a place designated by Houseman. Aram ably defended himself, and eloquently denounced the practice of conviction on circumstantial evidence, but nevertheless he was sentenced to be hung three days later. Before his execution he confessed his guilt to a minister.

The Professional Tramp's Sign Language.

Habitual tramps have a sort of organization—not so complete as the beggar guilds of China, which have regularly appointed "kings," and are recognized by the laws of the land as established organizations, with certain legal privileges—but nevertheless a social body, banded together for mutual assistance, and with a cipher language peculiar to themselves. With these creatures the term "lurk" is said to signify a guild or class of beggars. Beggars who feign sickness are said to belong to the "sick lurk;" those who feign deafness, to the "deaf and dumb lurk;" those who claim to have suffered the loss of everything through some conflagration, to the "fire lurk," and so on. For common use these lurks have not only a sign language by means of which they can converse without honest people around them even suspecting it, but a number of written symbols, such as the following, which are claimed to have been revealed by a professional tramp, as among their cipher communications left on doors, fences, barns, and gate posts for the guidance of other members of the profession: ‖, good for a meal; ¶, this road better

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than the other; X, no good; §, these people have had too many tramps; ‡, will have you arrested, †, beware of these folks, they will hurt you, or have you imprisoned. The city tramp guilds in some places even resort to drug stores, hotels, and other places where directories are kept for public use, and set over against the names there such marks as these: *, very good, likely to give; —, not called on before, or doubtful. Other signs might be given, but these are enough to illustrate their secret vocabulary.

The Longest Rivers of the World.

Rivers	Locality.	Rise.	Discharge.	Miles.
Missouri	N. America	Rocky Mountains.	Gulf of Mexico	4,194
Amazon	Brazil	Andes	Atlantic Ocean	3,944
Hoang-Ho	China	Koulkoun Mountains.	Yellow Sea	3,000
Murray	Australasia	Australian Alps	Encounter Bay	3,000
Obi	Siberia	Altaian Mountains.	Arctic Ocean.	2,800
Nile	Egypt, Nubia.	Blue Nile, Abyssinia.	Mediterranean	2,750
Yang-tse-Kiang	China	Thibet	China Sea	2,500
Mississippi	N. America	Lake Itasca.	Gulf of Mexico	2,616
Lena	Siberia	Heights of Irkutsk	Arctic Ocean.	2,500
Mackenzie	N. America	River Athabasca	Arctic Ocean.	2,500
Niger	Soudan	Base of Mt. Loma	Gulf of Guinea	2,300
St. Lawrence	N. America	River St. Louis	Gulf St. Lawrence	1,960
Volga	Russia	Lake in Volhonsky	Caspian Sea	1,900
Maykiang	Siam	Thibet	Chinese Gulf	1,700
Indus	Hindostan	Little Thibet	Arabian Sea	1,700
Danube	Germany	Black Forest	Black Sea	1,690
Brahmapootra	Thibet	Himalaya	Bay of Bengal	1,500
Columbia	N. America	Rocky Mountains.	Pacific Ocean.	1,080
Colorado	N. America	San Iaba	Gulf of California	1,000
Susquehanna	N. America	Lake Otsego.	Chesapeake Bay	400
James	N. America	Alleghany Mountains.	Chesapeake Bay	500
Potomac	N. America	Great Back Bone Mt.	Chesapeake Bay	400
Hudson	N. America	Adirondacks, Mt. Marcy.	Bay of New York	325

The Drainage of the Pinsk Marshes.

The Pinsk Marshes are in South-western Russia, on the borders of Gallicia. In extent they are estimated at about

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85,000 square miles, or larger than the whole of Ireland. From the earliest times this tract has been a dense marsh overgrown with trees and masses of undergrowth, an irreclaimable wilderness, utterly useless for any purposes of civilized man. The Russian Government first undertook the reclaiming of this vast wilderness in 1870. A large staff of engineering officers and several thousand troops have been engaged upon the undertaking since. Up to 1889 about 4,300,000 acres have been reclaimed by means of the construction of several thousand miles of ditches and canals, navigable for barges of several hundred tons burden. Of the expense of land already reclaimed, 800,000 acres consisted of bog, which has been converted into good meadow land; about 1,000,000 acres of "forest tangle," which have been prepared for timber purposes by cutting down the underwood and thinning the trees; 500,000 acres of good forest land—forest oases in the middle of marshes—hitherto inaccessible, but which have been connected more or less by navigable canals, and thereby with the distant markets; and finally, 2,000,000 acres have been thrown open to cultivation. Besides making the canals and ditches, the engineers have built 179 bridges, bored 600 wells from 20 to 80 feet deep, and have made a survey of 20,000 square miles of country hitherto unmapped.

Facts Worth Knowing. Proper Ages of Reproduction (1), Length of Power of Reproduction (2), and Periods of Gestation (3), in Domestic Animals.

	1	2	3		
			Shortest	Mean	Longest
	Years.	Years.	Days.	Days.	Days.
Horse	.....	12 to 15	.....	.....	.....
Mare	4	10 to 12	287	347	419
Cow	3	10	240	283	321
Bull	.....	5	.....	.....	.....
Sow	1	6	109	115	143
Boar	.....	6	.....	.....	.....
Ewe	2	6	146	154	161
Ram	.....	7	.....	.....	.....
Jackass	.....	12 to 15	.....	.....	.....
Ass	4	10 to 12	365	380	391
Goat	2	5 to 6	150	156	163
Slut	2	8 to 9	55	60	63
Dog	.....	8 to 9	.....	.....	.....
Cat	1	9 to 10	.....	.....	.....
Cat, female	.....	5 to 6	48	50	56

The Communication of Heat.

Heat is communicated by conduction, convection, and radiation. Conduction is the method by which the heat is

transmitted from particle to particle of a body, as from the end of a metallic rod placed in a fire, to all other portions of the rod. All bodies may be divided into two classes respecting their power of heat—conductors and non-conductors. If we hold the ends of two rods, one of iron and one of wood, in a fire, we soon become aware that the metal conducts the heat much more readily to the hand than the wood. The relative conducting power of metals is as follows:

Silver, 100; copper, 74; gold, 53; brass, 24; tin, 15; iron, 12; lead, 9; platinum, 8; German silver, 6; bismuth, 2.

Weight of a Cubic Foot of Various Substances.

METALS.

Platina	lbs.,	1,218	oz., 12	Tin	lbs.,	455	oz., 12
Pure gold*	"	1,203	" 10	Cast iron	"	450	" 7
Mercury	"	849	" 12	Copper	"	547	" 4
Lead	"	709	" 8	Brass	"	526	" 13
Pure silver†	"	625	" 13	Zinc	"	428	" 13
Steel	"	487	" 12				

*The value of a ton of pure gold is $602,799.21. $1,000,000 gold coin weighs 3,685.8 pounds avoirdupois. †The value of a ton of silver is $37,704.84. $1,000,000 silver coin weigh 58,929.9 pounds avoirdupois.

MISCELLANEOUS.

India rubber	lbs.,	56	oz., 7	Pressed cotton	lbs.,	25	....
Pressed hay	"	25	....				

EARTH, STONE, ETC.

Italian marble	lbs.,	169	oz. 4	Mortar	lbs.,	109	oz. 6
Vermont marble	"	165	" 9	Mud	"	101	" 14
Window glass	"	166	" 2	Loose earth	"	96	" 12
Common glass	"	157	" 8	Lehigh coal, loose	"	56	" 4
Moist sand	"	128	" 2	Lackawanna — loose	"	48	" 10
Clay	"	120	" 10				
Brick	"	118	" 12				

WOODS.

Lignum vitæ	lbs.,	83	oz., 5	Shellbark hick'ry	lbs.,	43	oz., 2
Ebony	"	83	" 5	Pitch pine	"	41	" 4
Boxwood	"	75	" 2	Chestnut	"	38	" 2
Mahogany	"	66	" 7	Birch	"	36	" 7
White oak	"	53	" 12	Cedar	"	35	" 1
Ash	"	52	" 13	White poplar	"	33	" 1
Red hickory	"	52	" 6	Spruce	"	31	" 4
Apple	"	49	" 9	Yellow pine	"	28	" 13
Maple	"	46	" 14	Butternut	"	23	" 8
Cherry	"	44	" 11	Cork	"	15	" ..

GROCERIES.

Sugar	lbs.,	100	oz., 5	Butter	lbs.,	58	oz., 14
Beeswax	"	66	" 5	Tallow	"	56	" 13
Lard	"	59	" 3	Castile soap	"	56	" 13

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LIQUIDS

Honey	lbs., 90	oz., 10	Tar	lbs., 63	oz., 7
Vinegar	" 97	" 8	Rain water	" 62	" 8
Blood	" 65	" 14	Linseed oil	" 58	" 12
Beer	" 65	" 10	Brandy	" 57	" 12
Milk	" 64	" 8	Ice	" 57	" ..
Cider	" 63	" 10	Alcohol	" 49	" 10

DIFFERENCE IN WEIGHT OF WOOD—GREEN AND DRY.

English oak, dry	lbs., 43	oz., 8	Ash, dry	lbs., 52	oz., 6
" green	" 71	" 10	" green	" 58	" 3
Beech, dry	" 53	" 4	Amer'n pine, dry	" 30	" 11
" green	" 60	"	" " green	" 44	" 12

A Quick Method of Finding the Interest on any Sum of Money, at any Given Per Cent., for any Given Time.

Rule.—1st. Divide the principal by 12, and multiply the result by the rate per cent. expressed decimally; this gives the interest for one month. 2d. Multiply the years by 12, and add the number of months, then place ⅓ of the number of days to the right as a decimal.

Multiply 1st and 2d results, gives the interest.

Example.—What is the interest on $120.00 at 8 per cent., for 2 years, 3 months, and 9 days?

12)$190 Principal

10
.08

.80 Interest for 1 month.

2 yrs. ⅓ mo. 3)9 days.
12
3

24
3 months.

27.3
.80

Interest, $21.840

What is the interest on $62.50 at 5 per cent. for 4 months and 27 days?

12)$62.50 4 months and 27 days.

5.2166
.05

.260830
4.9

[23-7470
1043320

$1.278670 Interest.

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Principal Exports of Various Countries.

ARABIA.—Coffee, aloes, myrrh, frankincense, gum-arabic.
BELGIUM.—Grain, flax, hops, woolens, linens, laces, various manufactures.
BRAZIL.—Cotton, sugar, coffee, tobacco, gold, diamonds, wheat dye-woods.
CANADA, NOVA SCOTIA, AND NEW BRUNSWICK.—Flour, furs, lumber, fish.
CAPE COLONY. — Brandy, wine, ostrich feathers, hides, tallow.
CENTRAL AMERICA.—Logwood, mahogany, indigo, cocoa.
CHILI.—Silver, gold. copper, wheat, hemp, hides, sugar, cotton, fruits.
CHINA.—Tea, silks, nankeens, porcelain, opium, articles of ivory and pearl.
DENMARK.—Grain, horses, cattle, beef, pork, butter, and cheese.
EASTERN, WESTERN, AND SOUTHERN AFRICA. — Gold, ivory, ostrich feathers.
EGYPT.—Rice, grain, linseed, fruits, indigo, cotton, sugar.
ECUADOR AND NEW GRENADA. — Coffee, cotton, indigo, fruits, sugar, cocoa.
FRANCE.—Silks, woolens, linens, cottons, wine, brandy, porcelain toys.
GERMANY.—Linen, grain, various manufactures of silver, copper, etc.
GREAT BRITAIN.—Woolens, cottons, linens, hardware, porcelain, etc.
GREENLAND.—Whale oil, whale bone, seal-skins.
HINDOSTAN. — Cotton, silks, rice, sugar, coffee. opium, indigo.
HOLLAND.—Fine linens, woolens, butter, cheese, various manufactures.
ITALY.—Silks, wines, grain, oil, fruits.
IRELAND. — Linens, beef, butter, tallow, hides, potatoes, barley, etc.
JAPAN.—Silk and cotton goods, Japanware, porcelain.
MEXICO.—Gold, silver, logwood, cochineal, fruits.
PERSIA.—Carpets, shawls, wine, silk, cotton, rice, rhubarb, guns, swords, etc.
PERU.—Silver, gold, Peruvian bark, mercury, sugar, cotton, fruits.
RUSSIA.—Hemp, iron, linen, grain, timber, furs, tallow, platina.
SPAIN AND PORTUGAL.—Silks, wool, wine, oil, fruits, salt, etc.
SWEDEN AND NORWAY.—Iron, steel, copper, timber, fish.
SWITZERLAND.—Watches, jewelry, paper, laces, linen, cotton and silk goods, etc.
TURKEY.—Grain, fruits, cotton, oil, wines, carpets, muslin, swords.
UNITED STATES.—Eastern States—Lumber, beef, pork, fish, cottons, woolens, etc. Middle States—Flour, wheat, salt coal, cottons, woolens, etc. Southern States—Cotton, rice,

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tobacco, corn, lumber, pitch, fruits. Western States—Corn, wheat, lead, coal, iron, salt, lime, beef, pork, fruits.

VENEZUELA.—Sugar, coffee, cocoa, cotton, indigo, fruits.

WEST INDIES.—Sugar, rum, molasses, coffee, spice, cotton, indigo, fruits.

Size of Oceans, Seas, Bays, and Lakes.

Oceans.	Sq. Miles.	Oceans.	Sq. Miles.
Pacific, about	80,000,000	Southern, about	10,000,000
Atlantic, "	40,000,000	Arctic "	5,000,000
Indian, "	20,000,000		

The seas, bays, gulfs, etc., connected with each ocean, are included in the foregoing estimate. The exact superficial extent of the several oceans is not known with certainty, nor the exact proportion of land and water.

Seas.	Length in Miles.	Seas.	Length in Miles.
Mediterranean, about	2,000	Caspian, about	640
Caribbean, about	1,800	Baltic, "	600
China "	1,700	Okhotsk, "	600
Red, "	1,400	White, "	450
Japan, "	1,000	Aral, "	250
Black. "	932		

Bays.	Length in Miles.	Bays.	Length in Miles.
Hudson, about	1,200	Chesapeake, about	250
Baffin's, "	600		

Lakes.	Length Miles.	Width Miles.	Lakes.	Length Miles.	Width Miles.
Superior	380	120	Great Bear	150	40
Baikal	360	35	Ladoga	125	75
Michigan	330	60	Champlain	123	12
Great Slave	300	45	Nicaragua	120	40
Huron	250	90	Lake of the Woods	70	25
Winnipeg	240	40	Geneva	50	10
Erie	270	50	Constance	45	10
Athabaska	200	20	Cayuga	36	4
Ontario	180	40	George	36	3
Maracaybo	150	60			

Weight of Green Logs to Scale 1,000 Feet, Board Measure.

Yellow Pine (Southern)	8,000 to 10,000	lbs.
Norway Pine (Michigan)	7,000 to 8,000	"
White Pine (Mich.) off stump	6,000 to 7,000	"
White Pine (Mich.) outwater	7,000 to 8,000	"
White Pine (Penn.) bark off	5,000 to 6,000	"
Hemlock (Penn.) "	6,000 to 7,000	"

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Weight 1,000 Feet of Lumber, Board Measure.

Yellow or Norway Pine—Dry	3,000 lbs.
" " Green	5,000 "
White Pine Dry	2,500 "
" Green	4,000 "

Weight of One Cord of Seasoned Wood, 128 Cubic Feet per Cord.

Hickory or Sugar Maple	4,500 lbs.
White Oak	3,850 "
Beech, Red, Oak, or Black Oak	3,250 "
Poplar, Chestnut, or Elm	2,350 "
Pine, (White or Norway)	2,000 "
Hemlock Bark, dry	2,200 "

Capacities of Cisterns and Wells.

For a circular cistern or well take the diameter in feet, square that and multiply by 785,398; that gives the area in feet; multiply this by 1,728 and divide by 231, and you will have the number of gallons capacity of one foot in depth; from this calculate the depth. If for a square cistern, multiply length by breadth, and proceed to multiply the result by 1,728 and to divide by 231 as before. Calculated in this way, we find that each foot in depth of a circular cistern or well,

5	feet in diameter holds	4.66 barrels.		8	feet in diameter holds	11.93 barrels.	
6		6.61	"	9		15.10	"
7		9.13	"	10		18.65	"

SQUARE CISTERN OR WELL.

5 feet by 5 holds		5.92 barrels.			8 feet by 8 holds		15.19 barrels.		
6	" "	6	"	8.54	"	9	" "	9	" 19.39 "
7	" "	7	"	11.73	"	10	" "	10	" 23.74 "

How to Find the Horse-power of a Waterfall.

Rule.—Multiply the area of the cross section in feet by the velocity in feet per minute, and multiply by 62½, the number of pounds in a cubic foot of water, and this by the vertical fall in feet, and we have the foot-pounds per minute of the fall; divide by 33,000 gives the horse-power.

Example I.—A stream flows through a flume 10 feet wide, and the depth of the water is 4 feet; velocity 150 feet per minute. Then multiply 10 by 4=40, and 40×150=6000, the cubic feet of water flowing per minute; then 6000×62½=375,000 pounds of water per minute. Now suppose the fall be 12 feet we have 375,000×12=4,500,000; now divide by 33,000 and we have 133⅓, the horse-power of the fall.

Example II.—The flume of a mill is 15 feet wide, the water is 4 feet deep, the velocity 50 feet per minute, and the fall 10 feet; what is the horse-power of the fall?

Operation.—15×4×50×10×62½=1,875,000.

Then, 1,875,000÷33,000=56 9-11 horse-power.

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Rules for the Management of Poultry.

1. Good dry houses, well ventilated but void of drafts.
2. Keep your hen-houses clean and the floor covered with ashes.
3. Whitewash inside monthly from March 1st to October 1st.
4. Feed regularly, but never over-feed; cease feeding when the fowls cease to run for it.
5. Scatter the food on the ground when the weather will permit.
6. Feed mixed grain, or alternate, as corn one day, oats next, wheat next, etc.
7. Allow adult fowls freedom as early in the morning as they desire.
8. Keep hens with chicks in small coops (well covered and dry) until the chicks are three weeks old.
9. Feed chicks morning, noon, and afternoon.
10. Mix ground black pepper with the morning food.
11. Grease the hens well under the wings, breast, and fluff feathers, as soon as the chicks are taken off, with ointment made of lard and carbolic acid; 1 tablespoonful of lard to 10 drops of acid.

How to Weigh a Hay-stack.

Measure the length and breadth of the stack; take height from the ground to the eaves, add to this last one-half of the height from the eaves to the top; multiply length by breadth, and the product by the height, all expressed in feet; divide the amount by 27, to find the cubic yards, which multiply by the number of pounds supposed to be in a cubic yard, viz: in a stack of new hay, 132 pounds avoirdupois each; if old hay, 154 pounds each.

Mount Etna and Its Eruptions.

Mount Etna is a volcano of Sicily, and has been active from the earliest times. The ancients had a fable that beneath the mountain was buried a mighty giant, Enceladus, whom Jove had hurled from heaven for rebellion, and pinned to earth by tossing a mountain upon him. The flames were the breath of the imprisoned monster, the loud noises his groans, and earthquakes were caused by his efforts to turn over his enormous body. The first recorded eruption of Etna occurred before the supposed date of the Trojan war, but its exact time is not known. Thucydides, the historian, next records three eruptions—one in the year 475 B.C., one in 425, and the third at an earlier date not specified. Since those there have been, down to the present time, seventy-eight outbreaks, many of them harmless. Among the most remarkable of the great eruptions were that of 1169 A.D., when Catania and 15,000 of its inhabitants were destroyed; that of 1527, in which two villages were destroyed and many human beings perished; and two eruptions of 1669, in which 15 villages were destroyed. Many fissures in the earth were made at this time—one twelve miles long, which emitted a most vivid

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light. Afterward five other fissures opened, from which came smoke and loud noises. The city of Catania, at the foot of the mountain, had built a wall sixty feet high on that side to protect it, but the lava rose until it overflowed the wall and poured a current of liquid fire into the houses. This current flowed onward until it reached the sea, 15 miles distant. It was 600 yards wide and 40 feet deep. Entering the sea, the water was thrown into violent commotion, the noise of its agitation was as loud as thunder, and clouds of steam darkened the air for many hours. The eruption of 1755 was remarkable for an inundation caused by the flow of the hot lava over the snow that covered the mountain. It was imagined at the time that the water was thrown out of the crater. A great eruption took place in 1852, immense clouds of ashes being ejected. From two new openings on the east vast torrents of lava poured out, one of which was two miles broad, and in part of its course 170 feet deep. The outbreak of May, 1879, was violent, the clouds of smoke and showers of ashes being followed by the ejection of a stream of lava 200 feet wide, which desolated large tracts of cultivated land. There were also eruptions in 1883 and 1886, but both subsided before any great damage had been caused. Mount Etna is now 10,868 feet high. It is known that frequent eruptions have broken off large parts of the upper portion of the mountain. Its surface is divided into three distinct regions. The lowest is that of fertile land, producing fruit and grain, which extends 2,000 feet from the base up the mountain side, with a circumference of 92 miles. Above this is a strip nearly 4,300 feet wide, covered with large forests, above which to the mountain top there is only a dreary waste of ashes and hardened lava. In spite of its tragic history, the sides of the mountain have a population of over 300,000 people in 68 small villages and 2 large cities.

A Description of the Valley of Death.

The Valley of Death is on the island of Java. It is the most remarkable natural example of an atmosphere loaded with carbonic acid gas in existence. It has never been fully explored, because of the danger of remaining more than a few moments in its poisonous atmosphere. Approached through an opening between the hills it is seen to be an oval shaped valley, about half a mile across. It is about thirty-five feet deep; the bottom is hard and sandy, without vegetation, and strewn with large stones. The surface is covered with the bones of animals, birds, and human beings. Explorers seldom venture beyond the borders, though the deadly air does not immediately affect human beings. This is because the carbonic acid gas, being heavier than the atmosphere, settles to the bottom of the valley. Dogs and fowls thrown into it fall senseless instantly and die in a few minutes. No craters or fissures are visible on the floor of this valley, and it is thought that the openings are near the base of the rock hills surrounding.

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Mother Shipton's Prophecy.

The lines were first published in England in 1485, before the discovery of America, and before any of the discoveries and inventions mentioned therein. All the events predicted have come to pass except that in the last two lines.

Carriages without horses shall go,
And accidents fill the world with woe.
Around the world thoughts shall fly
In the twinkling of an eye.
Waters shall yet more wonders do,
Now strange, yet shall be true.
The world upside down shall be,
And gold be found at root of tree.
Through hills man shall ride,
And no horse nor ass be at his side.
Under water man shall walk,
Shall ride, shall sleep, shall talk.
In the air men shall be seen
In white, in black, in green.
Iron in the water shall float,
As easy as a wooden boat.
Gold shall be found 'mid stone,
In a land that's now unknown.
Fire and water shall wonders do,
England shall at last admit a Jew.
And this world to an end shall come
In eighteen hundred and eighty-one.

The Greatest Number of Men Ever Killed in a Single Battle.

Sylla destroyed 300,000 men in each of three battles, one being at Cheronea. The Persians are said to have lost 230,000 at Platæa. Second Chronicles xiii., 17, records 500,000 slain on one side, which may not have been in one battle. First Kings xx., 26, gives 100,000 on one side destroyed in one day. Many historians pay little attention to statistics of losses, but look for the influence of the conflict, and such as give figures often caution us regarding the unreliability of the number which they mention as being killed in remote times.

How to Polish Sea-Shells.

The surface of the shell should be first cleansed by rubbing it with a rag dipped in hydrochloric acid until the outer dull covering of the shell is removed. It must then be washed in warm water, dried in hot sawdust, and polished with chamois leather. Those shells which are destitute of a natural polished surface may be either varnished or rubbed with a mixture of tripoli powder and turpentine applied by means of a piece of wash-leather, after which fine tripoli should be used, then a little olive oil rubbed in well, and finally the surface well rubbed with the chamois leather. The hands should be protected from contact with the acid.

How Waste Time Has Been Utilized.

Baxter wrote his "Saint's Everlasting Rest" on a bed of sickness (1615-91).

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Bloomfield composed "The Farmer's Boy" in the intervals of shoemaking (1766-1823).

Bramah (Joseph), a peasant's son, occupied his spare time when a mere boy in making musical instruments, aided by the village blacksmith. At the age of 16 he hurt his ankle while plowing, and employed his time while confined to the house in carving and making woodwares. In another forced leisure from a severe fall he employed his time in contriving and making useful inventions, which ultimately led him to fame and fortune (1749-1814).

Bunyan wrote his "Pilgrim's Progress" while confined in Bedford jail (1628-1688).

Burritt (Elihu) made himself acquainted with ten languages while plying his trade as a village blacksmith (Hebrew, Greek, Syriac, Spanish, Bohemian, Polish, Danish, Persian, Turkish, and Ethiopic). His father was a village cobbler, and Elihu had only six months' education, and that at the school of his brother (1811-1879).

Carey, the missionary and Oriental translator, learned the rudiments of Eastern languages while employed in making and mending shoes (1761-1834).

Clement (Joseph), son of a poor weaver, was brought up as a thatcher, but, by utilizing his waste moments in self-education and works of skill, raised himself to a position of great note, giving employment to thirty workmen (1779-1844).

Cobbett learned grammar in the waste time of his service as a common soldier (1762-1835).

D'Aguesseau, the great French chancellor, observing that Mde. D'Aguesseau always delayed ten or twelve minutes before she came down to dinner, began and completed a learned book of three volumes (large quarto) solely during these "waste minutes." This work went through several editions (1668-1751).

Etty utilized indefatigably every spare moment he could pick up when a journeyman printer (1787-1849).

Ferguson taught himself astronomy while tending sheep in the service of a Scotch farmer (1710-1776).

Franklin, while working as a journeyman printer, produced his "Dissertation on Liberty and Necessity, Pleasure and Pain (1706-1790).

Miller (Hugh) taught himself geology while working as a mason (1802-1856).

Paul worked as a tentmaker in intervals of travel and preaching.

Speed of Ice-Boats.

There is no known mode of locomotion which outrivals the ice yacht in speed. It travels at a mile a minute with ease, outstrips fast railway trains, and, when contrasted with the ordinary sailing vessels, is handled with ease and safety. It travels faster than the wind, because it acquires momentum, and, in the lulls of the wind, its inertia carries it along.

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Origin of the Saying, "The Rolling Stone Gathers No Moss."

The stone that is rolling can gather no moss;
For master and servant ott changing is loss.
—T. Tusser, "The Points of Huswifery"
("Admonitions," 1560).

Origin of the Saying, "When in Rome Do as the Romans Do."

It originated with St. Ambrose (fourth century) from the following diversity in the observance of Saturday: The Milanese make it a feast, the Romans a fast. St. Ambrose being asked what should be done in such a case, replied, "In matters of indifference, it is better to be guided by the general usage. When I am at Milan I do not fast on Saturdays, but when I am at Rome I do as they do at Rome."

The Best Alliterative Poem in the English Language is the following:

An Austrian army, awfully arrayed,
Boldly by battery besieged Belgrade.
Cossack commanders, cannonading, come,
Dealing destruction's devastating doom;
Every endeavor engineers essay
For fame, for fortune, forming furious fray.
Gaunt gunners grapple, giving gashes good,
Heaves high his head heroic hardihood.
Ibraham, Islam, Ismael, imps in ill,
Jostle John Jarovlitz, Jem, Joe, Jack, Jill;
Kick kindling Kutusoff, kings' kinsmen kill;
Labor low levels loftiest, longest lines;
Men march 'mid moles, 'mid mounds, 'mid murderous mines.
Now nightfall's nigh, now needful nature nods,
Opposed, opposing, overcoming odds.
Poor peasants partly purchased, partly pressed,
Quite quaking, "Quarter! Quarter!" quickly quest.
Reason returns, recalls redundant rage,
Saves sinking soldiers, softens signiors sage.
Truce, Turkey, truce! truce, treacherous Tartar train!
Unwise unjust, unmerciful, Ukraine!
Vanish, vile vengeance! vanish, victory vain!
Wisdom wails war—wails warring words. What were
Xerxes, Xantippe, Ximenes, Xavier?
Yet Yassy's youth, ye yield your youthful yest.
Zealously, zanies, zealously, zeal's zest.

Persons Most Noted for Their Memory Are:

Magliabechi, of Florence, called "The Universal Index and Living Cyclopædia" (1633-1714).

P. J. Beronicius, the Greek and Latin improvisator, who knew by heart Horace, Virgil, Cicero, Juvenal, both the Plinys, Homer, and Aristophanes. He died at Middleburgh in 1676.

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Andrew Fuller, after hearing 500 lines twice, could repeat them without a mistake. He could also repeat verbatim a sermon or speech; could tell either backwards or forward every shop sign from the Temple to the extreme end of Cheapside, and the articles displayed in each of the shops.

Woodfall could carry in his head a debate, and repeat it a fortnight afterward.

Thompson could repeat the names, trades, and particulars of every shop from Ludgate Hill to Piccadilly.

William Radcliff, the husband of the novelist, could repeat a debate the next morning.

The Largest Nuggets Ever Found.

1. The Sarah Sands nugget, found at Ballarat. It weighed 130 lbs. troy or 1,560 oz. This, at $20 per ounce, would be worth $31,200.

2. The Blanche Barkly nugget, dug up at Kingower. It weighed 145 lbs., and was worth $34,800.

3. The Welcome nugget, found at Ballarat. It weighed 184 lbs., and was sold for $50,000. This was the largest ever found.

The first nugget was discovered in New South Wales, in 1851; the next in Victoria, in 1852. The former of these two weighed a hundredweight, and was purchased of a shepherd for $5,000.

The Formula for Making the Gum that the Government Uses on Postage Stamps.

Dissolve two oz. of dextrin in 5 oz. of hot water, and 1 oz. of acetic acid and 1 oz. spirits of wine.

A Recipe for a Good Furniture Polish.

For French polishing, cabinet-makers use: Pale shellac, 1 pound; mastic, 1 2-5 ounces; alcohol of 90 per cent. standard, 1 to 1 1-15 pints. Dissolve cold, with frequent stirring.

Dying Sayings of Famous People.

Addison. "See how a Christian dies!" or, "See in what peace a Christian can die!"

Anaxagoras. "Give the boys a holiday."

‖ Arria. "My Pætus, it is not painful."

† Augustus. "Vos plaudite." (After asking how he had acted his part in life.)—Cicero.

Beaufort (Cardinal Henry). "I pray you all, pray for me."

Berry (Mde. de). "Is not this dying with courage and true greatness?"

Bronte (father of the authoress). "While there is life there is will." (He died standing.) ‡

Byron. "I must sleep now."

§ Cæsar (Julius). "Et tu, Brute!" (To Brutus, when he stabbed him.)

• Charlemagne. "Lord, into Thy hands I commend my spirit!"

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Charles I. (of England). "Remember." (To William Juxon, Archbishop of Canterbury.)

Charles II. (of England). "Don't let poor Nelly starve." (Nell Gwynne.)

Charles V. "Ah, Jesus!"

Charles IX. (of France). "Nurse, nurse, what murder! what blood! Oh, I have done wrong. God pardon me."

Charlotte (the princess). "You make me drink. Pray, leave me quiet. I find it affects my head."

Chesterfield. "Give Day Rolles a chair."

* Columbus. "Lord, into thy hands I commend my spirit!"

Crome (John). "Oh, Hobbima, Hobbima, how I do love thee!"

Cromwell. "My desire is to make what haste I may to be gone."

† Demonax (the philosopher). "You may go home; the show is over."—Lucian.

Elden (Lord). "It matters not where I am going, whether the weather be cold or hot."

Fontenelle. "I suffer nothing, but feel a sort of difficulty in living longer."

Franklin. "A dying man can do nothing easy."

Gainsborough. "We are all going to heaven, and Vandyke is of the company."

George IV. "Whatty, what is this? It is death, my boy. They have deceived me. (Said to his page, Sir Walthen Waller.)

Gibbon. "Mon Dieu! Mon Dieu!"

¶ Goethe. "More light!"

Gregory VII. "I have loved justice and hated iniquity, therefore I die in exile."

* Grey (Lady Jane). "Lord, into thy hands I commend my spirit!"

Grotius. "Be serious."

Haydn. "God preserve the emperor."

Haller. "The artery ceases to beat."

Hazlitt. "I have led a happy life."

Hobbes. "Now I am about to take my last voyage—a great leap in the dark."

‖ Hunter (Dr. William). "If I had strength to hold a pen, I would write down how easy and pleasant a thing it is to die."

Irving. "If I die I die unto the Lord. Amen."

James V. (of Scotland). "It came with a lass and will go with a lass (*i. e.* the Scotch crown).

Jefferson (of America). "I resign my spirit to God, my daughter to my country."

Jesus Christ. "It is finished."

Johnson (Dr.). "God bless you, my dear!" (To Miss Morris.)

Knox. "Now it is come."

Louis I. "Huz! huz!" (Bouquet says, "He turned his face to the wall, and twice cried, 'Huz! huz!' (out, out) and then died.")

Louis IX. "I will enter now into the house of the Lord."

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‖ Louis XIV. "Why weep ye? Did you think I should live forever?" Then, after a pause, "I thought dying had been harder."

‡ Louis XVIII. "A king should die standing."

Mahomet. "Oh, Allah, be it so! Henceforth among the glorious host of paradise."

Margaret (of Scotland, wife of Louis XI. of France). "Fi de la vie! Qu'on ne m'en parle plus."

Marie Antoinette. "Farewell, my children, forever. I go to your father."

§ Massaniello. "Ungrateful traitors!" (Said to the assassins.)

Matthews (Charles). "I am ready."

Mirabeau. "Let me die to the sounds of delicious music."

Moody (the actor):

"Reason thus with life,
If I do lose thee, I do lose a thing
That none but fools would keep."

—Shakespeare.

Moore (Sir John). "I hope my country will do me justice."

Napoleon I. "Mon Dieu! La nation Francaise! Fete d'armee!"

Napoleon III. "Were you at Sedan? (To Dr. Conneau.)

Nelson. "I thank God I have done my duty."

Nero. "Qualis artifex pereo."

Palmer (the actor). "There is another and a better country." (This he said on the stage, it being a line in the part he was acting, the play being from *The Stranger*.)

Pitt (William). "Oh, my country, how I love thee!"

Pizarro. "Jesu!"

Pope. "Friendship itself is but a part of virtue."

† Rabelais. "Let down the curtain, the farce is over."

Sand (George). "Laissez la verdure." (Meaning "Leave the tomb green, do not cover it over with bricks or stone." George Sand was Mde. Dudevant.)

Schiller. "Many things are growing plain and clear to my understanding."

Scott (Sir Walter). "God bless you all!" (To his family.)

Sidney (Algernon). "I know that my Redeemer liveth. I die for the good old cause."

Socrates. "Crito, we owe a cock to Æsculapius."

Stael (Mde. de). "I have loved God, my father, and liberty."

¶ Talma. "The worst is, I cannot see."

* Tasso. "Lord, into Thy hands I commend my spirit!"

Thurlow (Lord). "I'll be shot if I don't believe I'm dying."

‡ Vespasian. "A king should die standing."

William III. (of England). "Can this last long?" (To his physician.)

William of Nassau. "Oh, God, have mercy upon me, and upon this poor nation!" (This was said as he was shot by Balthasar Gerard, 1584.)

Wolfe (General). "What! do they run already? Then I die happy."

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Wyatt (Thomas). "That which I then said I unsay. That which I now say is true. (This to the priest who reminded him that he had accused the princess Elizabeth of treason to the council, and that he now alleged her to be innocent.

Those names preceded by similar pilcrows indicate that the "dying words" ascribed to them are identical or nearly so. Thus the * before Charlemagne, Columbus, Lady Jane Grey, shows that their words were alike. So with the † before Augustus, Demonax, and Rabelais; the ‡ before Louis XVIII. and Vespasian; the § before Cæsar and Massaniello; the ‖ before Arria, Hunter, and Louis XIV.; and the ¶ before Goethe and Talma.

The Story of Shylock.

Shylock loaned Antonio, a Venetian Merchant, 3,000 ducats for three months, on these conditions: If repaid within that time, only the principal would be required; if not, the Jew should be at liberty to cut from Antonio's body a pound of flesh. The ships of Antonio being delayed by contrary winds, the merchant was unable to meet the bill, and the Jew claimed his forfeiture. Portia, in the dress of a law doctor, conducted the trial, and when the Jew was about to take his bond, reminded him that he must shed no drop of blood, nor must he cut either more or less than an exact pound. If these conditions were infringed, his life would be forfeit. The Jew, feeling it to be impossible to exact the bond under such conditions, gave up the claim, but was heavily fined for seeking the life of a Venetian citizen.

The Largest Diamonds in the World.

Name.	Possessor.	Carats. Uncut.	Cut.
Braganza	King of Portugal	1680	367
	Rajah of Mattan (Borneo)	....	....
Star of the South		....	254
Orloff	Czar of Russia	....	194
Florentine	Emperor of Austria	....	139½
	King of Portugal	....	138½
Pitt	King of Prussia	410	136¾
Koh-i-noor	Queen of England	793½	106 1-16
Shah	Czar of Russia	....	88
Pigott	Messrs. Rundell & Bridge	....	82½
Nassac	Lord Westminster	....	78
Blue		112	67¼
Sancy	Czar of Russia	....	53
Dudley	Earl of Dudley	88½	44¼
Pacha of Egypt	Khedive of Egypt	....	40

Gems Symbolic of the Months.

January, the jacinth or hyacinth, symbolising constancy and fidelity.

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February, the amethyst, symbolizing peace of mind and sobriety.

March, the blood-stone or jasper, symbolizing courage and success in dangerous enterprise.

April, the sapphire and diamond, symbolizing repentance and innocence.

May, the emerald, symbolizing success in love.

June, the agate, symbolizing long life and health.

July, the carnelian, symbolizing cure of evils resulting from forgetfulness.

August, the sardonyx or onyx, symbolizing conjugal felicity.

September, the chrysolite, symbolizing preservation from folly, or its cure.

October, the aqua-marine, opal, or beryl, symbolizing hope.

November, the topaz, symbolizing fidelity and friendship.

December, the turquois or ruby, symbolizing brilliant success.

Some doubt exists between May and June, July and August. Thus some give the agate to May, and the emerald to June; the carnelian to August, and the onyx to July.

Gem Alphabet.

TRANSPARENT.	OPAQUE.
Amethyst.	Agate.
Beryl.	Basalt.
Chrysoberyl.	Cacholong.
Diamond.	Diaspore.
Emerald.	Egyptian pebble.
Felspar.	Fire-stone.
Garnet.	Granite.
Hyacinth.	Heliotrope.
Idocrase.	Jasper.
Kyanite.	Krokidolite.
Lynx-sapphire.	Lapis-lazuli.
Milk opal.	Malachite.
Natrolite.	Nephrite.
Opal.	Onyx.
Pyrope.	Porphyry.
Quartz.	Quartz-agate.
Ruby.	Rose-quartz.
Sapphire.	Sardonyx.
Topaz.	Turquois.
Uranite.	Ultra-marine.
Vesuvianite.	Verd-antique.
Water-sapphire.	Wood-opal.
Xanthite.	Xylotile.
Zircon.	Zurlite.

Remarkable Rivers.

There is a salt river in Australia, and another—the Rio Salado—in the Argentine Republic of South America.

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The Athabasca River of British North America has two important salt branches, one of which rises in a natural salt spring or lakelet, and the other has its source in the Cariboo Mountains, which contain vast deposits of rock salt.

Another salt river, having its origin in a similar formation, is one of the tributaries of the Great Slave River.

Many of the streams and lakes of Eastern Oregon are strongly alkaline in character.

The Rio de Vinagre—the Vinegar River—of new Granada, in Central America, is sour from the sulphuric acid in its water.

The Orange River, in South Africa, contains matter, which renders it poisonous to fishes in part of its course.

In Algeria there is a stream inky black, and, indeed, it is only diluted ink, owing to one of its two tributaries being strongly impregnated with the iron which it imbibes from a ferruginous soil, and the other from meandering through a peat marsh, being equally rich in gallic acid, the two principal ingredients of ink.

The Effect of Heat on Various Substances.

Antimony melts at	951.	deg.	Zinc melts at	740.	deg.
Bismuth "	476.	"	Ice "	32.	"
Brass "	1900.	"	Mercury boils at	662.	"
Copper "	2548.	"	Naphtha "	186.	"
Glass "	2377.	"	Fresh water boils at	212.	"
Gold "	2590.	"	Sea water "	213.2	"
Cast Iron "	2479.	"	Ether "	100.	"
Lead "	594.	"	Oil Turpentine boils at	304.	"
Platinum "	3080.	"	Linseed Oil boils at	640.	"
Silver "	1250.	"	Sweet Oil "	412.	"
Steel "	2500.	"			
Tin "	421.	"			

Melting Temperature of Alloys.

Lead 1, Tin 1, Bismuth 4, Cadmium 1, melts at	155	degrees
Lead 3, Tin 5, Bismuth 8, "	208	"
Lead 1, Tin 3, Bismuth 5, "	212	"
Lead 1, Tin 4, Bismuth 5, "	240	"
Tin 1, Bismuth 1, "	286	"
Lead 2, Tin 3, "	334	"
Tin 2, Bismuth 1, "	336	"
Lead 1, Tin 2, "	360	"
Tin 8, Bismuth 1, "	392	"
Lead 2, Tin 1, "	475	"

Rules for Engineers and Firemen for the Management and Care of Steam Boilers.

1. CONDITION OF WATER.—The first duty of an engineer, when he enters his boiler-room in the morning, is to ascertain how many gauges of water there are in his boilers. Never unbank or replenish the fires until this is done. Accidents have occurred, and many boilers have been entirely ruined from neglect of this precaution,

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2. Low Water.—In case of low water, immediately cover the fires with ashes, or, if no ashes are at hand, use fresh coal. Don't turn on the feed under any circumstances, nor tamper with, or open the safety valve. Let the steam outlets remain as they are.

3. In Cases of Foaming.—Close throttle, and keep closed long enough to show true level of water. If that level is sufficiently high, feeding and blowing will usually suffice to correct the evil. In cases of violent foaming, caused by dirty water, or change from salt to fresh, or *vice versa*, in addition to the action above stated, check draft and cover fires with fresh coal.

4. Leaks.—When leaks are discovered they should be repaired as soon as possible.

5. Blowing Off.—Blow down, under a pressure not exceeding 20 lbs., at least once in two weeks; every Saturday night would be better. In case the feed becomes muddy, blow out six or eight inches every day. Where surface blow-cocks are used, they should be often opened for a few moments at a time.

6. Filling up the Boiler.—After blowing down allow the boiler to become cool before filling again. Cold water, pumped into hot boilers is very injurious from sudden contraction.

7. Exterior of Boiler.—Care should be taken that no water comes in contact with the exterior of the boiler, either from leaky joints or other causes.

8. Removing Deposit and Sediment.—In tubular boilers, the hand-hole should be often opened, and all collections removed from over the fire. Also, when boilers are fed in front and blown off through the same pipe, the collection of mud or sediment in the rear end should be often removed.

9. Safety Valves.—Raise the safety valves cautiously and frequently, as they are liable to become fast in their seats, and useless for the purpose intended.

10. Safety Valve and Pressure Gauge.—Should the gauge at any time indicate the limit of pressure allowed, see that the safety valves are blowing off.

11. Gauge Cocks. Glass Gauge.—Keep gauge cocks clear, and in constant use. Glass gauges should not be relied on altogether.

12. Blisters.—When a blister appears, there must be no delay in having it carefully examined, and trimmed or patched, as the case may require.

13. Clean Sheets.—Particular care should be taken to keep sheets and parts of boilers exposed to the fire perfectly clean, also all tubes, flues, and connections well swept. This is particularly necessary where wood or soft coal is used for fuel.

14. General Care of Boilers and Connections.—Under all circumstances keep the gauges, cocks, etc., clean and in good order, and things generally in and about the engine and boiler-room in a neat condition.

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The Seven Wonders of the World.

The "pyramids" first, which in Egypt were laid;
Next "Babylon's garden," for Amytis made;
Then "Mausolo's tomb" of affection and guilt;
Fourth, the "temple of Dian," in Ephesus built;
The "colossus of Rhodes," cast in brass, to the sun;
Sixth, "Jupiter's statue," by Phidias done;
The "pharos of Egypt" comes last, we are told,
Or the "palace of Cyrus," cemented with gold.

Proportions of Various Compositions in Common Use.

Babbitt's Metal.....Tin 89, Copper 3.7, Antimony 7.3.
Fine Yellow Brass.....Copper 66, Zinc 34.
Gun Metal, Valves, &c..Copper 90, Tin 10.
White Brass .....Copper 16, Zinc 80, Tin 10.
German Silver.....Copper 33.3, Zinc 33.4, Nickel 33.3.
Church Bells.....Copper 80, Zinc 5.6, Tin 10.1, Lead 4.3.
Gongs.....Copper 81.6, Tin 18.4.
Lathe Bushes.....Copper 80, Tin 20.
Machinery Bearings....Copper 87.5, Tin 12.5.
Muntz Metal.....Copper 60, Zinc 40.
Sheathing Metal.....Copper 56, Zinc 44.

Receipts.

One of the best varnishes for smoke-stacks or steam-pipes, is good asphaltum dissolved in oil of turpentine.

Oxalic acid dissolved in soft water, say half an ounce to a pint, is one of the best known means for cleaning and brightening brass work.

Iron or steel immersed warm in a solution of carbonate of soda (washing soda) for a few minutes will not rust.

Eighty parts of sifted cast iron turnings, two parts of powdered sal-ammoniac, and one part sulphur made into a thick paste with water and mixed fresh for use, makes a good cement for stopping holes in castings.

Put pure olive oil into a clear glass bottle with strips of sheet lead and expose it to the sun for two or three weeks, then pour off the clear oil and the result is a lubricant which will neither gum nor corrode. It is used for watches and fine machinery of all kinds.

CEMENT FOR JOINTS.—Paris white, ground, four pounds; litharge, ground, ten pounds; yellow ochre, fine, half a pound; half ounce of hemp, cut short; mix well together with linseed to a stiff putty. This cement is good for joints on steam water pipes. It will set under water.

Scraps of Information.

To find capacity of a cylindrical vessel in gallons, multiply the area in inches by height in inches, and divide product by 231.

To find capacity of four-sided vessel in gallons, find cubical contents by multiplying the length, breadth, and height in inches, and divide product by 231.

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The U. S. Standard gallon measures 231 cubic inches and contains 8⅓ lbs. of distilled water.

A cubic foot of water weighs 62½ lbs. (salt water 64.3 lbs.) and contains 1,728 cubic inches, or nearly 7½ gallons U. S. Standard.

To evaporate one cubic foot of water requires the consumption of 7½ lbs. of ordinary coal; or about 1 lb. of coal to one gallon of water.

The average consumption of coal for steam boilers is 12 lbs. per hour for each square foot of grate.

The U. S. Standard bushel measures 2150.42 cubic inches, or nearly 1¼ cubic feet.

Twenty-eight bushels (of 5 pecks) or 43.56 cubic feet of coal = 1 ton.

One cubic foot of anthracite coal weighs about 53 lbs.

One cubic foot of bituminous coal weighs about 47 to 50 lbs.

One ton of coal is equivalent to two cords of wood for steam purposes.

Quantity of Seeds Required Per Acre.

Wheat	1½ to 2	bu.	Beets	3	lbs.
Rye	1½	"	Carrots	2	"
Oats	3	"	Ruta bagas	¾	"
Barley	2	"	Millet	½	bu.
Peas	2 to 3	"	Clover, white	4	qts.
White beans	1½	"	Clover, red	8	"
Buckwheat	½	"	Timothy	6	"
Corn, broadcast	4	"	Orchard grass	2	bu.
Corn in drills	2 to 3	"	Red top	1	to 2 pks.
Corn in hills	4 to 8	qts.	Blue grass	2	bu.
Broom corn	½	bu.	Mixed lawn grass	1 to 2	"
Potatoes	10 to 15	"	Tobacco	2	oz.

Hills in an Acre of Ground.

40 feet apart	27	8 feet apart	680 hills.
35 "	35 "	6 "	1,210 "
30 "	48 "	5 "	1,732 "
25 "	69 "	3½ "	3,556 "
20 "	108 "	3 "	4,840 "
15 "	193 "	2½ "	6,969 "
12 "	302 "	2 "	10,890 "
10 "	435 "	1 "	43,560 "

Carpenter's, Plasterer's, and Bricklayer's Work.

How to find the number of square yards in a floor or wall. Rule.—Multiply the length by the width or height (in feet), and divide the product by 9; the result will be square yards.

Building contracts, as all other business arrangements, should be written. A few moments' time spent in stating clearly and concisely, what is expected of each party will often save delays and annoyances during the progress of the work and endless litigation after it. The mechanic's lien laws are a sufficient protection to the contractor or material-man,

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but their enforcement is much more simple and prompt if action can be based on a written contract.

How many square yards in a floor 18 ft. long and 14 ft. wide; and how many yds. of carpet ¾ yd. wide, will it take?

$14 \times 18 = 252$ square feet

9)252(28 square yards.

28

4

3)112(37⅓ yards carpet.

Ans { 28 square yards. / 37⅓ yds. carpet.

To divide by a fraction, multiply the number by the denominator, and divide the product by the numerator.

To multiply by a fraction, multiply by the numerator and divide by the denominator.

Find how many sq. yards in the four walls and ceiling of a room 18x20, 11 ft. high; and the cost of plastering the same at 15 cts. per square yard.

The length of the four walls is (twice 20 and twice 18) 76 feet.

$76 \times 11 = 836$ square feet in four walls

$18 \times 20 = 360$ " ceiling.

9)1196(133 square yards nearly.

.15

Ans. $19.95 for plastering.

which multiplied by the height, gives the sq. ft. in the walls. The length multiplied by the width gives the sq. ft. in the ceiling.

To measure square timbers. Multiply the length, width, and thickness together, and divide the product by 12.

How many square feet in a joist 2x8, 18 ft. long?

$2 \times 8 \times 18 = 288 \div 12 = 24$ ft. Ans.

Sill 8x8, 22 feet long?

$8 \times 8 \times 22 = 1408 \div 12 = 117⅓$ ft. Ans.

Measures of Surface.

TABLE OF ORDINARY UNITS.

144 sq. in.=1 sq. ft. | 9 sq. ft.=1 sq. yd.
30¼ sq. yds.=1 sq. rod. | 160 sq. rods=1 acre.
640 acres=1 sq. mile or section. | 36 sections=1 township.

COMPARATIVE TABLE.

Sq. Mi.	Acres.	Sq. Rods.	Sq. Yds.	Sq. Ft.	Sq. In.
= 640	= 102,400	= 3,097,600	= 27,878,400	= 4,014,489,600	
1 =	160 =	4,840 =	43,560 =	6,272,640	
1 =	30¼ =	272¼ =	39,204		
1 =	9 =	1,296			
1 =	144				

Surveyors use the following table in measuring land:

625 sq. links make 1 pole. | 640 acres make 1 square chain.
16 poles make 1 square chain. | 36 square miles (6 miles sq.) township.
10 square chains make 1 acre.

TIMBER IN ONE LOAD—ENGLISH.

50 cubic feet of square timber | 200 lin ft 3 in planking 12 in wide
109 lin. ft. of 6x12 in. " | 300 " 2 in. " "
200 " of 6x6 " | 400 " 1½ in " "
150 "in planking 12 in. wide | 600 " 1 in. " "

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COMPARATIVE TABLE.

Tp.	Sq. Mi.	Acres.	Sq. Chains.	Poles.	Sq. Links.
1 =	36 =	23,040 =	230,480 =	3,686,400 =	2,340,000,000
	1 =	640 =	6,400 =	102,400 =	6,400,000
		1 =	10 =	160 =	100,000
			1 =	16 =	10,000
				1 =	625

The square foot is used in estimating glazing, stone-cutting, etc.; the square yard in plastering, roofing, paving, etc.; the acre in measuring lands.

SOLID OR CUBIC MEASURE.

1728 cu. in. make 1 cu. foot.
27 cu. feet make 1 cu. yard.

46,656 cu. in. make 1 cu. yard.

40 cu. ft. of round timber=1 ton
42 cubic feet of shipping timber=1 ton.

50 cu. ft. of hewed timber=1 ton
128 cubic feet=1 cord.

LIQUID MEASURE.

The United States standard for measurement of all liquid is the "wine" or "Winchester" gallon, containing 231 cubic inches.

4 gills make one pint.
2 pints " quart.
4 quarts " gallon.

31½ gallons make one barrel.
2 barrels make one hogshead.

DRY MEASURE.

The Government standard of dry measure of the United States is the "Winchester bushel" so called, being a cylindrical vessel having an inside diameter of 18½ inches, and a depth of 8 inches, and containing 2150.42 cubic inches.

4 gills make one pint.
2 pints " quart.

8 quarts make one peck.
4 pecks " bushel.

MEASURE OF WEIGHT.

The Pound is the United States standard of weight as applied to general purposes, and is the weight of 27,7015 cubic inches of distilled water, at its greatest density (*i. e.* at 39° 83" Farenheit, the barometer being at 30 inches), and is equivalent to 7,000 Troy grains.

27 11-32 grains make 1 dram.
16 drams " ounce.
16 ounces " pound.

25 lbs. make one quarter.
4 quarters make one cwt.
20 cwt " ton.

(In some cases the following table for gross weight is used: 28 lb.=1 quar.; 4 quar.=1 cwt.; 20 cwt., or 2240 lbs,=1 ton.)

COMPARATIVE TABLE OF WEIGHTS.

	Troy.	Apothecaries.	Avoirdupois.
1 lb. equals	5,760 grains,	equals 5,760 grains,	equals 7,000 grains
1 oz. "	480 "	" 480 "	" 437.5 "
	175 lbs.	" 175 lbs.	" 144 lbs.

The half peck, or dry gallon, contains 268.8 cubic inches. Six quarts, dry measure, are equal to nearly 7 quarts, liquid measure.

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Grain Measure.

To find the capacity of a bin or wagon-bed; multiply the cubic feet by .8 (tenths). For great accuracy, add ⅛ of a bushel for every 100 cubic feet.

To find the cubic feet, multiply the length, width, and depth together.

Find the capacity of a bin 4 ft. wide, 5 ft. deep, and 15 ft. long.

$4 \times 5 \times 15 = 300$ cubic ft.
.8
Ans. 240.0 bus.

To get the exact ans. 1 bu. is added for the 300 cu. ft.

$240 + 1 = 241$ bus. exact ans.

How many bus. will a wagon bed hold, 10 ft. long, 3 ft. wide, 18 in. or 1½ ft. deep?

$1\frac{1}{2} \times 3 \times 10 = 45$ cu. ft.
.8
Ans. 36.0 bus.

A bed 10 ft. long and 3 ft. wide, will hold 2 bus. for every inch in depth.

Ear Corn Measure.

To find the contents of a corn crib; multiply the cubic feet by 4 and divide the product by 9*.

Find the contents of a corn crib 18 feet long, 7 feet wide, and 8 feet high.

$7 \times 8 \times 18 = 1008$ cu. ft.
4
9)4032
Ans. 448 bus.

*This allows 2⅛ cu. ft. for a bus. It is the rule most generally used, and will hold out in ordinary good corn, even if measured at the time it is cribbed.

Cistern Measure.

To find the capacity of a round cistern or tank; multiply the square of the average diameter by the depth, and take 3-16 of the product. For great accuracy, multiply by 1865 instead of taking 3-16.

Four square cisterns or tanks; multiply the cubic feet by .2⅜ (tenths).

Find the capacity of a round cistern, 6 feet in diameter and 8 feet deep.

$6 \times 6 \times 8 = 288$
3
16)864(54 barrels.

Ans. 54 barrels of 31½ gallons.

How many barrels will a square tank hold, 10 feet long, 7 feet wide, and 6 feet deep?

$6 \times 7 \times 10 = 420$ (cubic feet) $\times\ 2\frac{3}{8} = 99\frac{3}{4}$ barrels. Ans.

Land Measure.

To find the number of acres in a body of land; multiply the length by the width (in rods), and divide the product by 160. When the opposite sides are unequal, add them, and take half the sum, for the mean length or width.

Find how many acres in a field, 96 rods long and 40 rods wide at one end, and 45 at the other. Ans. 25½ acres.

2)85 = 40 × 45 — 96 length.
42½ mean width. 42½
160)4080(25½ acres.

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The Famous Connecticut Blue Laws.

These laws, enacted by the people of the "Dominion of New Haven," became known as the blue laws because they were printed on blue paper. They were as follows:

The governor and magistrates convened in general assembly are the supreme power, under God, of the independent dominion. From the determination of the assembly no appeal shall be made.

No one shall be a freeman or have a vote unless he is converted and a member of one of the churches allowed in the dominion.

Each freeman shall swear by the blessed God to bear true allegiance to this dominion and that Jesus is the only king.

No dissenter from the essential worship of this dominion shall be allowed to give a vote for electing of magistrates or any officer.

No food or lodging shall be offered to a heretic.

No one shall cross a river on the Sabbath but authorized clergymen.

No one shall travel, cook victuals, make beds, sweep houses, cut hair or shave on the Sabbath Day.

No one shall kiss his or her children on the Sabbath or feasting days.

The Sabbath Day shall begin at sunset Saturday.

Whoever wears clothes trimmed with gold, silver or bone lace above one shilling per yard shall be presented by the grand jurors and the selectmen shall tax the estate £300.

Whoever brings cards or dice into the dominion shall pay a fine of £5.

No one shall eat mince pies, dance, play cards or play any instrument of music except the drum, trumpet, or jewsharp.

No gospel minister shall join people in marriage. The magistrate may join them, as he may do it with less scandal to Christ's church.

When parents refuse their children convenient marriages, the magistrate shall determine the point.

A man who strikes his wife shall be find £10.

A woman who strikes her husband shall be punished as the law directs.

No man shall court a maid in person or by letter without obtaining the consent of her parents; £5 penalty for the first offense, £10 for the second, and for the third imprisonment during the pleasure of the court.

Number of Trees Required Per Acre.

4 feet apart	each way	2,720	15 feet apart	each way	200
5 "	"	1,742	18 "	"	135
6 "	"	1,200	20 "	"	110
8 "	"	680	25 "	"	70
10 "	"	430	30 "	"	50
12 "	"	325	33 "	"	40

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Dimensions of One Acre.

A square, whose sides are 12,649 rods, or 69.57 rods, or 208.71 feet long, contains one acre. Table of dimensions of rectangle containing one acre:

RODS.

1	×	160	1⅛	×	106⅔	2	×	80	2½	×	64
3	×	53⅓	3½	×	45 5-7	4	×	40	4½	×	35 5-9
5	×	32	5½	×	29 1-11	6	×	26⅔	6½	×	24 8-13
7	×	22 6-7	7½	×	21⅓	8	×	20	8½	×	18 14-17
9	×	17 7-9	9½	×	16 16-19	10	×	16	10½	×	15 5-21
11	×	14 6-11	11½	×	13 7-11	12	×	13⅓	12½	×	12 4-5
									12 13-20	×	12 13-20

Tables Convenient for Taking Inside Dimensions.

A box 24 in. x 24 in. x 14.7 will hold a barrel of 31½ gallons.
A box 15 in. x 14 in. x 11 in. will hold 10 gallons.
A box 8¾ in. x 7 in. x 4 in. will hold a gallon.
A box 4 in. x 4 in. x 3.6 in. will hold a quart.
A box 24 in. x 28 in. x 16 in. will hold five bushels.
A box 16 in. x 12 in. x 11-2 in. will hold a bushel.
A box 12 in. x 11.2 in. x 8 in. will hold a half bushel.
A box 7 in. x 6.4 in. x 12 in. will hold a peck.
A box 8.4 in. x 8 in. x 4 in. will hold a half peck, or four dry quarts.
A box 6 in. x 5 3-5 in., and 4 in. deep will hold a half gallon.
A box 4 in. x 4 in., and 2 1-10 deep will hold a pint.

To Find the Contents of a Corn Crib.

Multiply the number of cubic feet by 4⅘ and point off one decimal place; the result will be the answer in bushels. How many bushels will a crib hold that is 48 feet long, 7½ feet wide, and 8½ feet high? 48×7½×8½=3,060 cubic feet; 3,060×4⅘=13,240; 12,240+1530=1877 bushels. Ans.

Hay Measure.

About 500 cubic feet of well-settled hay, or about 700 of new mown hay, will make a ton. To estimate amount of hay in mow—Ten cubic yards of meadow hay weigh a ton. When the hay is taken out of old stacks, 8 or 9 yards will make a ton. Eleven or twelve cubic yards of clover, when dry, make a ton.

Estimates of Materials.

3⅓ barrels of lime will do 100 sq. yards plastering, two coats.
2 " " " 100 " " one coat.
1½ bushels of hair " 100 " "
1¼ yards good sand " 100 " "
½ barrel of plaster (stucco), will hard finish 100 square yards plastering.
1 barrel of lime will lay 1,000 brick. It takes good lime to do it.
2 " " 1 cord rubble stone.
½ " " 1 perch " (Yes. ½ c'd to perch.)
To every barrel of lime estimate about ½ yards of good sand for plastering and brick work.

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Wood Measure.

To find the contents of cord word. Multiply the length, width, and height together and divide the product by 128.

How many cords in a pile of wood 4 feet wide, 5 feet high, and 24 feet long?

$4 \times 5 \times 24 = 480$ (cubic feet) $\div 128 = 3\frac{3}{4}$ cords.

To find the circumference of a circle; multiply the diameter by 3.1416.

To find the area of a circle; multiply the square of the diameter by .7854.

To find the surface of a globe; multiply the square of the diameter by 3.1416.

To find the solidity of a globe; multiply the cube of the diameter by .5236.

Who Owns the Land in America.

Nearly 22,000,000 acres of land are owned by men who owe allegiance to other governments. To be exact there are 21,241,900 acres of land under the direct control and management of thirty foreign individuals or companies. There are 2,720,283 acres of land in Massachusetts, so that the men living in other countries and owing allegiance to other powers own land enough to make about ten States like Massachusetts, more than the whole of New England, more land than some governments own to support a king. The largest amount of land owned by any one man or corporation is called the Holland Land Company. There is twice as much land owned by aliens in the United States as there is owned by Englishmen in Ireland.

Wedding Anniversaries.

First anniversary, iron; fifth, wooden; tenth, tin; fifteenth, crystal; twentieth, china; twenty-fifth, silver; thirtieth, cotton; thirty-fifth, linen; fortieth, woolen; forty-fifth, silk; fiftieth, gold; seventy-fifth, diamond.

How They Discover the Point of a Break in an Ocean Cable.

Simple as are the methods of locating mid-ocean breaks in cables, so that a vessel may sail to the point of rupture, they are not popularly understood. If the metallic conductor were broken, the surrounding insulation remaining perfect, the electrostatic charge of the cable, or the amount of electricity which it absorbs in becoming charged, is electrically weighed by building up an artificial line until the current flows equally into the cable and such artificial line. If the insulating covering of the wire is broken the current will flow freely from the conductor to the surrounding water, and its strength, if the power of the battery is known, definitely measures the electrical resistance and consequently the length of the conductor. In other words, the battery power, divided by the indicated current strength, gives the line's resistance, and therefore its length.

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The Nationality of Soldiers in the Army During the Great Rebellion.

		PER CENT.
Native American	1,523,300	75.48
British American	53,500	2.15
English	45,560	2.26
Irish	144,200	7.14
German	176,800	8.76
Other foreigners	48,400	2.38
Foreigners, nativity unknown	26,500	1.38
Total	2,018,200	100.00

The Highest and Lowest Prices of Gold for Each Year from 1861 to 1879.

1862	139 —101⅛	1871	115¾—108⅝
1863	172¾—122½	1872	115⅝—108¾
1864	285 —151⅝	1873	119½—106⅛
1865	234⅝—128½	1874	114¼—109
1866	167¾—125⅛	1875	117⅛—111⅜
1867	146¾—132⅛	1876	115 —107
1868	150 —132	1877	107⅞—102⅛
1869	163⅛—119⅛	1878	102⅞—100
1870	123¾—110		

Specie payments resumed January 1, 1879.

How to Engrave on Eggs.

The art of engraving on eggs is very puzzling to the uninitiated, but in reality it is very simple. It merely consists in writing upon the egg-shell with wax or varnish, or simply with tallow, and then immersing the egg in some weak acid, such, for example, as vinegar, dilute hydrochloric acid, or etching liquor. Wherever the varnish or wax has not protected the shell, the lime of the latter is decomposed and dissolved in the acid, and the writing or drawing remains in relief.

A History of Vassar College, When and How Founded, etc.

Vassar College is on the east bank of the Hudson, near Poughkeepsie, N. Y. It was founded in 1861. In that year Matthew Vassar, a wealthy brewer of Poughkeepsie, gave to an incorporated board of trustees the sum of $408,000 and 200 acres of land for the endowment of a college for women. The building was constructed from plans approved by him, at a cost of about $200,000. The college was opened in September, 1865, with eight professors and twenty other instructors, and three hundred students. The first President of the College was Professor Milo P. Jewett; the second, Dr. John H. Raymond; the third, the Rev. Samuel Caldwell. The college has a fine library, with scientific apparatus and a museum of natural history specimens.

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Where the Gate of Tears and the Bridge of Sighs Are, and Why So Called.

The Straits of Babelmandeb, the passage from the Persian Gulf into the Red Sea, are called the Gate of Tears by the Arabs. The channel is only about twenty miles wide, is rocky and very dangerous for passage in rough weather. It received its melancholy name from the number of shipwrecks that occurred there. The Bridge of Sighs is the bridge in Venice which connects the palace of the doge with the State prison, and was so called because over it prisoners were conveyed from the judgment hall to the place of execution.

The Philosophy of Some Things.

WHY SOME BEVERAGES FROTH OR SPARKLE WHEN UNCORKED.

When liquors are bottled they contain a certain amount of sugar, which ferments through the action of minute spores or cells; these break the sugar up into alcohol and carbonic acid gas; when the cork is withdrawn the gas instantly makes its escape, and rising in bubbles, produces effervescence and froth.

COMPARATIVE SIZE OF THE SUN AND EARTH.

If the sun were hollow like an air-ball it would take 1,331,000 globes the size of our earth to fill it.

HOW ROCKS ARE CUT BY WATER.

The Falls of Niagara eat back the cliff at the rate of about one foot a year. In this way a deep cleft has been cut right back from Queenstown, for a distance of seven miles, to the place where the falls now are. At this rate it has taken more than thirty-five thousand years for that channel of seven miles to be made.

WHY A TALLOW CANDLE FIRED FROM A GUN WILL PIERCE A BOARD.

When a candle starts from the breech of a gun its motion is gradually increased until it leaves the muzzle at a high velocity, and when it reaches the board every particle of matter composing it is in a state of intense velocity. At the moment of contact the particles of matter composing the target are at rest, and as the density of the candle, multiplied by the velocity of its motion, is greater than the density of the target at rest, the greater force overcomes the weaker and the candle breaks through and pierces a hole in the board.

WHY A RIVER ALWAYS APPEARS MORE SHALLOW THAN IT REALLY IS.

Because the light proceeding from the bottom of the river is refracted as it emerges out of the water. A river is about one-third deeper than it seems to be. If, therefore, a river seems only 4½ feet deep, it is actualy 6 feet deep. Many persons get out of their depth in bathing in consequence of this deception.

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WHY A SMALL NEEDLE CAREFULLY LAID UPON THE SURFACE OF WATER WILL FLOAT.

Its weight is not sufficient to overcome the cohesion of the particles of water constituting the surface, consequently it cannot pass through them and sink. For the same reason many light insects walk upon the surface of water without sinking or becoming wet.

WHY A RAILWAY TRAIN MAKES MORE NOISE WHEN IT PASSES OVER A BRIDGE THAN WHEN ON SOLID GROUND.

The bridge is elastic and vibrates much more from the weight of the train than the solid earth, in consequence of which it produces more definite sound-waves. The bridge acts as a sounding-board and the water or earth below it repeats or echoes the sound.

WHY A SOAP BUBBLE EXHIBITS SUCH A VARIETY OF COLORS.

Because the thickness of the film through which the rays pass is constantly varying.

WHY WATER EXPANDS WHEN IT FREEZES.

Ice is, in reality, crystallized water, and during its formation the particles arrange themselves in ranks and lines, which cross each other at angles of 60 and 120 degrees, and consequently occupy more space than when liquid. Cast-iron bomb-shells, thirteen inches in diameter and two inches thick, were filled with water and their apertures or fuse-holes firmly plugged with iron bolts. Upon exposure to a temperature of 19 degrees below zero, at the moment the water froze, the shells burst asunder, demonstrating the enormous interior pressure to which they were subjected by the water assuming its solid shape.

WHY OIL AND WATER WILL NOT UNITE.

Because there is no affinity between the oil and the water. Affinity is the peculiar disposition which one body has to unite with a different body to the rejection of others which are dissimilar in their properties. In the case of the oil and water, the repulsion is overcome if we add a little potash, the three uniting to form soap.

WHY WAVES ARE CALMED BY POURING OIL UPON THE WATER.

Oil, from its inferior specific gravity, forms a floating film, which defends the surface of the water from contact with the currents of air, and the friction between the wind and the waves is greatly diminished, in the same manner that the friction between solids is by the application of oils.

WHY THE FUR OF A CAT CRACKLES WHEN RUBBED WITH THE HAND IN COLD WEATHER.

Because the friction between the hand and the fur produces an excitation of positive electricity in the hand and negative in the fur, and an interchange of the two causes a spark with a slight noise. It is miniature thunder and lightning.

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WHY HOT IRON MAKES A HISSING NOISE WHEN PLUNGED INTO WATER.

The hot iron converts into steam the particles of water which come in contact with it, and as the steam flies upward it passes by other particles of water not yet evaporated; the collision produces very rapid vibrations in the air and a hissing noise is the result.

HOW WE CAN DEMONSTRATE THAT ICE HAS HEAT.

By friction, two pieces of ice can be quickly melted, in a room cooled below the freezing point, by rubbing them against each other.

WHY IN TRAVELING WE EXPERIENCE LESS DUST IN THE NIGHT TIME THAN DURING THE DAY.

Because the dews of night moisten the dust and prevent its rising into the air, and as the surface of the earth is colder than the air after sunset, the currents of the wind will incline downward and tend rather to press the dust down than to buoy it up.

WHY WOOD AND COAL SNAP WHEN LAID UPON THE FIRE.

Because the air or liquid contained in the pores becomes expanded by heat and bursts the covering in which it is confined.

WHY TWO OR MORE ECHOES ARE SOMETIMES HEARD.

Because separate reverberating surfaces receive the sound and reflect in succession. At Glasgow is a remarkable echo. If a trumpeter plays a tune and stops, the echo will begin the same tune and repeat it all accurately; as soon as this echo has ceased, another will echo the same tune in lower tone; and after the second echo has ceased, a third will succeed with equal fidelity, though in a much feebler tone. At the Lake of Killarney there is an echo which plays an excellent "second" to any simple tune played on a bugle.

WHY PLASTER OF PARIS HARDENS WHEN MOISTENED WITH WATER.

Plaster of Paris (calcined plaster), so called because immense beds of it are found in the vicinity of Paris, in which city it was first extensively used as a plaster or cement, is pulverized rock. After being pulverized, it is strongly heated, until it loses one-fifth of its weight by the expulsion of moisture from its composition. When mixed with water, the anhydrous burnt gypsum again chemically combines with it and passes into a solid state.

HOW KNOWLEDGE OF THE VELOCITY OF SOUND IS MADE APPLICABLE TO THE MEASUREMENT OF DISTANCES.

Suppose a flash of lightning be perceived, and on counting the seconds that elapse before the report or thunder is heard, we find them to amount to 3½; then, as sound moves 1,142 feet in a second, it will follow that the thunder-cloud must be distant $1,142 \times 3\frac{1}{2} = 3,997$ feet.

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WHY SHOES ARE HOTTER FOR BEING DUSTY.

Because dull, dusty shoes will absorb heat from the sun, earth, and air, but shoes brightly polished throw off the heat of the sun by reflection.

WHY THE FLASH OF A GUN FIRED AT A DISTANCE IS SEEN LONG BEFORE THE REPORT IS HEARD.

Because light travels much faster than sound. Light would go four hundred and eighty times around the whole earth while sound is going thirteen miles.

HOW THE VELOCITY OF LIGHT COMPARES WITH THE SPEED OF A LOCOMOTIVE.

Light passes from the sun to the earth in about eight minutes; distance 95,000,000 miles: a locomotive, traveling at the rate of a mile a minute, would require upward of 180 years to accomplish the same journey.

Trinity Church Property.

In 1638 one Everadus Bogardus married Annetje (or Anneke) Jans, the widow of one Roelof Jans. The lady had inherited from her first husband a farm of sixty-two acres, situated in what is no the center of the business part of New York city. This piece of land was known for many years as "Dominie's Bowery." In 1647 Dominie Bogardus set sail for Holland. The ship was wrecked in Bristol Channel, and Bogardus was among the passengers that were lost. Whether it was because his heirs did not pay due attention to attesting their claim to the "Bowery" or whether they were in some way bought off is not now known, but shortly after the taking of the New Netherlands by the British, in 1664, we find this land in possession of the government and known as the "King's Farm." In 1705 this tract was granted by the crown to Trinity Church corporation and became the foundation of its great wealth. The descendants of Anneke Jans Bogardus have made many attempts to have their claim to this property recognized by the courts, but without success. As the church's title to the property from the crown is complete it is extremely improbable that the heirs will ever get any part of it.

Sending Vessels Over Niagara Falls—When It Was Done and Why.

There have been three such instances. The first in 1827. Some men got an old ship which had been pronounced unseaworthy. They put aboard a bear, a fox, a buffalo, a dog, and some geese, and sent it over the cataract. The bear jumped from the vessel before it reached the rapids, swam toward the shore, and was rescued by some humane persons. The geese went over the falls and came to the shore below alive, and, therefore, became objects of great interest, and were sold at high prices to visitors at the falls. The dog, fox, and buffalo were not heard of or seen again. Another con-

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demned vessel, the Detroit, that had belonged to Commodore Perry's victorious fleet, was started over the cataract in the winter of 1841, but grounded about midway in the rapids, and lay there until knocked to pieces by the ice. A picturesque instance was sending a ship over the Canada side in 1837. It was set on fire, then cut loose from its moorings. All in flames, it went glaring and hissing down the rapids and over the precipice, and smothered its ruddy blaze in the boiling chasm below. This was described as a most magnificent sight.

How to Kill the Nerve of a Hollow Tooth.

Take half dram white oxide of arsenic; one dram sulphate of morphia; mix with a little creosote, and apply to the cavity of the tooth, previously cleansed.

How to Destroy the Taste of Castor Oil.

A good way is to beat the castor oil with the white of an egg until both are thoroughly mixed.

How to Take Bruises out of Furniture.

Wet the part with warm water; double a piece of brown paper five or six times, soak it in warm water, and lay it on the place; apply on that a warm, but not hot, flat-iron, till the moisture is evaporated. If the bruise be not gone, repeat the process. After two or three applications the dent or bruise will be raised to the surface. If the bruise be small, merely soak it with warm water, and hold a red-hot iron near the surface, keeping the surface continually wet; the bruise will soon disappear.

How to Prevent Ivory Knife Handles from Cracking.

When the blades of knives require washing or standing in water, it should be done in a pitcher, with water enough to cover the blades, but not to touch the handles; and the water no hotter than is absolutely necessary. Soaking the handles in water makes them crack.

How to Cleanse Feathers.

Feathers are prepared by exposing them to the sunshine or in a stove until perfectly dry, and then beating them to remove dust and loose dirt. When carelessly collected and dirty, they may be cleansed with lime-water, or, still better, with a weak solution of carbonate of soda, or with water containing a little solution of chloride of lime; after which they are rinsed in clean water, and dried as before. Old feathers are purified and cleansed in the same way.

Management of Brooms.

If brooms are wetted in boiling suds once a week, they will become very tough, will not cut a carpet, will last much longer, and always sweep like a new broom.

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How to Mend Rubber Overshoes.

Rub the patch and shoe thoroughly with sharp sand paper. Smear both with liquid rubber five times, every time letting them dry. Do this once more, and, before they dry, apply the patch, with pressure if possible, and the boot is mended. If liquid rubber is not obtainable, dissolve small pieces of pure rubber (not vulcanized), in warm spirits of turpentine, to the consistence of sirup.

How to Drive Flies from Stables.

Scatter chloride of lime on a board in a stable, to remove all kinds of flies, but more especially biting flies. Sprinkling beds of vegetables with even a weak solution, effectually preserves them from caterpillars, slugs, etc. A paste of one part powdered chloride of lime, and a half part of some fatty matter placed in a narrow band round the trunk of the tree, prevents insects from creeping up it. Even rats, mice, cockroaches, and crickets flee from it.

How to Keep Flies from Horses.

Procure a bunch of smartweed, and bruise it to cause the juice to exude. Rub the animal thoroughly with the bunch of bruised weed, especially on the legs, neck, and ears. Neither flies or other insects will trouble him for twenty-four hours. The process should be repeated every day. A very convenient way of using it is, to make a strong infusion by boiling the weed a few minutes in water. When cold it can be conveniently applied with a sponge or brush. Smartweed is found growing in every section of the country, usually on wet ground near highways.

How to Remove the Smell of Onions from the Breath.

Parsley eaten with vinegar will remove the unpleasant effects of eating onions.

Remedy for Bad Breath.

Bad breath or foul breath will be removed by taking a teaspoonful of the following mixture after each meal: One ounce liquor of potassa; one ounce chloride of soda; one and a half ounces phosphate of soda, and three ounces of water.

How to Exterminate Red Ants.

Grease a plate with lard, and set it where the insects abound. They prefer lard to anything else, and will forsake sugar for it. Place a few sticks around the plate for the ants to climb up on. Occasionally turn the plate bottom up over the fire, and the ants will fall in with the melting lard. Reset the plate, and in a short time you will catch them all. Powdered borax, sprinkled around the infested places, will exterminate both red and black ants.

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How to Destroy Bed Bugs.

Rub the bedsteads in the joints with equal parts of spirits of turpentine and kerosene oil, and the cracks of the surbase in the rooms where there are many. Filling up all the cracks with hard soap, is an excellent remedy. March and April are the months when bedsteads should be examined to kill all the eggs.

How to Destroy Bed Bugs in Papered Rooms.

Clean the paint of the room thoroughly, and set in the center of the room a dish containing four ounces of brimstone. Light it, and close the room as tight as possible, stopping the key-hole of the door with paper, to keep the fumes of the brimstone in the room. Let it remain for three or four hours, then open the windows and air thoroughly. The brimstone will be found to have also bleached the paint, if it was a yellowish white.

How to Transplant Large Shade Trees.

In the autumn, before the frost comes on, dig a trench around the tree and cut the roots, but not too near the tree. Remove the tree through the winter, when the ground is frozen. Raise it up with the frozen earth adhering to the roots. The whole mass is easily raised with levers on to a strong sled, and can then be drawn erect by means of oxen or horses. Trees from twenty to thirty feet high can be moved by this method, and they will grow in the spring.

How to Remove Warts.

A daily application of either of the three following remedies is effective in dispersing warts: Touch the wart with a little nitrate of silver, lunar caustic; or with nitric acid or aromatic vinegar. The lunar caustic produces a black, and the nitric acid a yellow stain, which passes off in a short time; the vinegar scarcely discolors the skin. Sparks of frictional electricity, repeated daily, by applying the warts to the conductor of an electrical machine, have been also successfully employed as a cure for these troublesome and unsightly excrescences.

How to Keep Ice in Summer.

On exposing a piece of ice weighing, say twenty-five pounds, to the air, at a temperature of 75°, but so placed that it is perfectly drained, it will be found to have scarcely disappeared at the end of twenty-four hours. Wrap the same piece in three or four thicknesses of blanket or flannel, and place it in a small tub exposed to the same temperature, and as the water filters through the blanket the ice will stand in its own water, and will be all dissolved in five or six hours. Wrap the same piece of ice carefully in a blanket, and place it on a grating, or on four crossed sticks, so that no water can accumulate underneath, and at the end of three or even four days it will not have entirely melted.

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How to Destroy Insects in the Ear.

Insects may be destroyed by pouring a spoonful of warm olive oil, or camphorated oil, into the ear over night, retaining it there until the next morning by means of a piece of cotton wool, when it may be washed out with a little mild soap and warm water.

How to Purify a Sick Chamber.

The nitrous acid vapor, so invaluable as a disinfectant in contagious fevers, is obtained by decomposing nitre by means of heated sulphuric acid, in the following manner: Put half an ounce sulphuric acid in a crucible glass or china cup and warm it over a lamp or in heated sand, adding to it from time to time a little nitre. Several of these vessels must be placed in the sick chamber and in the neighboring apartments and passages, at a distance of 20 feet or more from each other, according to the height of the ceiling and the virulence of the contagion.

Simple Cure for a Felon.

As soon as the parts begin to swell, get the tincture of lobelia, and wrap the part affected with cloth saturated thoroughly with the tincture, and the felon is dead. An old physician says that he has known it to cure in scores of cases, and it never fails if applied in season.

Cure for Bone Felon.

As soon as the disease is felt, put directly over the spot a blister of Spanish fly, about the size of the thumb nail, and let it remain for six hours, at the expiration of which time, directly under the surface of the blister may be seen the felon, which can be instantly taken out with the point of a needle or a lancet.

To Cure Felons.

Stir half a teaspoonful of water into one ounce Venice turpentine with a rough stick until the mixture appears like granulated honey. Wrap a good coating of it round the finger with a cloth. If the felon is only recent, the pain will be removed in six hours.

How to Disperse Black Ants.

A few leaves of green wormwood, scattered among the haunts of these troublesome insects, is said to be effectual in dislodging them.

How to Purify Water in a Cistern.

Two ounces of permanganate of potassa thrown in a cistern will render the foulest water sweet and pure.

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Table Showing How Many Days a Note Has to Run.

The following table will be found very useful to bookkeepers in calculating the number of days a note has to run:

FROM	TO Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
January	365	31	59	90	120	151	181	212	243	273	304	334
February	334	365	28	59	89	120	150	181	212	242	273	306
March	306	337	365	31	61	92	122	153	184	214	245	275
April	275	306	334	365	30	61	91	122	153	188	214	244
May	245	276	304	335	365	31	61	92	123	153	184	214
June	214	245	273	304	334	365	30	61	92	122	153	188
July	184	215	243	274	304	335	365	31	62	93	123	153
August	153	184	212	243	273	304	334	365	31	61	92	122
September	122	153	181	212	242	272	303	334	365	30	61	91
October	92	123	151	182	212	243	273	304	335	365	31	61
November	61	92	120	151	181	212	242	273	304	334	365	30
December	31	62	90	121	151	182	212	243	274	304	335	365

The above table gives the number of days intervening between any day in any month to a similar date in any other month. To ascertain these intervening days, run the eye along the line designated by title of the month on the left hand, until it reaches its intersection by the column headed at the top, by the month in which the note matures, and the figures at the angle denote the number of days from the first of the respective months. To this add the day upon which the note matures, and from the sum substract the date of the month from which it is reckoned.

Example.—A note falling due June 26th is offered for discount on March 10th; wanted, the number of days intervening before maturity.

The figures at the angle give	92
Add date of note's maturity	26
	118
Deduct date of discount	10
Days to run	108

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Laws of Grace on Sight Drafts.

Grace on sight drafts is allowed in the following States:

Alabama,	Michigan,	Oregon,
Arkansas,	Minnesota,	Rhode Island,
Dakota,	Mississippi,	South Carolina,
Indiana,	Montana,	Utah,
Iowa,	Nebraska,	Wisconsin,
Kentucky,	New Hampshire,	Wyoming,
Maine,	New Jersey,	Canada.
Massachusetts,	North Carolina,	

Grace on sight drafts is not allowed in the following States:

California,	Illinois,	Pennsylvania,
Colorado,	Kansas,	Tennessee,
Connecticut,	Louisiana,	Texas,
Delaware,	Maryland,	Vermont,
District of Columbia,	Missouri,	Virginia,
Florida,	Nevada,	West Virginia.
Georgia,	New York,	
Idaho,	Ohio,	

Business Laws in Daily Use.

The following compilation of business law contains the essence of a large amount of legal verbiage:

If a note is lost or stolen it does not release the maker; he must pay it, if the consideration for which it was given and the amount can be proven.

Notes bear interest only when so stated.

Principals are responsible for the acts of their agents.

Each individual in a partnership is responsible for the whole amount of the debts of the firm, except in cases of special partnership.

Ignorance of the law excuses no one.

The law compels no one to do impossibilities.

An agreement without consideration is void.

A note made on Sunday is void.

Contracts made on Sunday cannot be enforced.

A note by a minor is voidable. A contract made with a minor is void.

A contract made with a lunatic is void.

A note obtained by fraud, or from a person in a state of intoxication, cannot be collected.

It is a fraud to conceal a fraud.

Signatures made with a lead-pencil are good in law.

A receipt for money is not always conclusive.

The acts of one partner bind all the rest.

"Value received" is usually written in a note, and should be, but is not necessary. If not written, it is presumed by law, or may be supplied by proof.

The maker of an "accommodation" bill or note (one for which he has received consideration, having lent his name on credit for the accommodation of the holder) is not bound to

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the person accommodated, but is bound to all other parties, precisely as if there was a good consideration.

No consideration is sufficient in law if it be illegal in its nature.

Checks or drafts must be presented for payment without unreasonable delay.

Checks or drafts should be presented during business hours; but in this country, except in the case of banks, the time extends through the day and evening.

If the drawee of a check or draft has changed his residence, the holder must use due or reasonable diligence to find him.

If one who holds a check, as payee or otherwise, transfers it to another, he has a right to insist that the check be presented that day, or at farthest, on the following day.

A note indorsed in blank (the name of the indorser only written) is transferable by delivery, the same as if made payable to bearer.

If time of payment of a note is not named, it is payable on demand.

The time of payment of a note must not depend upon a contingency. The promise must be absolute.

A bill may be written upon any kind of paper, either with ink or pencil.

The payee should be named in the note, unless it is payable to bearer.

An indorsee has a right of action against all whose names were on the bill when he received it.

If the letter containing a protest of non-payment be put into the post-office, and miscarriage does not affect the party giving notice, notice of protest may be sent either to the place of business or of residence of the party notified.

The holder of a note may give notice of protest either to all the previous indorsers or only to one of them; in case of the latter he must select the last indorser, and the last must give notice to the last before him, and so on. Each indorser must send notice the same day or the day following. Neither Sunday nor any legal holiday is counted in reckoning time in which notice is to be given.

The loss of a note is not sufficient excuse for not giving notice of protest.

If two or more persons, as partners, are jointly liable on a note or bill, due notice to one of them is sufficient.

If a note or bill is transferred as security, or even as payment of a pre-existing debt, the debt revives if the note or bill be dishonored.

An indorsement may be written on the face or back.

An indorser may prevent his own liability to be sued by writing "without recourse," or similar words.

An oral agreement must be proved by evidence. A written agreement proves itself. The law prefers written to oral evidence, because of its precision.

No evidence can be introduced to contradict or vary a writ-

ten contract; but it may be received in order to explain it, when such explanation is needed.

Written instruments are to be construed and interpreted by the law according to the simple customary and natural meaning of the words used.

The finder of negotiable paper, as of all other property, must make reasonable efforts to find the owner) before he is entitled to appropriate it for his own purposes. If the finder conceal it, he is liable to the charge of larceny or theft.

Joint payees of a bill or note, who are not partners, must all join in an indorsement.

One may make a note payable to his own order and indorse it in blank. He must write his name across its back or face, the same as any other indorser.

After the death of a holder of a bill or note, his executor or administrator may transfer i by his indorsement.

The husband who acquires a right to a bill or note which was given to the wife, either before or after marriage, may indorse it.

"Acceptance" applies to bills and not to notes. It is an engagement on the part of the person on whom the bill is drawn to pay it according to its tenor. The usual way is to write across the face of the bill the word "accepted."

The Law of Partnership.

A partnership is an agreement between two or more persons for joining together their money, goods, labor, and skill, or any or all of them, in some lawful commerce or business, under an understanding, express or implied, from the nature of the undertaking, that the parties to the agreement shall share between them the profits and loss arising therefrom.

As stated, a partnership may be formed by oral agreement, but it is always better and safer that it should be based upon written articles of agreement, in which the terms and conditions of the partnership must be stated explicitly.

A single joint transaction, out of which, considered by itself, neither profit nor loss arises, will not create a partnership. Neither is it a partnership where parties make a joint purchase and each then and there takes his proper share of the goods.

No especial form of words is necessary in the preparation of articles of partnership. The agreement should give the full names of the parties to it, the amount of money or goods, or the nature of the services contributed by each; should state clearly the responsibility assumed by each; and should set forth the manner in which the profits arising from the agreement are to be divided. In the absence of such statement the law assigns an equal responsibility, and presumes an equal division of the profits.

The partnership dates from the date of the articles, unless otherwise expressly stated in the agreement.

It is not necessary that each partner should contribute an equal amount of money to be entitled to an equal share of

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As stated, a partnership may be formed by oral agreement, but it is always better and safer that it should be based upon written articles of agreement, in which the terms and conditions of the partnership must be stated explicitly.

A single joint transaction, out of which, considered by itself, neither profit nor loss arises, will not create a partnership. Neither is it a partnership where parties make a joint purchase and each then and there takes his proper share of the goods.

No especial form of words is necessary in the preparation of articles of partnership. The agreement should give the full names of the parties to it, the amount of money or goods, or the nature of the services contributed by each; should state clearly the responsibility assumed by each; and should set forth the manner in which the profits arising from the agreement are to be divided. In the absence of such statement the law assigns an equal responsibility, and presumes an equal division of the profits.

The partnership dates from the date of the articles, unless otherwise expressly stated in the agreement.

It is not necessary that each partner should contribute an equal amount of money to be entitled to an equal share of

the profits. An individual may contribute his knowledge of the business to be engaged in, or his skill, or his labor, or all three; the other partner or partners contributing a specified sum of money, or the money and their services. The agreement must state exactly what is contributed.

Each and every partner is liable for the debts or losses of the concern. A partnership may bind one or more partners to bear the losses, and exempt another partner, or other partners, from such losses. This agreement is perfectly valid between the partners, but is not good against creditors unless such creditors in dealing with the firm were aware of this agreement, and based their transactions upon it.

The act of one partner binds all the others. Thus, if one partner gives a negotiable note for the use of the firm, and signs it with his individual name, such signature binds all the other partners.

Each partner is absolutely responsible to every creditor of the firm for the whole amount of the debt. If his agreement with them limits the amount of his responsibility he may proceed against them to recover his loss.

A person lending his name to a firm, or causing, or allowing it to be published as one of the partners in a concern, or allowing it to be used as a partner after he has withdrawn from the concern, is in the meaning of the law a partner as regards the claims of creditors.

A person who contributes his money to the capital of a firm and shares its profits, without allowing his name to be used, is termed a secret or silent partner. A person contributing to the capital and sharing the profits of the concern, but taking no active part in its management, is termed a sleeping or dormant partner. Both of these are liable to creditors for the debts of the concern, even though they did not know them to be members of the firm.

The test of partnership is the participation in the profits of the business.

In forming partnerships it is generally the rule to form them for a stated period, which must be expressed in the agreement. This is termed a limited partnership, and expires "by limitation" at the end of the period named. The partners are then free to renew their agreement or not, as they may see fit. Where an agreement does not specify such a period, the law presumes that a general partnership is intended. This may be dissolved or ended at the pleasure of either party.

A sleeping or dormant partner is not liable for the debts of the firm contracted after his retirement, even though he may give no notice of his retirement, as such debts are not contracted upon the strength of his credit; and as he has no further participation in the profits of the firm, he cannot be called on to share its liabilities.

When a general partnership is dissolved by the wanton or arbitrary withdrawal of either partner, such partner renders himself liable to the others for the loss or damage they may

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suffer by his action. It is usual to state in the agreement how a general partnership may be terminated, and this stipulation is binding upon all the partners.

A partnership may be dissolved by the unanimous consent of all the partners, or a court of equity may, for sufficient cause, decree the dissolution of such partnership. Dissipation on the part of a partner, dissolute or reckless habits, calculated to endanger the credit or safety of the firm, are sufficient grounds for the other partners to invoke the action of the courts, where a mutual agreement cannot be had.

The death of a partner dissolves the firm, and its affairs must be adjusted as soon as possible thereafter.

The interest of a partner in a business may be attached by his creditors for his private debts. Such attachment operates as a dissolution of the firm.

When a partnership is dissolved, notice of such dissolution should be promptly published in the principal newspapers of the place in which the business was conducted. Notice should also be sent to the correspondents of the firm. In the absence of such precautions each partner continues liable for the acts of the others to all persons who have no knowledge of the dissolution.

The property of a partnership is bound for the debts of the firm. The creditor of one of the partners cannot attach such property until the debts of the partnership are paid. If, after such payment, a surplus remains, then such creditor may attach his debtor's interest in the partnership funds in payment of his private debt.

The statutes of some of the states recognize another kind of partnership, known as special partnership. A special partner is one who contributes a stated sum of money to the business of the concern, for a designated period. He shares in the profits of the business according to his agreement with the general partners; but his liability is limited to the amount of money contributed by him to the capital of the firm. In order to render a special partnership valid, the partners must publish in one or more newspapers, published in the town in which they do business, an advertisement setting forth the nature and limitation of their partnership, giving the names of the general partners, the name of the special partner, and the exact amount contributed by him to the capital of the concern. This statement must be verified by the signatures of all the parties, and sworn to before a magistrate, and this attestation must form a part of the advertisement. Care must be taken to see that the advertisement states the exact amount contributed by the special partner. An error in this respect, even though it be the fault of the printer, if allowed to remain uncorrected, destroys the effect of the agreement, and renders the special partner a general partner. In such a case he becomes liable for the whole debt of the firm.

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The Law of Agency.

An agent is a person who is employed by another to represent him in the performance of certain acts.

One who is legally incompetent to act on his own account may be an agent for a person who is competent. Thus, an alien or a married woman may act as an agent.

A principal is responsible for the acts of his agent when he, by his acts or words, causes the person with whom the agent deals to believe him to be vested with lawful authority to perform such acts.

A person authorized to perform certain designated acts for another is termed a special agent; one who has authority to represent his principal in all his business, or all his business of a particular kind, is termed a general agent.

If a special agent exceeds his authority, the principal is not bound by his act, because the person dealing with such an agent is bound to inform himself of the extent of such agent's powers. In the case of a general agent, the principal is bound by his acts, even though he exceed his authority, provided that in such acts he does not go beyond the general scope of his business. If, however, the person with whom the agent deals does so with the knowledge that the agent is exceeding his powers, he thereby releases the principal.

Authority may be given to an agent either verbally or in writing. If in writing, it may be either under or without seal. If given by a written instrument, this instrument is termed a power of attorney.

A power of attorney intended to cover much time should be recorded and acknowledged.

Aerolites.

The fall of aerolites is frequently mentioned and well authenticated. Chinese records tell of one as long ago as in 616 B. C., which in its fall, broke several chariots and killed ten men. A block of stone, equal to a full wagon-load, fell in the Hellespont, B. C. 465. By the ancients, these stones were held in great repute. The Emperor Jehangire, it is related, had a sword forged from a mass of meteoric iron which fell in the Punjab in 1620. In 1795, a mass was seen by a plowman, to descend toward the earth at a spot not far from where he was standing. It threw up the soil on every side, and penetrated some distance into the solid rock beneath. In 1807, a shower of stones, one weighing 200 pounds, fell at Weston, Conn. These aerolites are sometimes seen to plunge downward into the earth, and are found while yet glowing. A mass thus fell in South America, which was estimated to weigh 15 tons. When first discovered, it was so hot as to prevent all approach. Upon its cooling, many efforts were made, by some travelers who were present, to detach specimens, but its hardness was too great for any tools which they possessed. There is a mass of meteoric iron in Yale College cabinet, weighing 1,635 pounds.

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Facts About the Sun.

THE SUN'S LIGHT

Is equal to 5,563 wax-candles held at a distance of one foot from the eye. It would require 800,000 full moons to produce a day as brilliant as one of cloudless sunshine.

THE SUN'S HEAT.

The amount of heat we receive annually is sufficient to melt a layer of ice thirty-eight yards in thickness, extending over the whole earth. Yet the sunbeam is only 1-300,000 part as intense as it is at the surface of the sun. Moreover, the heat and light stream off into space equally in every direction. Of this vast flood only one twenty-three hundred millionth part reaches the earth. It is said that if the heat of the sun were produced by the burning of coal, it would require a layer ten feet in thickness, extending over the whole sun, to feed the flame a single hour. Were the sun a solid body of coal, it would burn up at this rate in forty six centuries. Sir John Herschel says that if a solid cylinder of ice forty-five miles in diameter and 200,000 miles long were plunged, end first, into the sun, it would melt in a second of time.

THE SUN'S DIMENSIONS.

Its diameter is about 850,000 miles. Let us try to understand this amount by comparison.

A mountain upon the surface of the sun, to bear the same proportion to the globe itself as the Dhawalaghiri of the Himalayas does to the earth, would have to be about six hundred miles high.

Again: Suppose the sun were hollow, and the earth placed at the center, not only would there be room for the moon to revolve in its regular orbit within the shell, but that would stretch off in every direction 200,000 miles beyond.

Its volume is 1,245,000 times that of the earth, *i. e.*, it would take 1,245,000 earths to make a globe the size of the sun. Its mass is 674 times that of all the rest of the solar system. Its weight may be expressed in tons thus,

1,910,278,070,000,000,000,000,000,000,

a number which is meaningless to our imagination, but yet represents a force of attraction which holds our own earth and all the planets steadily in their places; while it fills the mind with an indescribable awe as we think of that Being who made the sun, and holds it in the very palm of his hand.

Strength of Ice.

Thickness.	Strength.
Two inches—	Will support a man.
Four inches—	Will support a man on horseback.
Five inches—	Will support an 80-pounder gun.
Eight inches—	Will support a battery of artillery, with carriages and horses attached.
Ten inches—	Will support an army—an innumerable multitude.

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Meteors.

The records of meteors are still more wonderful. It is related that at Crema, Italy, one day in the 15th century, the sky at noonday became dark—a cloud of appalling blackness overspreading the heavens. Upon this cloud appeared the semblance of a great peacock of fire flying over the town. This suddenly changed to a huge pyramid, that rapidly traversed the sky. Thence arose awful lightnings and thunderings, amid which there fell upon the plain great rocks, some of which weighed 100 pounds. In 1803 a brilliant fireball (meteor) was seen traversing Normandy with great velocity, and some moments after, frightful explosions, like the noise of cannon or roll of musketry, were heard coming from a single black cloud hanging in a clear sky; they were prolonged for five or six minutes. These discharges were followed by a great shower of stones, some weighing over twenty-four pounds. In 1814 a meteor was witnessed in Massachusetts and Maryland, the diameter of which was estimated at half a mile. Its height was thought to be about twenty-five miles. In July, 1860, a brilliant fireball passed over the State of New York from west to east, and finally was seen to fall into the sea off Sandy Hook.

Shooting Stars.

One of the earliest accounts of star-showers is that which relates how, in 472, the sky at Constantinople appeared to be alive with flying stars and meteors. In some Eastern annals we are told that in October, 1202, "the stars appeared like waves upon the sky. They flew about like grasshoppers, and were dispersed from left to right." It is recorded that in the time of King William II. there occurred in England a wonderful shower of stars, which "seemed to fall like rain from heaven. An eye-witness seeing where an aerolite fell, cast water upon it, which was raised in steam with a great noise of boiling."

How to Test Quality of Steel.

Good tool steel, with a white heat, will fall to pieces; with bright red heat will crumble under the hammer; with middling heat may be drawn to a needle-point.

To test hardening qualities, draw under a low heat to a gradually tapered square point and plunge into cold water; if broken point will scratch glass, the quality is good.

To test tenacity, a hardened piece will be driven into cast-iron by a hardened hammer—if poor, will be crumbled. Excellence will be in proportion to tenacity in hard state. Soft steel of good quality gives a curved line fracture and uniform gray texture. Tool steel should be dull silver color, uniform, entirely free from sparkling qualities.

Aquafortis, applied to the surface of steel, produces a black

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spot; on iron the metal remains clean. The slightest vein of iron or steel can be readily detected by this method.

The Political Divisions of the World, Arranged According to Size.

	Sq. miles.		Sq. miles
Russian Empire	7,862,568	Nebraska	75,995
Chinese Empire	4,695,334	Washington	69,994
*British Empire	4,419,559	Indian Territory	68,991
United States	3,578,392	Uruguay	66,716
British North America	3,523,083	Missouri	65,350
Brazil	3,231,047	Florida	59,268
Australian Continent	2,945,219	Georgia	58,000
Turkish Empire	1,917,472	Michican	56,451
India	1,552,028	Illinois	55,416
China (proper)	1,300,000	Iowa	55,045
Argentine Republic	826,828	Wisconsin	53,924
Mexico	773,144	Arkansas	52,198
Egypt	659,081	Alabama	50,722
Turkestan	640,516	North Carolina	50,704
Persia	562,344	Orange Free State	48,019
Bolivia	535,769	Mississippi	47,156
Peru	510,107	New York	47,000
Venezuela	368,235	Pennsylvania	46,000
U. S. of Colombia	357,179	Tunis	45,710
Tripoli	344,423	Tennessee	45,600
Morocco	259,593	Louisiana	41,346
Afghanistan	258,530	Ohio	39,964
Texas	247,356	Virginia	38,352
Austria	240,381	Portugal	37,977
Madagascar	232,315	Kentucky	37,680
Ecuador	218,984	Maine	35,000
France	209,428	South Carolina	34,000
Spain	195,607	Indiana	33,809
California	188,981	Bavaria	29,373
Central America	178,869	West Virginia	23,000
Sweden	170,634	Servia	21,210
Beloochistan	165,830	Greece	19,353
German Empire	160,207	St. Domingo	17,826
Abyssinia	158,392	Switzerland	15,722
Dakota	152,000	Denmark	14,734
Japan	149,399	Netherlands	12,680
Montana	143,776	Belgium	11,373
Prussia	135,606	Maryland	11,124
Chili	132,624	Vermont	10,212
Paraguay	126,352	Hayti	10,205
New Mexico	121,201	Liberia	9,567
Great Britain	121,115	New Hampshire	9,280
Norway	120,295	Fejee Islands	8,033
Arizona	113,916	Massachusetts	7,800
Nevada	112,090	Sandwich Islands	7,633
Italy	109,837	New Jersey	7,570
Colorado	104,500	Wurtemburg	7,532
Oregon	95,274	Baden	5,912
Idaho	90,932	Saxony	5,779
Utah	88,056	Mecklenburg-Schwerin	5,190
Wyoming	88,000	Connecticut	4,674
Minnesota	83,531	Papal States	4,552
Kansas	81,318	Hesse Darmstadt	2,969
Transvaal Republic	77,964	Oldenburg	2,469

*Exclusive of Hudson Bay Territory.

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Capacity of Large Rooms—Estimating a Person to Occupy an area of 10.9 inches square.

Churches.	Will Contain No. Persons.
St. Peter's, Rome	54,000
Cathedral, Milan	37,000
St. Paul's, Rome	32,000
St. Paul's, London	25,600
St. Petronio, Bologna	24,400
Cathedral, Florence	24,300
Cathedral, Antwerp	24,000
St. Sophia's, Constantinople	23,000
St. John's Lateran	22,900
Notre Dame, Paris	21,000
Cathedral, Pisa	13,000
St. Stephen's, Vienna	12,400
St. Dominic's, Bologna	12,000
St. Peter's, Bologna	11,400
Cathedral, Vienna	11,000
St. Mark's, Venice	7,500

Opera-Houses and Theaters.	Will Contain No. Persons.
The Chicago Auditorium	8,000
Academy of Music, Philadelphia	2,867
Carlo Felice, Genoa	2,568
Opera House, Munich	2,307
Alexander, St. Petersburg	2,332
San Carlos, Naples	2,240
Adelphi Theater, Chicago	2,238
Imperial, St. Petersburg	2,160
La Scala, Milan	2,113

Opera-Houses and Theaters.	Will Contain No. Persons.
Academy of Paris, Paris	2,092
Covent Garden, London	2,684
Academy of Music, N. Y.	2,526
Boston Theater, Boston	2,972
Music Hall, Boston	2,585
Grand Opera Hall, New Orleans	2,052
St. Charles Theater, New Orleans	2,178
Grand Opera House, N. Y.	1,883
Opera House, Detroit	1,790
McVicker's Theater, Chicago	1,786
Grand Opera House, Chicago	1,786
Ford's " " Baltimore	2,001
National Theater, Washington	1,500
De Bar's Opera House, St. Louis	1,696
California Theater, San Francisco	1,651
Euclid Avenue Opera House, Cleveland	1,650
Opera House, Berlin	1,636
Opera House, Albany	1,404
Hooley's Theater, Chicago	1,373
Coulter Opera House, Aurora, Ill	1,004
Opera House, Springfield, Ill.	1,300

How to Mix Paints for Colors.

Buff	Mix together—	White, Yellow Ochre, Red.
Chestnut	"	Red, Black, Yellow.
Chocolate	"	Raw Umber, Red, Black.
Claret	"	Red, Umber, Black.
Copper	"	Red, Yellow, Black.
Dove	"	White, Vermilion, Blue, Yellow.
Drab	"	White, Yellow Ochre, Red, Black.
Fawn	"	White, Yellow, Red.
Flesh	"	White, Yellow Ochre, Vermilion.
Freestone	"	Red, Black, Yellow Ochre, Vermilion.
French Gray	"	White, Prussian Blue, Lake.
Gray	"	White Lead, Black.
Gold	"	White, Stone Ochre, Red.
Green Bronze	"	Chrome Green, Black, Yellow.
Lemon	"	White, Chrome Yellow.
Limestone	"	White, Yellow Ochre, Black, Red.
Olive	"	Yellow, Blue, Black, White.
Orange	"	Yellow and Red.
Peach	"	White and Vermilion.
Pearl	"	Whtte, Black, Blue.
Purple	"	Violet, with more Red and White.
Rose	"	White, Madder Lake.
Sandstone	"	White, Yellow Ochre, Black, Red.
Snuff	"	Yellow, Vandyke Brown.
Violet	"	Red, Blue, and White.

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Value of Foreign Coins.

Country.	Monetary Unit.	Standard.	Values in U.S. Money.
Argentine Rep.	Peso	Gold and silver	$ 96.5
Austria	Florin	Silver	42.
Belgium	Franc	Gold and silver	19.3
Bolivia	Boliviano	Silver	85.
Brazil	Milreis of 1,000 reis	Gold	54.6
Canada	Dollar	Gold	1 00
Chili	Peso	Gold and silver	91.2
Cuba	Peso	Gold and silver	92.6
Denmark	Crown	Gold	26.8
Ecuador	Peso	Silver	75.1
Egypt	Piaster	Gold	04.9
France	Franc	Gold and silver	19.3
German Emp.	Mark	Gold	23.8
Great Britain	Pound sterling	Gold	4.86.6½
Greece	Drachma	Gold and silver	19.3
Hayti	Gourde	Gold and silver	96.5
India	Rupee of 16 annas	Silver	40.4
Italy	Lira	Gold and silver	19.3
Japan	Yen	Silver	91.7
Liberia	Dollar	Gold	1 00
Mexico	Dollar	Silver	92.3
Netherlands	Florin	Gold and silver	40.2
Norway	Crown	Gold	26.8
Peru	Sol	Silver	85.
Portugal	Milreis of 1,000 reis	Gold	1.08
Russia	Rouble of 100 copecks	Silver	68.
Spain	Presta of 100 centimes	Gold and silver	19.3
Sweden	Crown	Gold	26.8
Switzerland	Franc	Gold and silver	19.3
Tripoli	Mahbub of 20 piasters	Silver	76.7
Turkey	Piasters	Gold	.04
U. S. Colombia	Peso	Silver	85.
Venezuela	Bolivar	Gold and silver	17.

What a Horse Can Draw.

On metal rails a horse can draw one and two-thirds times as much as on asphalt pavement; three and one-third times as much as on good Belgian blocks; five times as much as on ordinary Belgian blocks; seven times as much as on good cobble-stone; thirteen times as much as on ordinary cobble-stone; twenty times as much as on an earth road; forty times as much as on sand.

A modern compilation of engineering maxims states that a horse can drag, as compared with what he can carry on his back, in the following proportions: On the worst earthen

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road, three times more; on a good macadamized road, nine; on plank, twenty-five; on a stone trackway, thirty-three, and on a good railway, fifty-four times as much.

Excessive Heat in the Past.

In 1303 and 1304 the Rhine, Loire, and Seine ran dry. The heat in several French provinces during the summer of 1705 was equal to that of a glass furnace. Meat could be cooked by merely exposing it to the sun. Not a soul dare venture out between noon and 4 P. M. In 1718 many shops had to close. The theaters never opened their doors for three months. Not a drop of water fell during six months. In 1773 the thermometer rose to 118 degrees. In 1778 the heat of Bologna was so intense that a great number of people were stifled. There was not sufficient air for the breath, and people had to take refuge under the ground. In July, 1793, the heat again became intolerable. Vegetables were burned up, and fruit dried on the trees. The furniture and woodwork in dwelling-houses cracked and split up; meat went bad in an hour.

Ready Reckoner Table.

For computing wages, rent, board, etc. The sum will be found heading the columns, and the days and weeks on the extreme left-hand column. If the desired sum is not in the table, double or treble two or three suitable numbers.

TIME.		$2.50	$2.75	$3.00	$3.25	$3.50	$3.75	$4.00	$4.25	$4.50	$4.75
Days.	1	.36	.39	.43	.44	.50	.53	.57	.61	.64	.68
	2	.72	.78	.86	.93	1.00	1.07	1.14	1.21	1.28	1.36
	3	1.08	1.17	1.29	1.39	1.50	1.61	1.71	1.82	1.93	2.03
	4	1.44	1.56	1.71	1.86	2.00	2.14	2.28	2.43	2.57	2.71
	5	1.80	1.95	2.14	2.30	2.50	2.68	2.86	3.03	3.21	3.39
	6	2.15	2.34	2.57	2.78	3.00	3.21	3.43	3.64	3.86	4.07
Weeks.	1	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75
	2	5.09	5.50	6.00	6.50	7.00	7.50	8.00	8.50	9.00	9.50
	3	7.50	8.25	9.00	9.75	10.50	11.25	12.00	12.75	13.50	14.25
	4	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00	19.00
	5	12.50	13.75	15.00	16.25	17.50	18.75	20.00	21.25	22.50	23.75

TIME.		$5.00	$5.25	$5.50	$5.75	$6.00	$6.25	$6.50	$6.75	$7.00	$8.00
Days.	1	.71	.75	.79	.82	.86	.89	.93	.96	1.00	1.14
	2	1.43	1.50	1.58	1.64	1.72	1.78	1.86	1.92	2.00	2.28
	3	2.14	2.25	2.37	2.46	2.23	2.67	2.79	2 88	3.00	3.52
	4	2.86	3.00	3.15	3.28	3.44	3.56	3.72	3 84	4.00	4.26
	5	3.57	3.75	3.94	4.10	4.30	4.45	4.65	4.80	5.00	5.72
	6	4.28	4.50	4.73	4.92	5.16	5.34	5.58	5.76	6.00	6.86
Weeks.	1	5.00	5.25	5.50	5.75	6.00	6.25	6.50	6.75	7.00	8.00
	2	10.00	10.50	11.00	11.50	12.00	12.50	13.00	13.50	14.00	16.00
	3	15.00	15.75	16.50	17.25	18.00	18.75	19.50	20.25	21.00	24.00
	4	20.00	21.00	22.00	23.00	24.00	25.00	26.00	27.00	28.00	32.00
	5	25.00	26.25	27.50	28.75	30.00	31.25	32.50	33.50	35.00	40.00

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Rate of Annual Income on Investments, Par Value Being $100.

Price Paid.	Bearing Interest at— Five Per ct.	Six Per ct.	Seven Per ct.	Eight Per ct.	Ten Per ct.	Price Paid.	Bearing Interest at— Five Per ct.	Six Per ct.	Seven Per ct.	Eight Per ct.	Ten Per ct.
$50	10.00	12.00	14.00	16.00	20.00	99	5.05	6.06	7.07	8.08	10.10
55	9.09	10.90	12.72	14.55	18.18	100	5.00	6.00	7.00	8.00	10.00
60	8.33	10.00	11.66	13.33	16.66	101	4.95	5.94	6.03	7.92	9.90
65	7.69	9.23	10.76	12.30	15.38	102	4.90	5.88	6.86	7.84	9.80
70	7.14	8.57	10.00	11.42	14.28	103	4.85	5.82	6.79	7.76	9.70
75	6.66	8.00	9.33	10.66	13.35	104	4.80	5.76	6.73	7.69	9.61
80	6.25	7.50	8.75	10.00	12.50	105	4.76	5.71	6 66	7.61	9.56
82½	6.06	7.27	8.48	9.69	11.12	110	4.54	5.45	6.36	7.27	9.09
85	5.88	7.05	8.23	9.41	11.76	115	4.34	5.21	6.08	6.95	8.69
87½	5.71	6.85	8.00	9.14	11.42	120	4.16	5.00	5.83	6.66	8.69
90	5.55	6.66	7.77	8.88	11.11	125	4 00	4.90	5.60	6.40	8.00
92½	5.40	6.48	7.56	8.64	10.80	130	3.84	4.61	5.38	6.15	7.69
95	5.26	6.31	7.36	8.42	10.52	135	3.70	4.44	5.18	5.92	7.40
96	5.20	6.25	7.29	8.33	10.41	140	3.57	4.28	5.00	5.71	7.14
97	5.15	6.18	7.21	8.24	10.30	145	3.44	4.13	4.82	5.51	6.89
97½	5.12	6.15	7.17	8 20	10.25	150	3.33	4.00	4.66	5.33	6.66
98	5.10	6.12	7.14	8.16	10.20	160	3.20	3.75	4.40	5.00	6.40

What a Deed to a Farm in Many States Includes.

Every one knows it conveys all the fences standing on the farm, but all might not think it also included the fencing-stuff, posts, rails, etc., which had once been used in the fence, but had been taken down and piled up for future use again in the same place. But new fencing material, just bought, and never attached to the soil, would not pass. So piles of hop poles stored away, if once used on the land and intended to be again so used, have been considered a part of it, but loose boards or scaffold poles merely laid across the beams of the barn, and never fastened to it, would not be, and the seller of the farm might take them away. Standing trees, of course, also pass as part of the land; so do trees blown down or cut down, and still left in the woods where they fell, but not if cut, and corded up for sale; the wood has then become personal property.

If there be any manure in the barnyard, or in the compost heap on the field, ready for immediate use, the buyer ordinarily, in the absence of any contrary agreement, takes that also as belonging to the farm, though it might not be so, if the owner had previously sold it to some other party, and had collected it together in a heap by itself, for such an act might be a technical severance from the soil, and so convert real into personal estate; and even a lessee of a farm could not take away the manure made on the place while he was in occupa-

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tion. Growing crops also pass by the deed of a farm, unless they are expressly reserved; and when it is not intended to convey those, it should be so stated in the deed itself, a mere oral aggreement to that effect, would not be, in most States, valid in law. Another mode is to stipulate that possession is not to be given until some future day, in which case the crops or manures may be removed before that times.

As to the buildings on the farm, though generally mentioned in the deed, it is not absolutely necessary they should be. A deed of land ordinarily carries all the buildings on it, belonging to the grantor, whether mentioned or not; and this rule includes the lumber and timber of any old building which has been taken down or blown down, and packed away for future use on farm.

Number of Pounds to the Bushel (Legal Weight) in Different States.

States.	Buckwheat	Corn on the Cob	Shelled Corn	Corn Meal	Onions	Sweet Potatoes	Potatoes	Turnips	Peas	Beans	Barley	Wheat	Oats	Rye	Dried Apples	Flax Seed	Clover Seed	Blue Grass Seed	Anthracite Coal	Timothy Seed
Arkansas	52	70		50	57	50	60		46	60	48	60	32	56	24	56	60	14	80	45
California	30		52								50	60	32	54						
Connecticut	48		58	50	50		60	50	60	60	48	6	32	56						
Georgia	52	70	56	48	57	55	60	55	60	60	47	60	32	56	24	56	60	14	80	45
Illinois	52	70	56	48	57	55	60	55		60	48	60	32	56	24	56	60	14	80	45
Indiana	50	68	56	50	48		60			60	48	60		56	25		60	14		45
Iowa	52	70	56		57	10	30			60	48	60	32	56	24	56	60	14	80	45
Kansas	50	70	56	50	57	50	30	55		60	48	60	32	56	24	56	60	14	80	45
Kentucky	52	70	56	50	57	55	60	60	60	60	47	60	32	56	24	56	60	14	76	45
Maine	48		56	50	52		60	50	60	60	48	60	30	50						
Massachusetts	48		56	50	52	55	60				48	60	32	56						
Michigan	52	70	56	50	54	56	30	58	60	60	48	60	32	56	22	56	60	14		45
Minnesota	42		56				60				48	60	32	56	28		60			
Missouri	52		56		57		30			60	48	60	32	56	24	56	60	14		45
New Hampshire			56	50			60		60	60		60	32	56						
New Jersey	50		56		57	54	60		60	60	48	60	30	56	25	55	64			
New York	48		56				60		60	62	48	60	32	56		55	60			44
North Carolina	54		54	46					50		48	60	30	56			64			
Ohio	50	70	00		50	56	60		60	60	48	60	32	56	22	56	60			45
Pennsylvania	48		56				56				47	60	32	56			62			
Rhode Island			56	50	60		60				48	60	32	56						
South Carolina	56	70	56	50	57	50	60		60	60	48	60	33	56	26	14	60	14		
Tennessee	30	72	56	50	56	56	60		60	60	48	60	32	56	26	56		14		45
Vermont	48		52		52		60	60	60	60	48	60	32	56			60			45
Virginia	52	70	56	50	57	56	60	55	60	60	48	60	32	56	28	56	60	14	80	45
Wisconsin	50	70	56		60		60	42		60	48	80	32	56	28	56	60			45

How to Destroy the Effect of Acid on Clothes.

Dampen as soon as possible, after exposure to the acid, with spirits of ammonia. It will destroy the effect immediately.

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Language of Flowers.

FLOWERS.	SENTIMENTS.
Acacia	Concealed love.
Almond	Hope.
Apple-Blossom	Preference.
Arbutus, Trailing	Welcome.
Bell Flower	Gratitude.
Box	Constancy.
Calla Lily	Feminine beauty.
Cedar	I live for thee.
China Aster	I will think of it.
Chrysanthemum, Rose	I love.
Clover, Red	Industry.
Corn	Riches.
Cowslip, American	You are my divinity.
Daffodil	Chivalry.
Dahlia	Forever thine.
Daisy, Garden	I partake your sentiments.
Daisy, White	Innocence.
Daisy, Wild	I will think of it.
Elm, American	Patriotism.
Forget-me-not	True love.
Fuchsia, Scarlet	Taste.
Geranium, Apple	Present preference.
Geranium, Ivy	Your hand for the next dance.
Geranium, Rose	Preference.
Gillyflower	Lasting beauty.
Golden Rod	Encouragement.
Hawthorn	Hope.
Heliotrope, Peruvian	I love you ; Devotion.
Honeysuckle	Bond of love.
Horse-chestnut	Luxury.
Hyacinth	Jealousy.
Mint	Virtue.
Morning Glory	Coquetry.
Myrtle	Love.
Oats	Music.
Orange	Generosity.
Pansy	Think of me.
Pink	Pure affection.
Pink Red	Pure, ardent love.
Rose, Moss	Superior merit.
Rose, Tea	Always lovely.
Rose, White	I am worthy of you.
Snowball	Winter.
Tuberose	Dangerous pleasures.
Verbena	Sensibility.
Violet, Blue	Love.
Violet, White	Modesty.

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Popular and Electoral Votes for Presidents.

Year.	Candidates.	Party.	Popular Vote	Electoral Vote.
1824	Andrew Jackson	Democrat	152,872	99
1824	John Q. Adams	Federal	105,321	84
1824	W. H. Crawford	Republican	44,282	41
1824	Henry Clay	Republican	46,587	37
1828	Andrew Jackson	Democrat	647,231	178
1828	John Q. Adams	Federal	509,097	83
1832	Andrew Jackson	Democrat	687,502	219
1832	Henry Clay	Nat. Republican	538,189	49
1832	John Floyd	Whig	.....	11
1832	William Wirt	Whig	.....	7
1836	Martin Van Buren	Democrat	761,549	170
1836	W. H. Harrison	Whig	736,656	73
1836	Hugh L. White	Whig		26
1836	Daniel Webster	Whig		14
1836	W. P. Mangum	Whig		11
1840	Martin Van Buren	Democrat	1,128,702	48
1840	W. H. Harrison	Whig	1,275,017	234
1840	J. G. Birney	Liberty	7,059	...
1844	James K. Polk	Democrat	1,337,243	170
1844	Henry Clay	Whig	1,299,068	105
1844	James G. Birney	Liberty	62,300	...
1848	Zachary Taylor	Whig	1,360,101	163
1848	Lewis Cass	Democrat	1,220,544	127
1848	Martin Van Buren	Free Soil	291,263	...
1852	Franklin Pierce	Democrat	1,601,474	254
1852	Winfield Scott	Whig	1,386,578	42
1852	John P. Hale	Free Soil	156,149	...
1856	James Buchanan	Democrat	1,838,169	174
1856	John C. Fremont	Republican	1,341,262	114
1856	Millard Fillmore	American	874,534	8
1860	Abraham Lincoln	Republican	1,866,352	180
1860	Stephen A. Douglas	Democrat	1,375,157	12
1860	John C. Breckenridge	Democrat	845,763	72
1860	John Bell	Union	589,581	39
1864	Abraham Lincoln	Republican	2,216,067	212
1864	Geo. B. McClellan	Democrat	1,808,725	21
1868	U. S. Grant	Republican	3,015,071	214
1868	Horatio Seymour	Democrat	2,709,613	80
1872	U. S. Grant	Republican	3,597,070	286
1872	Horace Greeley	Liberal & Democrat	2,834,079	...
1872	Charles O'Conor	Democrat	29,408	...
1872	James Black	Temperance	5,608	...
1876	R. B. Hayes	Republican	4,033,950	185
1876	Samuel J. Tilden	Democrat	4,284,885	184
1876	Peter Cooper	Greenback	81,740	...
1876	G. C. Smith	Prohibition	9,522	...
1876	Scattering		2,636	...

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Year.	Candidates.	Party.	Popular Vote.	Electoral Vote.
1880	James A. Garfield	Republican	4,449,053	214
1880	Winfield S. Hancock	Democrat	4,442,035	155
1880	James B. Weaver	Greenback	307,306	...
1884	Grover Cleveland	Democrat	4,911,017	219
1884	James G. Blaine	Republican	4,848,334	182
1884	Benj. F. Butler	Greenback	133,825	...
1884	John P. St. John	Prohibition	151,809	...
1888	Benjamin Harrison	Republican	5,430,607	233
1888	Grover Cleveland	Democrat	5,538,045	168
1888	Fisk	Prohibition	257,243	...
1888	Labor Vote		114,623	...

How to Measure Corn in Crib, Hay in a Mow, etc.

This rule will apply to a crib of any kind. Two cubic feet of sound, dry corn in the ear will make a bushel shelled. To get the quantity of shelled corn in a crib of corn in the ear, measure the length, breadth, and height of the crib, inside of the rail; multiply the length by the breadth and the product by the height; then divide the product by 2, and you have the number of bushels in the crib.

To find the number of bushels of apples, potatoes, etc., in a bin, multiply the length, breadth and thickness together, and this product by 8, and point off one figure in the product for decimals.

To find the amount of hay in a mow, allow 512 cubic feet for a ton, and it will come out very nearly correct.

How Deep in the Ground to Plant Corn.

The following is the result of an experiment with Indian corn. That which was planted at the depth of

¼ inch, sprout appeared in 8 days; 1 inch, sprout appeared in 8¼ days; 1½ inch, sprout appeared in 9½ days; 2 inches, sprout appeared in 10 days; 2½ inches, sprout appeared in 11½ days; 3 inches, sprout appeared in 12 days; 3½ inches, sprout appeared in 13 days; 4 inches, sprout appeared in 18¾ days.

The more shallow the seed was covered with earth, the more rapidly the sprout made its appearance, and the stronger afterward was the stalk. The deeper the seed lay, the longer it remained before it came to the surface. Four inches was too deep for the maize, and also too deep for smaller kernels.

How to Petrify Wood.

Gum, salt, rock alum, white vinegar, chalk and pebbles powder, of each an equal quantity. Mix well together. If, after the ebullition is over, you throw into this liquid any wood or porus substance, it will petrify it.

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Governors' Salaries, Terms of Office, and State Capitals.

Terms of Office.	States and Territories.	Capitals.	Yearly Salaries.
One year	Massachusetts	Boston	$ 4,000
One year	Rhode Island	Newport	1,000
Two years	Alabama	Montgomery	3,000
Two years	Arkansas	Little Rock	3,500
Two years	Colorado	Denver	5,000
Two years	Connecticut	Hartford	2,000
Two years	Georgia	Atlanta	3,000
Two years	Iowa	Des Moines	4,000
Two years	Kansas	Topeka	3,000
Two years	Maine	Augusta	2,000
Two years	Michigan	Lansing	1,500
Two years	Minnesota	St. Paul	3,800
Two years	Nebraska	Lincoln	2,500
Two years	New Hampshire	Concord	1,000
Two years	Ohio	Columbus	4,000
Two years	South Carolina	Columbia	3,500
Two years	Tennessee	Nashville	4,000
Two years	Texas	Austin	4,000
Two years	Vermont	Montpelier	1,000
Two years	Wisconsin	Madison	5,000
Three years	New Jersey	Trenton	5,000
Three years	New York	Albany	10,000
Four years	Arizona Territory	Phœnix	2,600
Four years	California	Sacramento	6,000
Two years	North Dakota	Bismarck	3,000
Two years	South Dakota	Pierre	2,600
Four years	Delaware	Dover	2,000
Four years	Florida	Tallahassee	3,500
Four years	Idaho Territory	Boise City	2,600
Four years	Illinois	Springfield	6,000
Four years	Indiana	Indianapolis	5,000
Four years	Indian Territory	Tahlequah	2,600
Four years	Kentucky	Frankfort	5,000
Four years	Louisiana	Baton Rouge	4,000
Four years	Maryland	Annapolis	4,500
Four years	Mississippi	Jackson	4,000
Four years	Missouri	Jefferson City	5,000
Four years	Montana	Helena	5,000
Four years	Nevada	Carson City	6,000
Four years	New Mexico Territory	Santa Fe	2,600
Four years	North Carolina	Raleigh	4,000
Four years	Oregon	Salem	1,500
Four years	Pennsylvania	Harrisburg	10,000
Four years	Utah Territory	Salt Lake City	2,600
Four years	Virginia	Richmond	5,000
Four years	Washington	Olympia	4,000
Four years	West Virginia	Charleston	3,700
Four years	Wyoming Territory	Cheyenne	2,600
Four years	Oklahoma	Guthrie	2,600

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Square Rods and Feet in an Acre.

An acre contains 43,560 square feet.

A plat of ground 208¾ feet square is very near an acre, being just 1-16 of a rod over. A nearer approximation is 208 feet and 8⅓ inches. The square of this number differs less than a foot from an acre, being 43,559 1 6 feet.

A plat of ground 12 rods, 10 feet, and 8⅓ inches square is an acre. For ordinary purposes it will answer to take a plat 12⅔ rods square, which will give 160 2-5 rods, 160 being an acre.

An acre is contained in a plat 3 by 53⅓ rods, or 4 by 40, or 5 by 32, or 6 by 26⅔, or 7 by 22 6-7, or 8 by 20, or 9 by 17 7-9, or 10 by 16, or 11 by 14 6-11, or 12 by 13⅓. Our farmer boys can soon learn this last table, and it will often be of use to them.

United States Land Measure and Homestead Law.

A township is 36 sections, each a mile square. A section is 640 acres. A quarter section, half a mile square, is 160 acres. An eighth section, half a mile long, north and south, and a quarter of a mile wide, is 80 acres. A sixteenth section, a quarter of a mile square, is 40 acres.

The sections are all numbered 1 to 36, commencing at north-east corner, thus:

6	5	4	3	2	NW NE SW SE
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	20	23	24
30	29	28	27	26	25
31	32	33	34	35	36

The sections are all divided in quarters, which are named by the cardinal points, as in section 1. The quarters are divided in the same way. The description of a forty-acre lot would read: The south half of the west half of the south-west quarter of section 1 in township 24, north of range 7 west, or

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as the case might be, and sometimes will fall short, and sometimes overrun the number of acres it is supposed to contain.

HOMESTEAD PRIVILEGE.—The laws give to every citizen, and to those who have declared their intention to become citizens, the right to a homestead on surveyed lands, to the extent of one-quarter section, or 160 acres, or a half-quarter section, or 80 acres; the former in cases in the class of lower priced lands held by law at $1.25 per acre, the latter of high priced lands held at $2.50 per acre, when disposed of to cash buyers. The pre-emption privilege is restricted to heads of families, widows, or single persons over the age of 21.

Every soldier and officer in the army, and every seaman, marine and officer of the navy, during the recent rebellion, may enter 160 acres from either class, and length of time served in the army or navy deducted from the time required to perfect title.

How to Make 33 Kinds of Solder.

1. Plumber's solder—Lead 2 parts, tin 1 part. 2. Tinmen's solder—Lead 1 part, tin 1 part. 3. Zinc solder—Tin 1 part, lead 1 to 2 parts. 4. Pewter solder—Lead 1 part, bismuth 1 to 2 parts. 5. Spelter solder—Equal parts copper and zinc. 6. Pewterers' soft solder—Bismuth 2, lead 4, tin 3 parts. 7—Another—Bismuth 1, lead 1, tin 2 parts. 8. Another pewter solder—Tin 2 parts, lead 1 part. 9. Glazier's solder—Tin 3 parts, lead 1 part. 10. Solder for copper—Copper 10 parts, zinc 9 parts. 11. Yellow solder for brass or copper—Copper 32 lbs., zinc 29 lbs., tin 1 lb. 12. Brass solder—Copper 61.25 parts, zinc 38.75 parts. 13. Brass solder, yellow and easily fusible—Copper 45, zinc 55 parts. 14. Brass solder, white—Copper 57.41 parts, tin, 14.60 parts, zinc 27.99 parts. 15. Another solder for copper—Tin 2 parts, lead 1 part. When the copper is thick heat it by a naked fire. If thin use a tinned copper tool. Use muriate or chloride of zinc as a flux. The same solder will do for iron, cast iron, or steel; if the pieces are thick, heat by a naked fire or immerse in the solder. 16. Black solder—Copper 2, zinc 3, tin 2 parts. 17. Another—Sheet brass 20 lbs., tin 6 lbs., zinc 1 lb. 18. Cold brazing without fire or lamp—Fluoric acid 1 oz., oxy muriatic acid 1 oz., mix in a lead bottle. Put a chalk mark each side where you want to braze. This mixture will keep about 6 months in one bottle. 19. Cold soldering without fire or lamp—Bismuth ¼ oz., quicksilver ¼ oz., block tin filings 1 oz., sprits salt 1 oz., all mixed together. 20. To solder iron to steel or either to brass—Tin 3 parts, copper 39½ parts, zinc 7½ parts. When applied in a molten state it will firmly unite metals first named to each other. 21. Plumbers' solder—Bismuth 1, lead 5, tin 3 parts; is a first-class composition. 22. White solder for raised Britannia ware—Tin 100 lbs., hardening 8 lbs., antimony 8 lbs. 23. Hardening for Britannia (to be mixed separately from the other ingredients)—Copper 2 lbs., tin 1 lb. 24. Best soft solder for cast Britannia ware—Tin 8 lbs., lead 5 lbs. 25. Bismuth solder—Tin 1, lead 3, bismuth 3 parts. 26.

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Solder for brass that will stand hammering—Brass, 78.26 parts, zinc 17.41 parts, silver 4.33 parts, add a little chloride of potassium to your borax for a flux. 27. Solder for steel joints—Silver 19 parts, copper 1 part, brass 2 parts. Melt all together. 28. Hard solder—Copper 2 parts, zinc 1 part. Melt together. 29. Solder for brass. Copper 3 parts, zinc 1 part, with borax. 30. Solder for copper—Brass 6 parts, zinc 1 part, tin 1 part; melt all together well and pour out to cool. 31. Solder for platina—Gold with borax. 32. Solder for iron—The best solder for iron is good tough brass with a little borax.

N.B.—In soldering, the surfaces to be joined are made perfectly clean and smooth, and then covered with sal. ammoniac, resin or other flux; the solder is then applied, being melted on and smoothed over by a tin soldering iron.

In soldering fluid, take 2 oz. muriatic acid, add zinc till bubbles cease to rise, add ½ teaspoonful of sal. ammoniac.

How Sound Travels.

In dry air at 82 degrees, 1,142 feet per second, or about 775 miles per hour; in water, 4,900 feet per second; in iron, 17,500 feet; in copper, 10,378 feet; and in wood from 12 to 16,000 feet per second. In water, a bell heard at 45,000 feet could be heard in the air out of the water but 656 feet. In a balloon the barking of dogs can be heard on the ground at an elevation of 4 miles. Divers on the wreck of the Hussar frigate, 100 feet under water, at Hell Gate, near New York, heard the paddle wheels of distant steamers hours before they hove in sight. The report of a rifle on a still day may be heard at 5,300 yards; a military band at 5,200 yards. The fire of the English on landing in Egypt was distinctly heard 130 miles.

How to Keep Fresh Meat a Week or Two in Summer.

Farmers or others living at a distance from butchers can keep fresh meat very nicely for a week or two, by putting it in sour milk or buttermilk, placing it in a cool cellar. The bone or fat need not be removed. Rinse well when used.

Valuable Suggestions to Clerks and Workingmen.

Never consider time wasted that is spent in learning rudiments. In acquiring a knowledge of any art or handicraft the greatest difficulty is experienced at the beginning, because our work then possesses little or nothing of interest. Our first lessons in drawing or music, or with tools, are very simple; indeed so simple are they that we are disposed to undervalue their importance. The temptation is to skip a few pages and begin further on in the book. But such a course is fatal to success. To learn principles thoroughly is to succeed. Be content to learn one thing at a time, whether it be to push a plane square and true, or draw a straight line. Whatever you learn, learn it absolutely, without possible question. This will enable you to advance steadily, step by

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step, year after year, and some day you will wonder why you have been enabled to distance the geniuses who once seemed so far in advance of you.

Set your heart upon what you have in hand. Valuable knowledge is acquired only by intense devotion. You must give your entire mind to whatever you undertake, otherwise you fail, or succeed indifferently, which is but little better than failure.

Learn, therefore, to estimate properly the value of what is called leisure time. There is entirely too much of this in the world. Do not mistake our meaning. Rest is necessary and play is well in its place, but young men who hope to do something in life must not expect to play one-third of their time.

While you resolve to acquire a thorough knowledge of your art, be equally as anxious to know something beyond it. A craftsman ought to be ashamed of himself who knows nothing but the use of his tools. Having the time to acquire it, be careful to properly estimate the value of knowledge. Remember of what use it will be to you in ten thousand instances as you go along in life, and be as conscientious in learning rudiments here as elsewhere. Learn to spell correctly, to write a good plain hand, and to punctuate your sentences.

Do not dress beyond your means; never spend your last dollar, unless for food to keep yourself or some one else from starving. You will always feel better to keep a little money in your pocket. At the earliest possible opportunity save up a few dollars and place the amount in a savings bank. It will serve as a magnet to attract other money that might be foolishly spent.

Just as soon as you can command the means, buy a piece of ground. Do not wait until you have saved enough to pay all down, but begin by paying one-third or one-quarter. Do not be afraid to go in debt for land, for it increases in value.

The United States Government Tempering Secret.

The following process and mixtures, patented by Garmen and Siegfried, and owned by the Steel Refining and Tempering Co., of Boston, Mass., cost the U. S. Government $10,000 for the right of using in their shops, and is said to impart extraordinary hardness and durability to the poorest kinds of steel. Siegfried's specification reads as follows: "I first heat the steel to a cherry red in a clean smith's fire, and then cover the steel with chloride of sodium (common salt), purifying the fire also by throwing in salt. I work the steel in this condition, and while subjected to this treatment, until it is brought into nearly its finished form. I then substitute for the salt a compound composed of the following ingredients, and in about the following proportions: One part by weight of each of the following substances: chloride of sodium (salt), sulphate of copper, sal-ammoniac, and sal-soda, together with ½ part by weight of pure nitrate of potassa (saltpeter), said ingredients being pulverized and mixed; I alternately heat the steel and treat it by covering with this mixture and ham-

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mering it until it is thoroughly refined and brought into its finished form. I then return it to the fire and heat it slowly to a cherry red, and then plunge it into a bath composed of the following ingredients, in substantially the following proportions for the required quantity: of rain water, 1 gallon; alum, sal-soda, sulphate of copper, of each 1½ ounces; of nitrate of potassa (saltpeter), 1 ounce, and of chloride of sodium (salt), 6 ounces. These quantities and proportions are stated as being what I regard as practically the best, but it is manifest that they may be slightly changed without departing from the principles of my invention."

Durability of a Horse.

A horse will travel 400 yards in 4½ minutes at a walk, 400 yards in 2 minutes at a trot, and 400 yards in 1 minute at a gallop. The usual work of a horse is taken at 22,500 lbs. raised 1 foot per minute, for 8 hours per day. A horse will carry 250 lbs. 25 miles per day of 8 hours. An average draught-horse will draw 1,600 lbs. 23 miles per day on a level road, weight of wagon included. The average weight of a horse is 1,000 lbs.; his strength is equal to that of five men. In a horse mill moving at 3 feet per second, track 25 feet diameter, he exerts with the machine the power of 4½ horses. The greatest amount a horse can pull in a horizontal line is 900 lbs.; but he can only do this momentarily, in continued exertion, probably half of this is the limit. He attains his growth in 5 years, will live 25, average 16 years. A horse will live 25 days on water, without solid food, 17 days without eating or drinking, but only 5 days on solid food, without drinking.

A cart drawn by horse over an ordinary road will travel 1.1 miles per hour of trip. A four-horse team will haul from 25 to 36 cubic feet of lime stone at each load. The time expended in loading, unloading, etc., including delays, averages 35 minutes per trip. The cost of loading and unloading a cart, using a horse cram at the quarry, and unloading by hand, when labor is $1.25 per day, and a horse 75 cents, is 25 cents a perch = 24.75 cubic feet.

Symbolic Meaning of Colors.

White was the emblem of light, religious purity, innocence, faith, joy, and life. In the judge, it indicates integrity; in the sick, humility; in the woman, chastity. Red, the ruby, signifies fire, divine love, heat of the creative power, and royalty. White and red roses express love and wisdom. The red color of the blood has its origin in the action of the heart, which corresponds to, or symbolizes love. In a bad sense, red corresponds to the infernal love of evil, hatred, etc.

How to Raise the Body of a Drowned Person.

In a recent failure to recover the body of a drowned person in New Jersey, a French-Canadian undertook the job, and proceeded as follows: Having supplied himself with some glass gallon-jars and a quantity of unslaked lime he went in a boat

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to the place where the man was seen to go down. One of the jars was filled half full of lime, then filled up with water and tightly corked. It was then dropped into the water and soon after exploded at the bottom of the river with a loud report. After the third trial, each time at a different place, the body rose to the surface and was secured.

Digestion.

Average time required for the digestion of various articles of food:

	Hours	Min
Apples, sweet (boiled)	2	30
Barley, boiled	2	
Beans, Lima (boiled)	2	30
Beef (roasted)	3	
Beef (fried)	4	
Beef, salt (boiled)	2	45
Bread	3	30
Butter	3	30
Cheese	3	30
Chicken (fricasseed)	2	40
Custard (baked)	2	45
Duck (roasted)	4	
Eggs (raw)		
Eggs (soft boiled)	3	
Eggs (hard boiled)	3	30
Eggs (fried)	3	30
Fish	2	44
Fowl (roast)	4	
Hashed meat &vegetables	2	30
Lamb (boiled)	2	30
Milk (raw)	2	15
Milk (boiled)	2	
Mutton (boiled)	3	
Mutton (roast)	3	15
Oysters (roast)	3	15
Oysters (stewed)	3	30
Pigs' feet, soused (boiled)	1	
Potatoes (baked)	2	30
Pork, salt (stewed)	3	
Pork (roast)	3	15
Rice (boiled)	1	
Sago (boiled)	1	45
Soup, barley	1	30
Soup, chicken, etc., (avg.)	3	15
Tripe, soused (boiled)	1	
Turkey (roast)	2	20
Veal (boiled)	4	
Veal (fried)	4	30

Fat, Water, and Muscle Properties of Food.

100 parts.	Water.	Muscle.	Fat.
Cucumbers	97.0	1.5	1.0
Turnips	94.4	1.1	4.0
Cabbage	90.0	4.0	5.0
Milk, cows	86.0	5.0	8.0
Apples	84.0	5.0	10.0
Eggs, yoke of	79.0	15.0	27.0
Potatoes	75.2	1.4	22.5
Veal	68.5	10.1	16.5
Eggs, white of	83.0	17.0	.0
Lamb	59.5	11.0	35.0
Beef	50.0	15.0	30.0
Chicken	46.0	18.0	32.0
Mutton	44.0	12.5	40.0
Pork	38.5	10.0	50.0
Beans	14.8	24.0	57.7
Buckwheat	14.2	8.6	75.4
Barley	14.0	15.0	68.8
Corn	14.0	12.0	73.0
Peas	14.0	23.4	60.0
Wheat	14.0	14.6	69.4
Oats	13.6	17.0	66.4
Rice	13.5	6.5	79.5
Cheese	10.0	65.0	19.0
Butter			100.0

Size of Ancient Roman Aqueducts.

Eight aqueducts supplied ancient Rome with water, delivering 40 millions of cubic feet daily. That of Claudia was 47 miles long and 100 feet high, so as to furnish the hills. Martia was 41 miles, of which 37 were on 7,000 arches 70 feet high. These vast erections would never have been built had the Romans known that water always rises to its own level.

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Cost of Articles by the Piece, form 1 to 1 Dozen.

12 cost....	$1.00	$1.25	$1.50	$1.75	$2.00	$2.25	$2.50
11 "	92	1.15	1.38	1.60	1.83	2.06	2.29
10 "	83	1.04	1.25	1.46	1.67	1.88	2.08
9 "	75	94	1.13	1.29	1.50	1.69	1.88
8 "	67	83	1.00	1.17	1.33	1.50	1.67
7 "	58	73	88	1.02	1.17	1.31	1.46
6 "	50	63	75	88	1.00	1.13	1.25
5 "	42	52	63	73	83	94	1.04
4 "	33	42	50	56	67	75	83
3 "	25	31	38	44	50	56	63
2 "	17	21	25	29	33	38	42
1 "	8⅓	10⅓	12½	14⅝	16⅔	18¾	21⅓

12 cost....	$2.75	$3.00	$3.25	$3.50	$3.75	$4.00	$4.25
11 "	2.52	2.75	2.98	3.21	3.44	3.67	3.89
10 "	2.29	2.50	2.73	2.92	3.13	3.33	3.54
9 "	2.06	2.25	2.44	2.63	2.81	3.00	3.19
8 "	1.83	2.00	2.17	2.33	2.56	2.67	2.83
7 "	1.60	1.75	1.90	2.04	2.19	2.33	2.48
6 "	1.38	1.50	1.63	1.75	1.88	2.00	2.13
5 "	1.15	1.25	1.36	1.46	1.56	1.67	1.77
4 "	92	1.00	1.09	1.17	1.25	1.33	1.42
3 "	69	75	82	88	94	1.00	1.06
2 "	46	50	55	58	63	67	71
1 "	23	25	28	29⅓	31¼	33⅓	35⅓

12 cost....	$4.50	$4.75	$5.00	$5.25	$5.50	$5.75	$6.00
11 "	4.13	4.23	4.58	4.81	5.04	5.27	5.50
10 "	3.75	3.96	4.17	4.38	4.58	4.79	5.00
9 "	3.38	3.56	3.75	3.94	4.13	4 31	4.50
8 "	3.00	3.17	3.33	3.50	3.67	3.83	4.00
7 "	2.63	2.77	2 92	3.06	3.21	3.35	3.50
6 "	2.25	2.34	2.50	2.63	2.75	2.87	3.00
5 "	1.88	1.98	2.08	2.19	2.29	2.40	2.50
4 "	1.50	1.58	1.67	1.75	1.83	1.92	2.00
3 "	1.13	1.19	1.25	1.31	1.38	1.44	1.50
2 "	75	79	83	88	92	96	1.00
1 "	37½	39⅝	41⅔	43¾	46	48	50

12 cost....	$6.25	$6.50	$6.75	$7.00	$7.25	$7.50	$7.76
11 "	5.73	5.96	6.19	6.42	6.65	6.88	7.11
10 "	5.25	5.42	5.63	5.83	6.04	6.25	6.46
9 "	4.69	4.88	5.06	5.25	5.44	5.63	5.81
8 "	4.17	4.33	4.50	4.67	4.83	5.00	5.17
7 "	3.65	3.79	3.94	4.08	4.23	4.38	4.52
6 "	3.13	3.25	3.38	3.50	3.63	3.75	3.88
5 "	2.60	2.71	2.81	2.92	3.02	3.13	3.23
4 "	2.08	2.17	2.25	2.33	2.42	2.50	2.58
3 "	1.56	1.63	1.69	1.75	1.81	1.88	1.94
2 "	1.94	1.08	1.13	1.17	1.21	1.25	1.29
1 "	52⅛	54⅛	56¼	58⅓	60⅜	62½	64⅝

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How to Get Rid of Rats.

Get a piece of lead pipe and use it as a funnel to introduce about 1½ ozs. of sulphide of potassium into any outside holes tenanted by rats, not to be used in dwellings. To get rid of mice use tartar emetic mingled with any favorite food; they will eat, sicken, and take their leave.

Cost of Small Quantities of Coal or Hay.

Price per Ton.	25 lbs. worth.	40 lbs. worth.	100 lbs. worth.	200 lbs. worth.	300 lbs. worth.
$4.00	5 cents	10 cents	20 cents.	$ 40	$ 60
5.00	6 "	12 "	25 "	50	75
6.00	7½ "	15 "	30 "	60	90
7.00	8½ "	17 "	35 "	70	1.05
8.00	10 "	20 "	40 "	80	1.20
9.00	11 "	22 "	45 "	90	1.35
10.00	12½ "	25 "	50 "	1.00	1.50
11.00	13½ "	27 "	55 "	1.10	1.65
12.00	15 "	30 "	60 "	1.20	1.80
13.00	16 "	32 "	65 "	1.30	1.95
14.00	17½ "	35 "	70 "	1.40	2.10
15.00	18½ "	37 "	75 "	1.50	2.25

Amount of Barbed Wire Required for Fences.

Estimated number of pounds of barbed wire required to fence space or distance mentioned, with one, two, or three lines of wire, based upon each pound of wire measuring one rod (16½ feet).

	1 Line.	2 Lines.	3 Lines.
1 square acre	50⅔ lbs.	101⅓ lbs.	152 lbs.
1 side of a square acre	12⅔ "	25⅓ "	38 "
1 square half acre	36 "	72 "	108 "
1 square mile	1,280 "	2,560 "	3,840 "
1 side of a square mile	320 "	640 "	960 "
1 rod in length	1 "	2 "	3 "
100 rods in length	100 "	200 "	300 "
100 feet in length	6 1-16 "	12⅛ "	18 3-16 "

A Woman's Chance to Marry.

One-quarter of 1 per cent., from fifty to fifty-six years of age.

Three-eighths of 1 per cent., from forty-five to fifty years of age.

Two and a half per cent., from forty to forty-five years of age.

Three and three-quarter per cent., from thirty-five to forty years of age.

Fifteen and a half per cent., from thirty to thirty-five years of age.

Eighteen per cent., from twenty-five to thirty years of age.

Fifty-two per cent., from twenty to twenty-five years of age.

Fourteen and a half per cent., from fifteen to twenty years of age.

Save a Little.

Every man who is obliged to work for his living should make a point to lay up a little money for that "rainy day" which we are all liable to encounter when least expected. The best

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way to do this is to open an account with a savings bank. Accumulated money is always safe; it is always ready to use when needed. Scrape together five dollars, make your deposit, receive your bank book, and then resolve to deposit a given sum, small though it be, once a month, or once a week, according to circumstances. Nobody knows without trying it, how easy a thing it is to save money when an account with a bank has been opened. With such an account a man feels a desire to enlarge his deposit. It gives him lessons in frugality and economy, weans him from habits of extravagance, and is the very best guard in the world against intemperance, dissipation, and vice.

Number of Plants for an Acre of Ground.

Dist. apart.	No. of Plants	Dist. apart.	No. of Plants.
3 inches by 3 inches	696,969	6 feet by 6 feet	1,210
4 " 4 "	392,040	6½ feet by 6½ feet	1,031
5 " 6 "	174,240	7 feet by 7 feet	891
9 " 9 "	77,440	8 feet by 8 feet	680
1 foot by 1 foot	43,560	9 feet by 9 feet	537
1½ feet by 1½ feet	19,360	10 feet by 10 feet	435
2 feet by 1 foot	21,780	11 feet by 11 feet	360
2 feet by 2 feet	10,890	12 feet by 12 feet	302
2½ feet by 2½ feet	6,960	13 feet by 13 feet	257
3 feet by 1 foot	14,520	14 feet by 14 feet	222
3 feet by 2 feet	7,260	15 feet by 15 feet	193
3 feet by 3 feet	4,840	16 feet by 16 feet	170
3½ feet by 3½ feet	3,555	16½ feet by 16½ feet	160
4 feet by 1 foot	10,890	17 feet by 17 feet	150
4 feet by 2 feet	5,445	18 feet by 18 feet	134
4 feet by 3 feet	3,630	19 feet by 16 feet	120
4 feet by 4 feet	2,722	20 feet by 20 feet	108
4½ feet by 4½ feet	2,151	25 feet by 25 feet	69
5 feet by 1 foot	8,712	30 feet by 30 feet	48
5 feet by 2 feet	4,356	33 feet by 33 feet	40
5 feet by 3 feet	2,904	40 feet by 40 feet	27
5 feet by 4 feet	2,178	50 feet by 50 feet	17
5 feet by 5 feet	1,742	60 feet by 60 feet	12
5½ feet by 5½ feet	1,417	66 feet by 66 feet	10

Time at Which Money Doubles at Interest.

Rate per cent.	Simple Interest.	Compound Interest.
10	10 years.	7 years 100 days.
9	11 years 40 days.	8 years 16 days.
8	12½ years.	9 years 2 days.
7	14 years 104 days.	10 years 89 days.
6	16 years 8 months.	11 years 327 days.
5	20 years.	15 years 75 days.
4½	22 years 81 days.	15 years 273 days.
4	25 years.	17 years 246 days.
3½	28 years 208 days.	20 years 54 days.
3	33 years 4 months	23 years 164 days.
2½	40 years.	28 years 26 days.
2	50 years.	35 years 1 day.

Hot Water for Inflamed Eyes.

Hot water is now a remedy so popular and varied in its ap-

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plications that it is not surprising to hear it recommended for the treatment of inflamed and aching eyes. An American writer, a woman whose eyesight was wonderful, considering her age and the immense amount of labor she performed, attributed it mainly to the custom of bathing her eyes freely in water as hot as could be borne, night and morning, a habit continued for many years.

Savings Bank Compound Interest Table.

Showing the amount of $1, from one year to fifteen years, with compound interest added semi-annually, at different rates.

	Ten Per cent.	Nine Per cent.	Eight Per cent.	Seven Per cent.	Six Per cent.	Five Per cent.	Four Per cent.	Three Per cent.
15 years.....	$4.32	$3.74	$3.24	$2.80	$2.42	$2.09	$1.80	$1.56
14 "	3.62	3.42	2.99	2.62	2.28	1.99	1.73	1.51
13 "	3.55	3.14	2.77	2.44	2.15	1.90	1.67	1.47
12 "	3.22	2.87	2.56	2.28	2.03	1.80	1.60	1.42
11 "	2.92	2.63	2.36	2.13	1.91	1.72	1.54	1.38
10 "	2.65	2.41	2.19	1.98	1.80	1.63	1.48	1.34
9½ "	2.52	2.30	2.10	1.92	1.75	1.59	1.45	1.32
9 "	2.40	2.20	2.02	1.85	1.70	1.55	1.42	1.30
8½ "	2.29	2.11	1.94	1.79	1.65	1.52	1.39	1.28
8 "	2.18	2.02	1.87	1.73	1.60	1.48	1.37	1.26
7½ "	2.07	1.93	1.80	1.67	1.55	1.44	1.34	1.24
7 "	1.97	1.85	1.73	1.61	1.51	1.41	1.31	1.23
6½ "	1.88	1.77	1.66	1.56	1.46	1.37	1.29	1.21
6 "	1.79	1.69	1.60	1.51	1.42	1.34	1.26	1.19
5½ "	1.71	1.62	1.53	1.45	1.38	1.31	1.24	1.17
5 "	1.62	1.55	1.48	1.41	1.34	1.28	1.21	1.16
4½ "	1.55	1.48	1.42	1.36	1.30	1.24	1.19	1.14
4 "	1.47	1.42	1.36	1.31	1.26	1.21	1.17	1.12
3½ "	1.40	1.36	1.31	1.27	1.22	1.18	1.14	1.10
3 "	1.34	1.30	1.26	1.22	1.19	1.15	1.12	1.09
2½ "	1.27	1.24	1.21	1.18	1.15	1.13	1.10	1.07
2 "	1.21	1.19	1.16	1.14	1.12	1.10	1.08	1.06
1½ "	1.15	1.14	1.12	1.10	1.09	1.07	1.06	1.04
1 "	1.10	1.09	1.08	1.07	1.06	1.05	1.04	1.03
½ "	1.05	1.04	1.04	1.03	1.03	1.02	1.02	1.01

One dollar loaned one hundred years at compound interest would amount to the following sum:

24 per cent.....	$2,351,799,404	10 per cent.....	$13,809.60
18 "	15,145,207	6 "	340.00
15 "	1,174,495	3 "	19.25
12 "	84,675	1 "	2.75

Length of Navigation of the Mississippi River.

The length of navigation of the Mississippi River itself for

ordinary large steamboats is about 2,161 miles, but small steamers can ascend about 650 miles farther. The following are its principal navigable tributaries, with the miles open to navigation.

	Miles.		Miles.
Minnesota	295	Wisconsin	160
Chippewa	90	Rock	64
Iowa	80	Illinois	350
Missouri	2,900	Yellowstone	474
Big Horn	50	Ohio	950
Allegheny	325	Monongahela	110
Muskingum	94	Kenawha	94
Kentucky	105	Green	200
Wabash	365	Cumberland	600
Tennessee	270	Clinch	50
Osage	302	St. Francis	180
White	779	Black	147
Little White	48	Arkansas	884
Big Hatchie	75	Issaquena	161
Sunflower	271	Yazoo	228
Tallahatchie	175	Big Black	35
Red	986	Cane	54
Cypress	44	Ouachita	384
Black	61	Bœuf	55
Bartholomew	100	Tensas	112
Macon	60	Teche	91
Atchafalya	218	D'Arbonne	50
Lafourche	168		

The other navigable tributaries have less than fifty miles each of navigation. The total miles of navigation of these fifty-five streams is about 16,500 miles, or about two-thirds the distance around the world. The Mississippi and its tributaries may be estimated to possess 15,550 miles navigable to steamboats, and 20,221 miles navigable to barges.

A Table of Daily Savings at Compound Interest.

Cents a day.	Per Year.	In Ten Years.	Fifty Years.
$ .02¾	$ 10	$ 130	$ 2,900
.05¼	20	260	5,800
.11	40	520	11,600
.27⅓	100	1,300	29,000
.55	200	2,600	58,000
1.10	400	5,200	116,000
1.37	500	6,500	145,000

How the Price of Confederate Money Dropped.

When the first issue of the Confederate money was scattered among the people, it commanded a slight premium. It then scaled down as follows: June, 1861, 90c.; December 1, 1861, 80c.; December 15, 1861, 75c.; February 1, 1862, 60c.; February 1, 1863, 20c.; June, 1863, 8c.; January, 1864, 2c.; November, 1864, 4½c.; January, 1865, 2½c.; April 1, 1865, 1½c. After that date it took from $800 to $1,000 in Confederate money to buy a one-dollar greenback.

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Five Per Cent. Interest Table.

DAYS.	$1	$2	$3	$4	$5	$10	$20	$30	$40	$50	$60	$70	$80	$90	$100	$200	$500	$1,000
1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	3	7	14
2	0	0	0	0	0	0	1	1	1	1	1	2	2	3	3	6	14	28
3	0	0	0	0	0	0	1	1	2	2	2	3	3	4	4	8	21	42
4	0	0	0	0	0	1	1	2	2	3	3	4	4	5	6	11	28	56
5	0	0	0	0	0	1	1	2	3	3	4	5	6	6	7	14	35	69
6	0	0	0	0	0	1	2	3	3	4	5	6	7	8	8	17	42	83
7	0	0	0	0	0	1	2	3	4	5	6	7	8	9	10	19	49	97
8	0	0	0	0	1	1	2	4	4	6	7	8	9	10	11	22	56	1.11
9	0	0	0	1	1	1	3	4	5	6	8	9	10	11	13	25	63	1.25
10	0	0	0	1	1	1	3	4	6	7	8	10	11	13	14	28	69	1.39
15	0	0	1	1	1	2	4	6	8	10	13	15	17	19	21	42	1.04	2.08
20	0	1	1	1	1	3	6	8	11	14	17	19	22	25	28	56	1.39	2.78
25	0	1	1	1	2	3	7	10	14	17	21	24	28	31	35	69	1.74	3.47
30	0	1	1	2	2	4	8	13	17	21	25	29	33	38	42	83	2.08	4.17
38	0	1	1	2	2	4	9	14	19	23	28	32	36	42	46	91	2.28	4.55
63	1	1	2	3	4	8	18	26	33	44	53	61	70	79	87	1.75	4.38	8.75
93	1	2	3	5	6	13	26	39	52	65	78	91	1.03	1.17	1.29	2.58	6.46	12.92

MONTHS.	$1	$2	$3	$4	$5	$10	$20	$30	$40	$50	$60	$70	$80	$90	$100	$200	$500	$1,000
1	0	1	1	2	2	4	8	13	17	21	25	29	33	38	42	83	2.08	4.17
2	1	2	3	4	4	8	17	25	33	42	50	58	67	75	83	1.67	4.17	8.33
3	1	3	4	5	6	13	25	38	50	63	75	88	1.00	1.13	1.25	2.50	6.25	12.50
4	2	3	5	7	8	17	33	50	67	83	1.00	1.17	1.33	1.50	1.67	3.33	8.33	16.67
5	2	4	6	8	10	21	42	63	83	1.04	1.25	1.46	1.67	1.88	2.08	4.17	10.42	20.83
6	3	5	8	10	13	25	50	75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	5.00	12.50	25.00
7	3	6	9	12	15	29	58	88	1.17	1.46	1.75	2.04	2.33	2.63	2.92	5.83	14.58	29.17
8	3	7	10	13	17	33	67	1.00	1.33	1.67	2.00	2.33	2.67	3.00	3.33	6.67	16.67	33.33
9	4	8	11	15	19	38	75	1.13	1.50	1.88	2.25	2.63	3.00	3.38	3.75	7.50	18.75	37.50
10	4	8	13	17	21	42	83	1.25	1.67	2.08	2.50	2.92	3.33	3.75	4.17	8.33	20.83	41.67
11	5	9	14	18	23	46	92	1.38	1.83	2.29	2.75	3.21	3.67	4.13	4.58	9.17	22.92	45.83
12	5	10	15	20	25	50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	10.00	25.00	50.00

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Six Per Cent. Interest Table.

DAYS.	$1	$2	$3	$4	$5	$10	$20	$30	$40	$50	$60	$70	$80	$90	$100	$200	$500	$1,000
1	0	0	0	0	0	0	0	1	1	1	1	1	1	2	2	3	8	17
2	0	0	0	0	0	0	1	1	1	2	2	2	3	3	3	7	17	33
3	0	0	0	0	0	1	1	2	2	3	3	4	4	5	5	10	25	50
4	0	0	0	0	0	1	1	2	3	3	4	5	5	6	7	13	33	67
5	0	0	0	0	0	1	2	3	3	4	5	6	7	8	8	17	42	83
6	0	0	0	0	1	1	2	3	4	5	6	7	8	9	10	20	50	1.00
7	0	0	0	0	1	1	2	4	5	6	7	8	9	11	12	23	58	1.17
8	0	0	0	1	1	1	3	4	5	7	8	9	11	12	13	27	67	1.33
9	0	0	0	1	1	2	3	5	6	8	9	11	12	14	15	30	75	1.50
10	0	0	1	1	1	2	3	5	7	8	10	12	13	15	17	33	83	1.67
15	0	1	1	1	1	3	5	8	10	13	15	18	20	23	25	50	1.25	2.50
20	0	1	1	1	2	3	7	10	13	17	20	23	27	30	33	67	1.67	3.33
25	0	1	1	2	2	4	8	13	17	21	25	29	33	38	42	83	2.08	4.17
30	1	1	2	2	3	5	10	15	20	25	30	35	40	45	50	1.00	2.50	5.00
33	1	1	2	2	3	6	11	17	22	28	33	39	44	50	55	1.10	2.75	5.50
63	1	2	3	4	5	11	21	32	42	53	63	74	84	95	1.05	2.10	5.25	10.50
93	2	3	5	6	8	16	31	47	62	78	93	1.09	1.24	1.40	1.55	3.10	7.75	15.50
MONTHS.																		
1	1	1	2	2	3	5	10	15	20	25	30	35	40	45	50	1.00	2.50	5.00
2	1	2	3	4	5	10	20	30	40	50	60	70	80	90	1.00	2.00	5.00	10.00
3	2	3	5	6	8	15	30	45	60	75	90	1.05	1.20	1.35	1.50	3.00	7.50	15.00
4	2	4	6	8	10	20	40	60	80	1.00	1.20	1.40	1.60	1.80	2.00	4.00	10.00	20.00
5	3	5	8	10	13	25	50	75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	5.00	12.50	25.00
6	3	6	9	12	15	30	60	90	1.20	1.50	1.80	2.10	2.40	2.70	3.00	6.00	15.00	30.00
7	4	7	11	14	18	35	70	1.05	1.40	1.75	2.10	2.45	2.80	3.15	3.50	7.00	17.50	35.00
8	4	8	12	16	20	40	80	1.20	1.60	2.00	2.40	2.80	3.20	3.60	4.00	8.00	20.00	40.00
9	5	9	14	18	23	45	90	1.35	1.80	2.25	2.70	3.15	3.60	4.05	4.50	9.00	22.50	45.00
10	5	10	15	20	25	50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	10.00	25.00	50.00
11	6	11	17	22	28	55	1.10	1.65	2.20	2.75	3.30	3.85	4.40	4.95	5.50	11.00	27.50	55.00
12	6	12	18	24	30	60	1.20	1.80	2.40	3.00	3.60	4.20	4.80	5.40	6.00	12.00	30.00	60.00

Seven Per Cent. Interest Table.

Months \ Days	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	.01	.02	.03	.04	.05	.06	.07	.08	.09	.10	.11	.12	.13	.14	.15	.16	.17	.18	.19	.20	.21	.22	.23	.24	.25	.26	.27	.28	.29	.30	.31
2	.02	.04	.06	.08	.10	.12	.14	.16	.18	.20	.22	.24	.26	.28	.30	.32	.34	.36	.38	.40	.42	.44	.46	.48	.50	.52	.54	.56	.58	.60	.62
3	.03	.06	.09	.12	.15	.18	.21	.24	.27	.30	.33	.36	.39	.42	.45	.48	.51	.54	.57	.60	.63	.66	.69	.72	.75	.78	.81	.84	.87	.90	.93
4	.04	.08	.12	.16	.20	.24	.28	.32	.36	.40	.44	.48	.52	.56	.60	.64	.68	.72	.76	.80	.84	.88	.92	.96	1.00	1.04	1.08	1.12	1.16	1.20	1.24
5	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55
6	.06	.12	.18	.24	.30	.36	.42	.48	.54	.60	.66	.72	.78	.84	.90	.96	1.02	1.08	1.14	1.20	1.26	1.32	1.38	1.44	1.50	1.56	1.62	1.68	1.74	1.80	1.86
7	.07	.14	.21	.28	.35	.42	.49	.56	.63	.70	.77	.84	.91	.98	1.05	1.12	1.19	1.26	1.33	1.40	1.47	1.54	1.61	1.68	1.75	1.82	1.89	1.96	2.03	2.10	2.17
8	.08	.16	.24	.32	.40	.48	.56	.64	.72	.80	.88	.96	1.04	1.12	1.20	1.28	1.36	1.44	1.52	1.60	1.68	1.76	1.84	1.92	2.00	2.08	2.16	2.24	2.32	2.40	2.48
9	.09	.18	.27	.36	.45	.54	.63	.72	.81	.90	.99	1.08	1.17	1.26	1.35	1.44	1.53	1.62	1.71	1.80	1.89	1.98	2.07	2.16	2.25	2.34	2.43	2.52	2.61	2.70	2.79
10	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	1.90	2.00	2.10	2.20	2.30	2.40	2.50	2.60	2.70	2.80	2.90	3.00	3.10
11	.11	.22	.33	.44	.55	.66	.77	.88	.99	1.10	1.21	1.32	1.43	1.54	1.65	1.76	1.87	1.98	2.09	2.20	2.31	2.42	2.53	2.64	2.75	2.86	2.97	3.08	3.19	3.30	3.41
12	.12	.24	.36	.48	.60	.72	.84	.96	1.08	1.20	1.32	1.44	1.56	1.68	1.80	1.92	2.04	2.16	2.28	2.40	2.52	2.64	2.76	2.88	3.00	3.12	3.24	3.36	3.48	3.60	3.72

Months \ Days	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	.01	.02	.03	.04	.05	.06	.07	.08	.09	.10	.11	.12	.13	.14	.15	.16	.17	.18	.19	.20	.21	.22	.23	.24	.25	.26	.27	.28	.29	.30	.31
2	.02	.04	.06	.08	.10	.12	.14	.16	.18	.20	.22	.24	.26	.28	.30	.32	.34	.36	.38	.40	.42	.44	.46	.48	.50	.52	.54	.56	.58	.60	.62
3	.03	.06	.09	.12	.15	.18	.21	.24	.27	.30	.33	.36	.39	.42	.45	.48	.51	.54	.57	.60	.63	.66	.69	.72	.75	.78	.81	.84	.87	.90	.93
4	.04	.08	.12	.16	.20	.24	.28	.32	.36	.40	.44	.48	.52	.56	.60	.64	.68	.72	.76	.80	.84	.88	.92	.96	1.00	1.04	1.08	1.12	1.16	1.20	1.24
5	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55
6	.06	.12	.18	.24	.30	.36	.42	.48	.54	.60	.66	.72	.78	.84	.90	.96	1.02	1.08	1.14	1.20	1.26	1.32	1.38	1.44	1.50	1.56	1.62	1.68	1.74	1.80	1.86
7	.07	.14	.21	.28	.35	.42	.49	.56	.63	.70	.77	.84	.91	.98	1.05	1.12	1.19	1.26	1.33	1.40	1.47	1.54	1.61	1.68	1.75	1.82	1.89	1.96	2.03	2.10	2.17
8	.08	.16	.24	.32	.40	.48	.56	.64	.72	.80	.88	.96	1.04	1.12	1.20	1.28	1.36	1.44	1.52	1.60	1.68	1.76	1.84	1.92	2.00	2.08	2.16	2.24	2.32	2.40	2.48
9	.09	.18	.27	.36	.45	.54	.63	.72	.81	.90	.99	1.08	1.17	1.26	1.35	1.44	1.53	1.62	1.71	1.80	1.89	1.98	2.07	2.16	2.25	2.34	2.43	2.52	2.61	2.70	2.79
10	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	1.90	2.00	2.10	2.20	2.30	2.40	2.50	2.60	2.70	2.80	2.90	3.00	3.10
11	.11	.22	.33	.44	.55	.66	.77	.88	.99	1.10	1.21	1.32	1.43	1.54	1.65	1.76	1.87	1.98	2.09	2.20	2.31	2.42	2.53	2.64	2.75	2.86	2.97	3.08	3.19	3.30	3.41
12	.12	.24	.36	.48	.60	.72	.84	.96	1.08	1.20	1.32	1.44	1.56	1.68	1.80	1.92	2.04	2.16	2.28	2.40	2.52	2.64	2.76	2.88	3.00	3.12	3.24	3.36	3.48	3.60	3.72

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Eight Per Cent. Interest Table.

TIME.	$1	$2	$3	$4	$5	$6	$7	$8	$9	$10	$100	$1,000
1 Day	0	0	0	0	0	0	0	0	0	0	2	22
2 "	0	0	0	0	0	0	0	0	0	0	4	44
3 "	0	0	0	0	0	0	0	1	1	1	7	67
4 "	0	0	0	0	0	1	1	1	1	1	9	89
5 "	0	0	0	0	1	1	1	1	1	1	11	1.11
6 "	0	0	0	1	1	1	1	1	1	1	13	1.33
7 "	0	0	0	1	1	1	1	1	1	2	16	1.56
8 "	0	0	1	1	1	1	1	1	2	2	18	1.78
9 "	0	0	1	1	1	1	1	2	2	2	20	2.00
10 "	0	0	1	1	1	1	2	2	2	2	22	2.22
11 "	0	0	1	1	1	2	2	2	2	2	24	2.44
12 "	0	1	1	1	1	2	2	2	2	3	27	2.67
13 "	0	1	1	1	1	2	2	2	3	3	29	2.89
14 "	0	1	1	1	2	2	2	2	3	3	31	3.11
15 "	0	1	1	1	2	2	2	3	3	3	33	3.33
16 "	0	1	1	1	2	2	2	3	3	4	36	3.56
17 "	0	1	1	2	2	2	3	3	3	4	38	3.78
18 "	0	1	1	2	2	2	3	3	4	4	40	4.00
19 "	0	1	1	2	2	3	3	3	4	4	42	4.22
20 "	0	1	1	2	2	3	3	4	4	4	44	4.44
21 "	0	1	1	2	2	3	3	4	4	5	47	4.67
22 "	0	1	1	2	2	3	3	4	4	5	49	4.89
23 "	1	1	2	2	3	3	4	4	5	5	51	5.11
24 "	1	1	2	2	3	3	4	4	5	5	53	5.33
25 "	1	1	2	2	3	3	4	4	5	6	56	5.56
26 "	1	1	2	2	3	3	4	5	5	6	58	5.78
27 "	1	1	2	2	3	4	4	5	5	6	60	6.00
28 "	1	1	2	2	3	4	4	5	6	6	62	6.22
29 "	1	1	2	3	3	4	5	5	6	6	64	6.44
1 Mon.	1	1	2	3	3	4	5	5	6	7	67	6.67
2 "	1	3	4	5	7	8	9	11	12	13	13.33	13.33
3 "	2	4	6	8	10	12	14	16	18	20	2.00	20.00
4 "	3	5	8	11	13	16	19	21	24	27	2.67	26.67
5 "	3	7	10	13	17	20	23	27	30	33	3.33	33.33
6 "	4	8	12	16	20	24	28	32	36	40	4.00	40.00
7 "	5	9	14	19	23	28	33	37	42	47	4.67	46.67
8 "	5	11	16	21	27	32	37	43	48	53	5.33	53.33
9 "	6	12	18	24	30	36	42	48	54	60	6.00	60.00
10 "	7	13	20	27	33	40	47	53	60	67	6.67	66.67
11 "	7	15	22	29	37	44	51	59	66	73	7.33	73.33
1 Year	8	16	24	32	40	48	56	64	72	80	8.00	80.00

How Grain Will Shrink.

Farmers rarely gain by keeping their grain after it is fit for market, when the shrinkage is taken into account. Wheat, from the time it is threshed, will shrink two quarts to the bushel or six per cent. in six months, in the most favorable

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Seven Per Cent. Interest Table.

DAYS.	$1	$2	$3	$4	$5	$10	$20	$30	$40	$50	$60	$70	$80	$90	$100	$200	$500	$1,000
1	0	0	0	0	0	0	0	1	1	1	1	1	2	2	2	4	10	19
2	0	0	0	0	0	0	1	1	1	2	2	3	3	4	4	8	19	39
3	0	0	0	0	0	1	1	2	2	3	3	4	5	5	6	12	29	58
4	0	0	0	0	0	1	2	2	3	4	5	5	6	7	8	16	39	78
5	0	0	0	0	0	1	2	3	4	5	6	7	8	9	10	19	49	97
6	0	0	0	0	1	1	2	4	5	6	7	8	9	11	12	23	58	1.17
7	0	0	0	1	1	1	3	4	5	7	8	10	11	12	14	27	68	1.36
8	0	0	0	1	1	2	3	5	6	8	9	11	12	14	16	31	78	1.56
9	0	0	0	1	1	2	4	5	7	9	10	12	14	16	18	35	88	1.75
10	0	0	0	1	1	2	4	6	8	10	12	14	16	18	19	39	97	1.94
15	0	0	1	1	1	3	6	9	12	15	18	20	23	26	29	58	1.46	2.92
20	0	1	1	2	2	4	8	12	16	19	23	27	31	35	39	78	1.94	3.89
25	0	1	1	2	2	5	10	15	19	24	29	34	39	44	49	97	2.43	4.86
30	1	1	2	2	3	7	12	18	23	29	35	41	47	53	58	1.17	2.92	5.83
33	1	1	2	2	3	7	13	20	25	32	39	45	52	58	64	1.29	3.21	6.41
63	1	2	4	5	6	13	24	37	49	61	74	86	98	1.10	1.23	2.45	6.12	12.25
93	2	4	5	7	9	19	36	55	72	91	1.09	1.27	1.45	1.63	1.81	3.62	9.04	18.06
MONTHS.																		
1	1	1	2	3	6	12	18	23	29	35	41	47	53	58	1.17	2.92	5.83	
2	1	2	4	5	7	12	23	35	47	58	70	82	93	1.05	1.17	2.33	5.83	11.67
3	2	2	4	5	7	9	18	35	53	70	88	1.05	1.23	1.40	1.58	1.75	3.50	8.75
4	2	2	5	7	9	12	23	47	70	93	1.17	1.40	1.63	1.87	2.10	2.33	4.67	11.67
5	2	3	6	9	12	15	29	58	88	1.17	1.46	1.75	2.04	2.33	2.63	2.92	5.83	14.58
6	3	4	7	11	14	18	35	70	1.05	1.40	1.75	2.10	2.45	2.80	3.15	3.50	7.00	17.50
7	4	4	8	12	16	20	41	82	1.23	1.63	2.04	2.45	2.86	3.27	3.68	4.08	8.17	20.42
8	4	5	9	14	19	23	47	93	1.40	1.87	2.33	2.80	3.27	3.73	4.20	4.67	9.33	23.33
9	5	5	11	16	21	26	53	1.05	1.58	2.10	2.63	3.15	3.68	4.20	4.73	5.25	10.50	26.25
10	6	6	12	18	23	29	58	1.17	1.75	2.33	2.92	3.50	4.08	4.67	5.25	5.83	11.67	29.17
11	6	6	13	19	26	32	64	1.28	1.93	2.57	3.21	3.85	4.49	5.13	5.78	6.42	12.83	32.08
12	7	7	14	21	28	35	70	1.40	2.10	2.80	3.50	4.20	4.90	5.60	6.30	7.00	14.00	35.00

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Eight Per Cent. Interest Table.

TIME.	$1	$2	$3	$4	$5	$6	$7	$8	$9	$10	$100	$1,000
1 Day	0	0	0	0	0	0	0	0	0	0	2	22
2 "	0	0	0	0	0	0	0	0	0	0	4	44
3 "	0	0	0	0	0	0	0	1	1	1	7	67
4 "	0	0	0	0	0	1	1	1	1	1	9	89
5 "	0	0	0	0	1	1	1	1	1	1	11	1.11
6 "	0	0	0	1	1	1	1	1	1	1	13	1.33
7 "	0	0	0	1	1	1	1	1	1	2	16	1.56
8 "	0	0	1	1	1	1	1	1	2	2	18	1.78
9 "	0	0	1	1	1	1	1	2	2	2	20	2.00
10 "	0	0	1	1	1	1	2	2	2	2	22	2.22
11 "	0	0	1	1	1	1	2	2	2	2	24	2.44
12 "	0	1	1	1	1	2	2	2	2	3	27	2.67
13 "	0	1	1	1	1	2	2	2	3	3	29	2.89
14 "	0	1	1	1	2	2	2	2	3	3	31	3.11
15 "	0	1	1	1	2	2	2	3	3	3	33	3.33
16 "	0	1	1	1	2	2	2	3	3	4	36	3.56
17 "	0	1	1	2	2	2	3	3	3	4	38	3.78
18 "	0	1	1	2	2	2	3	3	4	4	40	4.00
19 "	0	1	1	2	2	3	3	3	4	4	42	4.22
20 "	0	1	1	2	2	3	3	4	4	4	44	4.44
21 "	0	1	1	2	2	3	3	4	4	5	47	4.67
22 "	0	1	1	2	2	3	3	4	4	5	49	4.89
23 "	1	1	2	2	3	3	4	4	5	5	51	5.11
24 "	1	1	2	2	3	3	4	4	5	5	53	5.33
25 "	1	1	2	2	3	3	4	4	5	6	56	5.56
26 "	1	1	2	2	3	3	4	5	5	6	58	5.78
27 "	1	1	2	2	3	4	4	5	5	6	60	6.00
28 "	1	1	2	2	3	4	4	5	6	6	62	6.22
29 "	1	1	2	3	3	4	5	5	6	6	64	6.44
1 Mon.....	1	1	2	3	3	4	5	5	6	7	67	6.67
2 "	1	3	4	5	7	8	9	11	12	13	1.33	13.33
3 "	2	4	6	8	10	12	14	16	18	20	2.00	20.00
4 "	3	5	8	11	13	16	19	21	24	27	2.67	26.67
5 "	3	7	10	13	17	20	23	27	30	33	3.33	33.33
6 "	4	8	12	16	20	24	28	32	36	40	4.00	40.00
7 "	5	9	14	19	23	28	33	37	42	47	4.67	46.67
8 "	5	11	16	21	27	32	37	43	48	53	5.33	53.33
9 "	6	12	18	24	30	36	42	48	54	60	6.00	60.00
10 "	7	13	20	27	33	40	47	53	60	67	6.67	66.67
11 "	7	15	22	29	37	44	51	59	66	73	7.33	73.33
1 Year.....	8	16	24	32	40	48	56	64	72	80	8.00	80.00

How Grain Will Shrink.

Farmers rarely gain by keeping their grain after it is fit for market, when the shrinkage is taken into account. Wheat, from the time it is threshed, will shrink two quarts to the bushel or six per cent. in six months, in the most favorable

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circumstances. Hence, it follows that ninty-four cents a bushel for wheat when first threshed in August, is as good, taking into account the shrinkage alone, as one dollar in the following February.

Corn shrinks much more from the time it is first husked. One hundred bushels of ears, as they come from the field in November, will be reduced to not far from eighty. So that forty cents a bushel for corn in the ear, as it comes from the field, is as good as fifty in March, shrinkage only being taken into the account.

In the case of potatoes—taking those that rot and are otherwise lost—together with the shrinkage, there is but little doubt that between October and June, the loss to the owner who holds them is not less than thirty-three per cent.

This estimate is taken on the basis of interest at 7 per cent., and takes no account of loss by vermin.

Cogwheel Railways of the World.

The following are the only cogwheel lines in existence to-day:

Location.	When built.	Ascent.
Mount Washington	1866–'69..	1 foot in 2.67 feet.
Vitznau-Riga	1870..	1 " 4 "
Kahlenberg-Vienna	1872..	1 " 10 "
Schwanenberg-Pesth	1872..	1 " 10 "
Arth-Riga	1874..	1 " 4.8 "
Rio de Janeiro	1882..	1 " 6.6 "
Drachenfels to the Rhine	1883..	1 " 4.5 "
Pike's Peak	1890..	1 " 4 "

The Human Skin.

The human skin is composed of three layers, averaging in all between one-twelfth and one-eighth of an inch in thickness, and in extreme cases as much as one-fourth of an inch in thickness. The skin area of the average adult is therefore estimated at 2,000 square inches. The atmospheric pressure being about fourteen pounds to the square inch, a person of medium size is daily and hourly subjected to a pressure of 28,000 pounds. Each square inch of the skin contains 3,500 sweating tubes, or perspiration pores, each of which may be likened to a little drain-tile one-fourth of an inch in length, making an aggregate length of the entire surface of the body of 201,166 feet, or a tile ditch for draining the body almost forty miles long.

The Manufacture of Pins.

In former days it took from twelve to fourteen men to make a pin—that is, there were from twelve to fourteen processes in the manufacture, each of which was performed separately, and by a different hand. Now a single machine turns out a stream of pins at the rate of 200 a minute, all ready to be finished. The wire is prepared by drawing it from a large coil on a revolving drum through a hole the size

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of the pin wanted. The coil, wound on another drum, is then suspended at the end of a machine. The wire passes into the machine through a hole and a series of iron pegs, which keep it in place and straighten it. A pair of pincers, moving backward and forward, pull it along and thrust the end through a hole in a small iron plate, on the farther side of which a little hammer beats a tattoo on the head of the wire, and so forms the head of the pin. Next a knife descends and cuts off the pin to the proper length. The pin falls into a groove or slot, through which the heads cannot pass, and is thus suspended so that the lower or point end is exposed to the action of a cylindrical file, which has both a revolving and lateral motion. By this time the pin has a smooth, sharp point, and is complete so far as shape is concerned. These processes are all so rapid that the pins fall in a constant stream from the end of the machine. They are next put into revolving barrels, which are turned until the pins are cleaned. Next they are boiled in acid, in which powdered tin has been put, and they emerge white and shining. They are then dried in sawdust, again shaken in barrels, and dusted. The machine which sticks the pins upon the papers on which they are sold is very ingenious and simple in its details, but too complicated for brief description. The machine crimps the paper and holds it while the pins are brought up in long rows, a whole row being stuck on at one push of a lever.

Weights of Groceries.

Ten common-sized eggs weigh one pound.

Soft butter the size of an egg weighs one ounce.

One pint of coffee A sugar weighs twelve ounces.

One quart of sifted flour (well heaped), one pound.

One pint of best brown sugar weighs thirteen ounces.

Two tea cups (well heaped) of coffee A sugar weigh one pound.

Two tea-cups (level) of granulated sugar weigh one pound.

Two tea-cups soft butter (well packed) weigh one pound.

One and one-third pints of powdered sugar weigh one pound.

Two tablespoons of powdered sugar or flour weigh one ounce.

One tablespoon (well rounded) of soft butter weighs one ounce.

One pint (heaped) of granulated sugar weighs fourteen ounces.

Four teaspoons are equal to one tablespoon.

Two and one-half tea-cups (level) of the best brown sugar weigh one pound.

Two and three-fourths tea-cups (level) of powdered sugar weigh one pound.

One tablespoonful (well heaped) of granulated, or best brown sugar, equals one ounce.

One generous pint of liquid, or one pint of finely chopped meat, packed solidly, weighs one pound.

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Teaspoons vary in size, and the new ones hold about twice as much as an old-fashioned spoon of thirty years ago. A medium-sized teaspoon contains about a dram.

Origin of Some Common Phrases.

"Pow wow" comes from the Indians.

The word "boss" comes from the low Dutch, and means master.

"Kidnap" comes from the napping or stealing of a kid, gipsy, or child.

"Calaboose," a prison; "picaroon," a pirate; "palaver," to talk—are all Spanish.

"A rum chap" is simply a gipsy lad; it has no relation to the product of the still.

"Dude," meaning a dandy, has no appreciable derivation. Like Topsy, it growed.

"Pal" is a brother, and "conk," for nose, comes from the spouting fountain, the concha of the Romans.

"Demijohn" comes from the Arabic damaghan, itself taken from the Persian glass-making town of Damaghan.

The common word "mash" is from a beautiful gipsy word, mafada, which means "to charm by the eyes."

The good dictionary word "vamp" was at first a slang word, being rubbing up of old hats and shoes. Now, from being a cobbler's word, it has become a classic, and we talk of revamping the language.

A "tinker's dam" has nothing to do with swearing. It is merely the dam or stoppage, made of flour and water, with which the tinker stops the gap he is mending until the tin or the pewter he is using has cooled.

The Niagara Cantilever Bridge.

A cantilever bridge consists of two inverted trussed beams, each balanced on a pier, one part extending over the river and the other to the shore, where it is firmly anchored in solid, heavy masonry. The ends extending over the river toward each other from the opposite piers are joined by a short truss, in such a manner as to permit expansion and contraction, and yet be proof against vertical or lateral pressure. Such a bridge sustains scarcely any strain in the center of the span. Each half of the entire bridge is self-balanced on its pier; and when a long, heavy train is on it the part of the train on one side of the pier is balanced, as on a "teeter," by the part on the other side of the pier—in front or behind. This bridge is the first of the sort ever constructed. It spans Niagara River where the distance from bluff to bluff is 869 feet. From the roadbed to the water is 245 feet. It is built of steel, is double tracked, and is built to carry upon each track, at the same time, a freight train of the heaviest weight, extending the entire length of the bridge, headed by two consolidation engines, while enduring a side pressure of thirty pounds per square foot, such as would be exerted by a wind of seventy-five miles per hour. This heavy steel structure rests on two

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pairs of steel towers or piers, rising 130 feet above masonry of the most substantial character. In the construction of the latter the excavations were carried down until solid rock was reached, when blocks of Bitou Coignet twenty feet wide, forty-five feet long, and ten feet thick were put in, forming one single mass capable of standing a pressure almost equal to the best Quincy granite. Upon these Bitou Coignet blocks, four in number, rests masonry of the most substantial character, carried up fifty feet above the surface of the water, where it receives the pressure of the four steel towers before mentioned, sustaining a pressure of 800 tons each. This weight is so distributed that the rock on which it rests sustains a pressure no greater than twenty-five pounds per square inch.

Famous Ancient Amphitheaters.

PLACE.	Length: feet.....	Breadth: feet.....	Length of arena; feet.	Breadth of arena; feet.	Height: feet.....	No. of Spectators...
Coliseum, Rome.....	615	510	281	176	164	100,000
Nimes.....	437	332	....	....	....	23,000
Arles.....	459	338	316	130	55	25,000
Pozzuoli.....	480	382	336	138	....	25,000
Verona.....	513	410	249	147	100	22,000
Pompeii.....	430	335	198	107	....	20,000
Poitiers.....	426	375	264	210	....	20,000
Vienne.....	508	436	....	....	....	35,000
Pola.....	336	292	....	....	....	15,000

The Black Hole of Calcutta.

A small, close dungeon, 18 feet square, in Fort William, Calcutta, in which was locked up over night a British garrison of one hundred and forty-six men, upon their capture by Surajah Dowlah, on June 20, 1756. In consequence of the intense oppressiveness caused by so small an opening for air but twenty-three men survived the night, and the suffering, from thirst and foul air, of those who died was pitiful. It is now used as a warehouse, and a beautiful monument has been erected before its gate in memory of those who perished.

Historical Massacres.

Of all the Carthagenians in Sicily, 397 before Christ. Two thousand Tyrians crucified, and 8,000 put to the sword, for not surrendering Tyre to Alexander, 331 B. C. The Jews of Antioch fall upon the other inhabitants, and massacre 100,000, for refusing to surrender their arms to Demetrius Nicanor, tyrant of Syria, 154. A dreadful slaughter of the Teutones and Ambrones, near Aix, by Marius the Roman general, 200,000 being left dead on the spot, 102. The Romans through-

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out Asia, women and children not excepted, cruelly massacred in one day, by order of Mithridates, King of Pontus, 89. A great number of Roman senators massacred by Cinna, Marius, and Sertorius, and several of the Patricians despatched themselves to avoid their horrid butcheries, 86. Again, under Sylla, and Catiline his minister of vengeance, 79 and 82. At Prænestef Octavianus Cæsar ordered 300 Roman senators, and other persons of distinction, to be sacrificed to the manes of Julius Cæsar, 41. At the destruction of Jerusalem, 1,000,000 Jews were put to the sword, A. D. 70. Cassius, a Roman general, under the Emperor M. Aurelius, put to death 37,000 of the inhabitants of Seleucia, 197. At Alexandria, of many thousand citizens, by order of Antoninus, 213. The Emperor Probus put to death 700,000 of the inhabitants upon his reduction of Gaul, 277. Of eighty Christian fathers, by order of the Emperor Gratian, at Nicomedia; they were put into a ship which was set on fire and driven out to sea, 370. Of Thessalonica, when upward of 7,000 persons, invited into the circus, were put to the sword by order of Theodosius, 390. Belisarius put to death above 30,000 citizens of Constantinople for a revolt, on account of two rapacious minist rs set over them by Justinian, 532. Of the Latins, by Andronicus, 1184 (at Constantinople). The Sicilians massacre the French throughout the whole island, without distinction of sex or age, on Easter Day, the first bell for vespers being the signal; this horrid affair is known in history by the name of the Sicilian Vespers, 1282. At Paris, 1418. Of the Swedish nobility, at a feast, by order of Christian II, 1520. Of 70,000 Huguenots, or French protestants, throughout .e kingdom of France, attended with circumstances of the most horrid treachery and cruelty; it began at Paris, in the night of the festival of St. Bartholomew, August 25, 1572, by secret orders from Charles IX., King of France, at the instigation of the queen dowager, Catherine de Medicis, his mother; it is styled in history, the massacre of St. Bartholomew. Of the Christians, in Croatia, by the Turks, when 65,000 were slain, 1592. Of a great number of protestants at Thorn, who were put to death under a pretended legal sentence of the Chancellor of Poland, for being concerned in a tumult occasioned by a popish procession, 1724. At Batavia, where 12,000 Chinese were killed by the natives, October, 1740. In England, 300 English nobles, by Hengist, A. D. 475. Of the monks of Bangor 1,200; by Ethelfrid, King of Northumb rland, 580. Of the Danes, in the southern counties of England, in the night of November 13, 1002 and the 23d Ethelred II.; at London it was the most bloody, the churches being no sanctuary; among the rest, Gunilda, sister of Swein, King of Denmark, left in hostage for the performance of a treaty but newly concluded. Of the Jews, some few pressing into Westminster Hall, at Richard I.'s coronation, were put to death by the people, and a false alarm being given that the king had ordered a general massacre of them, the people in many parts of England, from an aversion to them, slew all they met; in York 500, who had

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taken shelter in the castle, killed themselves rather than fall into the hands of the people, 1189. Of the English, by the Dutch at Amboyna, 1624. Of the protestants in Ireland, when 40,000 were killed, 1641. Of the Macdonalds at Glencoe, in Scotland, for not surrendering in time according to King William's proclamation, though without the king's knowledge, 1692. Several dreadful massacres in France during the Revolution, from 1789 to 1794.

China.

The Chinese Empire was founded 2,100 before Christ; but its history does not extend above the Greek Olympiads; the first dynasty, when Prince Yu reigned, 2,207 before Christ; before this time the Chinese chronology is imperfect; by some Fohi is supposed to be the founder of the empire, and its first sovereign 2,247 before Christ; literature there revived, and the art of printing practised 206 before Christ; the first history of China was published by Sematsin 97 before Christ; first grant the island of Macoa, at the entrance of the river of Canton, to the Portuguese 1586; the country conquered by the Eastern Tartars, when the emperor and his family killed themselves, 1635; an attempt to establish Christianity there by the Jesuits 1692; the missionaries expelled 1724. It is fifteen times larger than Great Britain and Ireland; though not half the size of Europe.

Turpentine Baths for Rheumatic Pains.

Make a concentrated emulsion of black soap, 200 grammes, add thereto 100 or 120 grammes of turpentine, and shake the whole vigorously until a beautiful creamy emulsion is obtained. For a bath take half of this mixture, which possesses an agreeable pine odor. At the end of five minutes there is a diminution of the pains, and a favorable warmth throughout the whole body. After remaining in the bath a quarter of an hour, the patient should get into bed, when a prickling sensation, not disagreeable, however, is felt over the entire body, then, after a nap, he awakens, with a marked diminution in the rheumatic pains.

Remarkable Occurrences.

Abstinence, remarkable instance of, in Ann Moor, of Tutbury, Staffordshire, who lived twenty months without food, November, 1808.

Ball of fire fell during a thunder-storm upon a public house in Wapping, which instantaneously set fire to it and the house adjoining, July 4, 1803.

Bog of Castleguard or Poulenard, in the County of Louth, in Ireland, December 20, 1793, moved in a body, from its original situation, to the distance of some miles, crossing the high road toward Doon, covering every thing in its way, at least twenty feet in many parts, and throwing down several bridges, houses, etc.

Borge, a seat near Frederickstadt, in Norway, sunk into an

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abyss 100 fathoms deep, which instantly became a lake, and drowned fourteen persons, with 240 head of cattle, 1702.

Bosia, the village of, at Piedmont, near Turin, suddenly sunk, together with 200 of its inhabitants, April 8, 1679.

Brixton, the ground at, in Norfolk, for a very considerable extent, sunk nearly thirty feet, June, 1788.

Bulkeley, a hill at, near Chester, which had trees on it of a considerable height, sunk down, July 8, 1657, into a pit of water so very deep, that the tops of the trees were not to be seen.

Comets, the principal, have appeared in England, in 1680, 1582, 1758, and 1808.

Conjunction of the sun and moon, and all the planets, took place, 1186.

Darkness, an unaccountable, at noonday, in England, so that no person could see to read, January 12, 1679. A similar darkness at Quebec, September 16, 1785.

Fog, so remarkable in London, that several chairmen mistook their way in St. James' Park and fell with their fares into the canal; and considerable damage was done on the Thames, January 1, 1729.

Globe of fire passed over the island of Funen, in Denmark, in open day, September, 1807. A similar phenomenon was observed at the same time in Jutland.

Gulen River, in Norway, buried itself under ground, 1344, but burst out soon after, and destroyed 250 persons, with several churches, houses, etc.

Hackney, Alice, who had been buried 175 years, was accidentally dug up in the church of St. Mary Hill, London; the skin was whole, and the joints of the arms pliable, 1494.

Iris, or rainbow, a lunar, appeared near Wakefield in Yorkshire, from half past nine till half past ten at night, January 17, 1806; in Baltimore in 1807.

Lake of Harantoreen, in the County of Kerry, Ireland, a mile in circuit, sunk into the ground, with all its fish, March 25, 1792.

Land, a piece of, in Finland, 4,000 square ells in extent, sunk fifteen fathoms, but most of the inhabitants escaped, February, 1793.

Locusts, the country of Palestine infested with such swarms of, that they darkened the air, and after devouring the fruits of the earth they died, and their intolerable stench caused a pestilential fever, 406. A similar circumstance occurred in France, 873.

Lotea, a city of Murcia, in Spain, destroyed by the bursting of a reservoir, which inundated more than twenty leagues, and killed 1,000 persons, besides cattle, April 30, 1802.

Mammoth, a complete, discovered on the borders of the Frozen Ocean, 1799.

Mercury passed over the sun's disk, visible to the naked eye from twelve to two o'clock, at London, November 25, 1769.

Meteor, an astonishingly bright one, which lighted the atmosphere for almost a minute, so as to render legible the

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writings on the signs in London, at half past eight o'clock in the evening, November 13, 1803.

Oxenhall, near Darlington, the earth here suddenly rose to an eminence resembling a mountain; remained so several hours; then sunk in as suddenly with a horrible noise, leaving a deep chasm, A. D. 1179.

Parrot, an extraordinary one, belonging to Colonel Kelly, died at the age of 30, at his house in Piccadilly, October 9, 1802. This bird appeared to possess in some degree the faculty of reason, for when it made a mistake in either words or tune of the numberless songs it was master of, it would correct itself and begin the song again.

Plantation, a large, with all the buildings, destroyed, by the land removing from its former site to another, and covering everything in its way, October 16, 1784, in St. Joseph's parish, Barbadoes.

Portland Isle had 100 yards of its north end sunk into the sea, December 20, 1735.

Scarborough Cliff sunk, and the Spa removed, December 18, 1737.

Sea at Teignmouth and other places on the coast of Devonshire, rose and fell to the height of two feet, several times in the space of ten minutes, August 10, 1802.

Skeleton of a large animal, supposed to be of the mammoth kind, discovered, by the falling of Malton Cliff, near Harwich, 1803. One of the teeth is said to have weighed twelve pounds.

Skeleton, a human, dug up in the Isle of Wight, after having been buried, according to conjecture, 600 years, 1807.

Snakes, a prodigious quantity of, formed themselves into two bands on a plain near Tournay, in Flanders, and fought with such fury, that one band was almost destroyed, and the peasants killed the other by sticks and fire, 1059.

Tide ebbed and flowed three times in one hour, at Lyme, in Dorsetshire, May 31, 1582; the tide was suddenly and violently agitated on the south coast of England, so as to rise and fall above two feet in a few minutes, several times, November 1, 1755, during the earthquake at Lisbon; four times in an hour, at Whitby, July 17, 1761; damages on the coast of Essex, and destroyed the sea walls on its eastern coast, February 2, 1791; at Plymouth where the tide rose two feet perpendicular in nine minutes, and retired as rapidly; and this it did three times in less than one hour, October 30, 1795; the tide did great damage in several parts of England, 1808.

Toad, a live, found in a block of stone, at Newark, April 15, 1806.

Mount Vesuvius threw out such a quantity of flame and smoke, that the air was darkened, and the cities of Pompeii and Herculaneum were overwhelmed by the burning lava, A. D. 79. (Herculaneum was discovered in 1737; and several curiosities have been dug out of it at various times since; but every thing combustible had the marks of being burnt by fire).

Another fatal eruption, when 4,000 persons were destroyed, and great part of the neighboring country, 1632.

The most dreadful eruptions that had been known for a century past, happened in 1767 and 1795.

Volcano, in the Isle of Ferro, broke out, September 13, 1777, which threw out an immense quantity of red water, that discolored the sea for several leagues.

Woggis, near Lucerne, was swollowed up by an internal current, and totally lost, August 4, 1795.

A dreadful hail-storm in the Hay-market, and two or three adjoining streets, without the least appearance of hail in the rest of London; a fire-ball fell in Oxendon street, which tore up the pavement, June 9, 1803.

Historical Inundations.

The Thames destroyed a great number of the inhabitants of its banks, nine years after Christ; another which destroyed all the inhabitants in Ferne Island, seven miles south-west from Holy Island, 323: 5,000 people lost in Cheshire by an eruption, 353; another of the Dee which drowned forty families, 415; an inundation of the sea in Norfolk, Suffolk, and Essex, 575; an inundation at Edinburgh, which did great damage, 730; an inundation at Glasgow, which drowned above 400 families, 738; an inundation of the Tweed, which did immense damage, 836; an inundation of the Medway, 861; an inundation at Southampton, which destroyed many people, 935; an inundation of the Severn, which drowned abundance of cattle, 1046; the sea overflowed 4,000 acres of Earl Godwin's land, in Kent, since called Godwin Sands, 1100; a great part of Flanders overflowed by the sea, 1168; an inundation of the Thames for above six miles at Lambeth, 1243; another, since named the Dollert Sea, 1277; at Winchelsea 300 houses were overthrown by the sea, 1280; 120 laymen, and several priests, besides women were drowned by an inundation at Newcastle-upon-Tyne, 1339; at the Texel, which first raised the commerce of Amsterdam, 1400; the sea broke in at Dort, and drowned seventy-two villages and 100,000 people, and formed the Zuyder Sea, 1421; in February 1735, at Dagenham, and upon the coast of Essex, which carried away the sea walls, and drowned several thousand sheep and black cattle; in Spain, and did 3,000,000 livres damage, at Bilboa, April, 1762; at Naples, where it carried away a whole village, and drowned 200 of the inhabitants, November 10, 1773; in Spain, Navarre, September 1787, where 2,000 lost their lives all the buildings of several villages carried away by the currents from the mountains; a terrible inundation by the Liffey, in Ireland, which did very considerable damage in Dublin and its environs, November 12, 1787; at Kirkwald, in Scotland, by breaking the Dam-dykes, October 4, 1788, which nearly destroyed the town; almost throughout England by the melting of the snow, and the greater part of the bridges were either destroyed or damaged, February, 1795; at St. Domingo, which destroyed 1,400 persons, October, 1800; on the coast of Holland and Germany, November, 1801; in Dublin and parts adjacent, December 2 and 3, 1802; in various parts of England, 1808.

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Damages by Lightning.

A flash of lightning penetrated the theater at Venice during a representation; 600 people were in the house, several of whom were killed; it put out the candles, melted a lady's gold watch-case, the jewels in the ears of others, which were compositions, and split several diamonds, August, 1769.

First Things.

The first steamboat plied the Hudson in 1807.
The first sawmakers' anvil was brought to America in 1819.
The first use of a locomotive in this country was in 1829.
Kerosene was first used for lighting purposes in 1826.
The first horse railroad was built in 1826–7.
The first lucifer match was made in 1829.
The first iron steamship was built in 1830.
The first steel pen was made in 1830.
Omnibuses were introduced in New York in 1830.
Ships were first "copper-bottomed" in 1837.
Envelopes were first used in 1839.
Anæsthetics were discovered in 1844.
The first steel-plate was discovered in 1830.
The entire Hebrew Bible was printed in 1488.
Gold was first discovered in California in 1848.
Christianity was introduced into Japan in 1549.
First almanac printed by George Von Furback in 1460.
Percussion arms were used in the United States Army in 1830.
The first glass factory in the United States was built in 178[illegible].
The first complete sewing-machine was patented by Elias Howe, Jr. in 1846.
The first temperance society in this country was organized in Saratoga County, N. Y., in March, 1808.
The first daily newspaper appeared in 1702. The first newspaper printed in the United States was published in Boston on September 25, 1790.
The first telegraphic instrument was successfully operated by S. F. B. Morse, the inventor, in 1835, though its utility was not demonstrated to the world until 1842.
The first Union flag was unfurled on the 1st of January, 1776, over the camp at Cambridge. It had thirteen stripes of white and red, and retained the English cross in one corner.
When Captain Cook first visited Tahiti, the natives were using nails of wood, bone, shell, and stone. When they saw iron nails, they fancied them to be shoots of some very hard wood, and desirous of securing such a valuable commodity, they planted them in their gardens.
In 1750 the "shoe-black" came into vogue. The poet Gay, in his day, refers to the business, describing a mother as instructing her son in his calling.

Famines.

Famine which lasted seven years, 1708 before Christ; at Rome, when many people threw themselves into the Tiber, 440

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before Christ; in Britain, so that the inhabitants ate the barks of trees, 272 after Christ; one in Scotland, where thousands were starved, 306; in England and Wales, where 40,000 were starved, 310; all over Britain, 325; at Constantinople, 446; in Italy, where parents ate their children, 450; in Scotland, 576; all over England, Wales, and Scotland, 739; another in Wales, 747; in Wales and Scotland, 792; again in Scotland, 808; again in Scotland, when thousands were starved, 823; a severe one in Wales, 936; in Scotland, which lasted four years, 954; famines in England 864, 974, 976, 1005; in Scotland, which lasted two years, 1047; in England, 1050 and 1087; in England and France, from 1198 to 1195; in England, 1251, 1315, 1318, 1335, 1348; in England and France, called the dear summer, 1353; in England, 1389 and 1438, so great that bread was made of Fern roots; in 1565, two millions were expended on the importation of corn; one in 1748; another in 1798.

Historical Frosts.

The Mediterranean was frozen over, and the merchants passed with their merchandise in carts, in 1234; the Cattegat, or sea between Norway and Denmark, was frozen, and that from Oxslo, in Norway, they traveled on the ice to Jutland, in 1294; the sea between Norway and the promontory of Scagernit frozen over, and from Sweden to Gothland, 1296; the Baltic was covered with ice fourteen weeks, between the Danish and Swedish Islands, in 1306; the Baltic was passable for foot passengers and horsemen for six weeks, in 1323; the sea was frozen over, and passable from Stralsund to Denmark, in 1349; the Baltic was quite frozen over, from Pomerania to Denmark, in 1402; the whole sea between Gothland and Geland was frozen, and from Rostock to Gezoer, in 1408; the ice bore riding on from Lubee to Prussia, and the Baltic was covered with ice from Mecklenburg to Denmark, in 1423, 1426, and 1459. The sea between Constantinople and Iskodar was passable on ice, 1620; in 1785, which lasted one hundred and fifteen days; in 1788, which lasted only from November to January; 1789, when the Thames was crossed opposite the custom-house, the Tower, Execution Dock, Putney, Brentford, etc. It was general through Europe, particularly in Holland, at the same time; the most severe, on December 25, 1796, that had been felt in the memory of man. The winter of 1780 was very cold in New York. The Bay was frozen over, and wagons and artillery crossed to Staten Island. Again in the winter of 1821 the Bay was frozen over.

Ink Stains.

To remove ordinary ink stains from fabrics, fingers, or paper, the following treatment is recommended: In many cases lemon juice will prove efficacious. If this fails, try an aqueous solution of oxalic acid (one part to two parts of water), and rub well with a soft cloth. Or use a solution of chloride of tin (one part to three parts of water), or pure dilute muriatic acid

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(one part to ten parts water). Apply with a camel's hair brush, and then wash in cold water. Where the colors of the fabric are affected by the above treatment, moisten the spots with fresh milk, and cover with fine salt. This should be done before washing. If the fabric is fine and delicate, the stained portions may be dipped in melted tallow, and then pressed for some time between layers of warm pipe clay.

Discoveries and Settling of Countries.

Andreanoffsy Isles, between Asia and America, discovered 1760.
Angola settled by Portugal, 1482.
Anguilla, in the Carribees, first planted by England, 1650.
Antigua settled by the English, 1632.
Archangel, passage to, discovered, 1553.
Aruba Isle, planted by Holland, 1634.
Azores Isles discovered by Portugal, 1419.
Baffin's Bay discovered, 1623.
Bahama Isles discovered, 1629; taken possession of by the English, December, 1718.
Barbadoes discovered and planted, 1614.
Barbuda Isle first planted by England, 1628.
Barrington Isle, one of the Gallapagos, explored, June, 1793.
Batavia, in the Island of Java first fortified by Holland, 1618,
Bermuda Isles discovered, 1527; settled, 1612.
Boston, Mass., built, 1630.
Botany Bay settlement first sailed from England, March 21, 1787.
Bourbon (formerly Mascareen) Isle planted by France, 1672.
Brazil discovered, 1486; settled by the Spaniards, 1515; settled by Holland, 1624; taken from Holland by Portugal, 1654.
Britain discovered to be an island about 90.
Caledonia, in America, settled, 1699.
California discovered by Cortez, 1543.
Canada discovered by Cabot, 1499; explored by the French, 1508, 1524, and 1534; settled, 1540; Quebec built, 1608; taken first by England, 1628.
Canary Isles discovered, 1344, and granted Spain; explored, 1393.
Cape Blanco, on the coast of Africa, discovered, 1441.
Cape Breton discovered by the English, 1584; yielded to France, 1632; taken by England, 1745; restored, 1748; again taken and kept, 1758.
Cape de Verd Islands discovered, 1447.
Cape of Good Hope discovered, 1487; planted by Holland, 1651.
Cape Horn first sailed round, 1616.
Carolina discovered, 1497; planted, 1629.
Caribee Isles discovered, 1595.
Cat Isle, one of the Bahamas, the first discovery in America by Columbus, 1492.
Cayenne Isle first planted by France, 1635.
Ceylon, the Isle of, discovered, 1506.
Chatham Isle, one of the Gallapagos, explored, June, 1793.

Chili discovered by Spain, 1518; invaded by the Spaniards, 1540.
China first visited by the Portuguese, 1517; conquered by the Eastern Tartars, 1635.
Christopher's, St. Isle of, discovered, 1595; settled by the English, 1626.
Congou Kingdom discovered, 1482; settled by Portugal, 1486.
Crimea settled by Russia, 1784.
Cuba discovered, 1492; settled in 1511.
Curacoa settled by the Dutch, 1634.
Darien settled, 1700.
Davis' Straits discovered, 1586.
De la Plate, river, discovered, 1512.
Deseada Isle was discovered by Columbus, 1494.
Domingo, St. Isle of, discovered, 1492; city founded, 1494.
Dominica discovered by Columbus, November 3, 1493.
Easter Isle discovered, 1722.
East Indies discovered by the Portuguese, 1497; visited overland by some English, 1591; first Dutch voyage, 1595; first voyage of the English company, 1601; first from France, 1601; first voyage of the Danes, 1612.
Faulkland, Isles of, discovered, 1592.
Florida discovered by Cabot, 1500; settled in 1768.
Frobisher's Straits discovered, 1578.
Fox Island, in North Pacific Ocean, discovered, 1760.
Galapagos Isles discovered, 1700; explored by Captain James Colnett, 1793.
Georgia colony erected by General Oglethorpe, 1739.
Goree Isle, on the Guinea Coast, first planted by the Dutch, 1617.
Granada Isle settled by France, 1662.
Greenland was discovered in 1585; settled, 1721, 1731.
Gaudaloupe Isle discovered by Columbus, 1493; planted by France, 1635.
Guinea Coast discovered by the Portuguese, 1482; slave trade commenced here by Captain Hawkins, an Englishman, 1563.
Helena, St., discovered, 1502; first possessed by England, 1600; settled by the English, 1651.
Hood's Isle, one of the Galapages, in the Pacific Ocean, explored, June, 1793.
Hudson Bay discovered by Captain Hudson, 1607.
Iceland discovered by a Danish pirate in 860.
Jamaica discovered by Columbus, 1494; settled by the Spaniards, 1509.
Japan discovered, 1542; visited by the English, 1613.
Kamtschatka discovered by the Russians, 1739.
Ladrone Isles discovered, 1521.
Le Roach Island, near Faulkland's Island, discovered, 1657.
Louisiana, west of the Mississippi, discovered by the French, 1683; settled by them, 1718; ceded to the United States, 1801.
Madagascar discovered by the Portuguese, 1506.
Madeira, Island of, discovered, 1344 and 1418.
Magellen, Straits of, discovered, 1520.

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Marigalante Isle discovered, 1493.
Maryland planted by Lord Baltimore, at the expense of £40,000, 1633.
Maurities Isle discovered, 1598; settled in 1721.
Mexico conquered by the Spaniards under Cortez, 1519-21.
Montreal discovered, 1534; settled, 1629.
Montserrat, in the West Indies, discovered by Columbus, 1493; planted by England. 1632.
Nevis planted by England, 1628.
New Caledonia discovered, 1774.
New England planted by the Puritans, 1620.
Newfoundland discovered by Cabot, 1497; settled, 1614.
New Guinea, discovered, 1699.
New Holland discovered by the Dutch, 1627; settled by the English, 1787.
New Jersey planted by the Swedes, 1637.
New Spain, or Mexico, discovered, 1518.
New Zealand discovered, 1660; explored in 1769.
New Plymouth built and settled, 1620.
New York settled, 1664.
North-East passage to Russia discovered, 1553.
Nova Scotia settled, 1622.
Nova Zembla discovered, 1553.
Otaheite, or George III.'s Island, discovered, June 18, 1765.
Owhy-he Island discovered, 1778, where Captain Cook was killed.
Palmyra, ruins of, in the Deserts of Syria, discovered, 1678.
Panama settled, 1516.
Paraguay discovered, 1525.
Pennsylvania, Penn's charter for planting, 1680.
Peru discovered, 1518.
Phillipine Isles discovered by the Spaniards, 1521.
Pitt's Straits, in the East Indies, discovered, April 30, 1760.
Porto Rico discovered, 1497.
Saba planted by the Dutch, 1640.
Salem, Mass., settled, 1628.
Sandwich Islands, in the Pacific Ocean, discovered, 1778.
Savannah settled, 1732.
Sierra Leona Coast discovered, 1460.
Society Isles, in the Pacific Ocean, discovered, 1765.
Solomon's Isles, in America, discovered, 1527.
Somer's Isles discovered, 1527.
St. Eustatia Isle settled by Holland, 1632.
St. Lawrence River discovered and explored by the French, 1508.
St. Salvador, Guanihani, or Cat Island, was the first land discovered in the West Indies, or America, by Columbus, October 11, 1492.
Suffolk Isles discovered, 1764; first produced sugar, 1770.
Surinam planted by England, 1640.
Surat settled, 1603.
Tate Island, East Indies, discovered, June 29, 1795.
Tobago planted by the Dutch, 1642.

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Terceras Isles discovered by the Spaniards, 1583.
Terra Firma settled by the Spaniards, 1524.
Trinidad, the Isle of, discovered, 1498.
Ukraine settled by Russia, 1752.
Virginia discovered by Sir Walter Raleigh, 1584; the settlement of the first permanent colony there, 1607; first marriage, 1608.
West Indies discovered by Columbus, 1492.

Silk Stockings.

Silk stockings were first worn by Henry II. of France, 1547. Howell says, in 1560, Queen Elizabeth was presented with a pair of black knit silk stockings by her silk-woman, Mrs. Montague, and she never wore cloth ones any more. He adds, that Henry VIII., that magnificent and experienced prince, wore ordinary cloth hose, except there came from Spain, by great chance, a pair of silk stockings; for Spain very early abounded in silk. His son Edward VI. was presented with a pair of Spanish silk stockings by his merchant, Sir Thomas Graham, and the present was then much taken notice of; consequently the invention of knit silk stockings came from Spain. Others relate that William Rider, a London apprentice, seeing at the house of an Italian merchant, a pair of knit worsted stockings from Mantua, from thence ingeniously made a pair like them, which he presented to the Earl of Pembroke, and were the first of the kind made in England, 1564. The weaving of them was invented, 1589.

An Ancient English Law.

Coaches were first used in England in 1580; an act passed to prevent men riding in coaches, as effeminate, in 1601; began to be common in London, 1605; hackney coaches began in 1634, when Captain Baily set up four in number; were prohibited in 1635; fifty hackney coachmen only were allowed in 1637; limited to two hundred in 1652; to three hundred in 1654; to four hundred in 1661; to seven hundred in 1694, when they were first licensed; to eight hundred in 1710; to one thousand in 1771.

Money.

Money first mentioned as a medium of commerce in the twenty-third chapter of Genesis, when Abraham purchased a field as a sepulcher for Sarah, in the year of the world 2139; first made at Argos, 894 before Christ. Silver has increased 30 times its value since the Norman conquest, viz: a pound in that age was three times the quantity what it is at present, and ten times its value in purchasing any commodity; first coined in the United States, 1652; first paper money, 1690.

Ships.

The first seen in Greece arrived at Rhodes from Egypt, 1485 before Christ; the first double-decked one built in England was of 1,000 tons burthen, by order of Henry VII., 1509, it was called the Great Harry, and cost £14,000; before this, 24 gun

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ships were the largest in the navy, and these had no port-holes, the guns being on the upper decks only. Port-holes and other improvements were invented by Decharges, a French builder at Brest, in the reign of Louis XII., 1560.

Ancient Clocks.

Clocks, called water-clocks, first used in Rome, 158 before Christ; clocks and dials first set up in churches, 913; clocks made to strike by the Arabians, 801; by the Italians, 1300; a striking clock in Westminster, 1368: the first portable one made, 1530: none in England that went tolerably, till that dated 1540, maker's name N. O. now at Hampton Court palace; clocks with pendulums, etc., invented by one Fromantil, a Dutchman, about 1555; repeating clocks and watches invented by one Barlow, 1676. Till about 1631, neither clocks nor watches were general.

Rain.

A continual rain in Scotland for five months, 918; a violent one in London, 1222; again, 1233; so violent, the harvest did not begin until Michaelmas, 1330; so heavy that the corn was spoiled, 1335; from the beginning of October to December, 1338; from midsummer to Christmas, so that there was not one day or night dry together, 1348; in Wales, which destroyed 10,000 sheep, September 19, 1752; in Languedoc, which destroyed the village of Barle Duc, April 26, 1776; in the island of Cuba, June 21, 1791, when 3,000 persons and 11,700 cattle of various kinds perished by the torrents occasioned by the rain.

Plague.

The whole world visited by a plague, 767 before Christ; in Rome, when 10,000 persons died in a day, 78; in England, 767; in Chichester, when 34,000 died, 772; in Canterbury, 783; in Scotland, which swept away 40,000 inhabitants, 954; in England, 1025, 1247, and 1347; in England, when 50,000 died in London, 1500; in Germany, which cut off 90,000 people, 1348; in Paris and London, very dreadful, 1367; again, 1379; in London, which killed 30,000 persons, 1407; again, when more were destroyed than in fifteen years war before, 1477; again, when 30,000 died in London, 1499; again, 1548 and 1594; which carried off in London a fourth part of its inhabitants, 1604; at Constantinople, when 200,000 persons died, 1611; at London, when 35,417 died, 1625 and 1631; at Lyons, France, 60,000 died, 1632; again, at London which destroyed 68,000 persons in 1665; at Messina, February, 1743; at Algiers, 1755; in Persia, when 80,000 persons perished at Passorah, 1773; at Smyrna, that carried off about 20,000 inhabitants, 1784; and at Tunis, 32,000, 1784; in the Levant, 1786; at Alexandria, Smyrna, etc., 1791; in Egypt, in 1792, where near 800,000 died; the yellow fever destroyed 2,000 at Philadelphia, in 1793; on the coast of Africa, particularly at Barbary, 3,000 died daily; at Fez, 247,000 died in June, 1799; 1,800 died at Morocco in 1800. In one day; in

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Spain and at Gibraltar, where great numbers died in 1804 and 1805; ten plagues of Egypt, 1494 before Christ.

Eclipses.

The most remarkable eclipses of the sun observed at Sardis, and predicted by Thales, 585 before Christ. At Athens, 424 before Christ. At Rome, caused a total darkness at noonday, A. D. 291. At Constantinople, 968. In France, June 29, 1033, dark at noonday. In England, March 21, 1140, occasioned a total darkness. Another on the 22d of June, 1191, entire darkness and the stars very visible at ten in the morning. In the same year, the true sun, and the appearance of another, so that astronomers alone could distinguish the difference by their glasses. Another in 1331. A total eclipse of the sun in England, when the darkness was so great that the stars faintly appeared, and the birds went to roost in the morning about ten, April 22, 1715.

Jews.

The seventy years captivity of the Jews began 606 before Christ; they about Cyrene, headed by one Andree, murdered nearly 160,000 Greeks and Romans; they ate their entrails, and covered themselves with the skins of those they assassinated, 115 after Christ; above 580,000 destroyed by the Romans, 135; first arrived in England, 1079; every Jew, who lent money on usury, was commanded to wear a plate upon his breast, signifying that he was an usurer, or quit the realm, 1274; 267 were hanged and quartered for clipping, 1277; the same year the Jews crucified a child at Northampton, for which fifty were drawn on horses' tails, and hanged; all the synagogues were ordered to be destroyed, 1282; all the Jews in England were apprehended in one day, their goods and chattels confiscated to the king, and they, to the number of 15,660, banished the realm, having only sustenance money allowed, 1287; they remained banished 364 years, till Oliver Cromwell restored them; a general massacre of them at Verdun by the peasants, who, from a pretended prophecy, conceived the Holy Land was to be recovered from the infidels by them; 500 of these Jews took shelter in a castle, and defended themselves to the last extremity, when, for want of weapons, they threw their children at the enemy, and then killed each other, 1317; driven out of France, 1394: driven out of Spain, to the number of 150,000, 1492; they retired to Africa, Portugal, and France. It was against them that the Inquisition was there first established. There was not a Jew in this island from 1610 to 1624. Act passed to naturalize them, 1753, but repealed on the petition of all the cities in England in 1754.

Fish.

The increase of fish is said to be in the following proportion: A flounder of two ounces contains 133,407 eggs or spawn; one of twenty-four ounces, 1,857,403. Herrings, weighing from four to five and three-quarter ounces, have from 21,285 to

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36,960. Lobsters, from fourteen to thirty-six ounces, contain 21,699. Mackerel, twenty ounces, 454,961. Prawn, about 3,806. Shrimps, from 2,849 to 6,807. Smelts, from 14,411 to 38,278. Soal, of five ounces, 38,772; one of fourteen ounces and a half contains 100,362. To which may be added the cod, which produces 3,684,700, and a ling, 19,248,625.

The Highest Mountains.

	Feet.		Feet.
Kunchainyunga, Himalayas	28,178	Simplon, Alps	11,542
Sorata, Andes	25,380	Mt. Lebanon, Syria	11,000
Illimani, Bolivia	21,780	Mt. Perdu, France	10,950
Chimborazo, Ecuador	21,444	Mt. St. Helen's, Oregon	10,158
Hindoo-Koosh, Afghanistan	20,600	Mt. Etna, Sicily	10,050
Cotopaxi, Ecuador	19,408	Olympus, Greece	9,754
Antisana, Ecuador	19,150	St. Gothard, Alps	9,080
St. Elias, British America	18,000	Pilate, Alps	9,050
Popocatapetl, Mexico	17,735	Mt. Sinai, Arabia	8,000
Mt. Roa, Hawaii	16,000	Pindus, Greece	7,677
Mt. Brown	15,900	Black Mountain, New Caledonia	6,467
Mont Blanc	15,776	Mt. Washington, New Hampshire	6,234
Mowna Roas, Owhyhee	15,700	Mt. Marcy, New York	5,467
Mt. Rosa, Alps, Sardinia	15,550	Mt. Hecla, Iceland	5,000
Pinchinca, Ecuador	15,200	Ben Nevis, Scotland	4,400
Mt. Whitney, Cal.	15,000	Mansfield, Vermont	4,280
Mt. Fairweather, Russia	14,796	Peaks of Otter, Virginia	4,260
Mt. Shasta, Cal.	14,450	Ben Lawers, Scotland	4,030
Pike's Peak, Colorado	14,320	Parnassus, Greece	3,950
Mt. Ophir, Summatra	13,800	Vesuvius, Naples	3,932
Fremont's Peak, Wyoming	13,570	Snowdon, England	3,500
Long's Peak, Cal.	13,400	Stromboli	3,850
Mt. Ranier, Washington	13,000	Ben Lomond	3,280
Mt. Ararat, Armenia	12,700	Mount Carmel	2,000
Peak of Teneriffe, Canaries	12,236	Gibraltar	1,470
Miltsin, Morocco	12,000		
Mt. Hood, Oregon	11,570		

Remarkable Revolutions in Ancient History.

The Assyrian Empire destroyed, and that of the Medes and Persians founded by Cyrus the Great, 546 before Christ. The Macedonian Empire founded on the destruction of the Persian, on the defeat of Darius Codomannus, by Alexander the Great, 331 before Christ. The Roman Empire established on the ruins of the Macedonian, or Greek Monarchy, by Julius Cæsar, 47 before Christ. The Eastern Empire founded by Constantine the Great, on the final overthrow of the Romans, A. D. 306. The empire of the Western Franks began under Charlemagne, A. D. 802. This empire underwent a new revolution, and became the German Empire, under Rodolph of Augsbourg, the head of the house of Austria, A. D. 1273, from which it is also called The Monarchy of the Austrians. The Eastern Empire passed into hands of the Turks, A. D. 1300. In England in 1688. Poland in 1704, 1709, and 1795. Turkey in 1730. Persia in 1748 and 1753. Russia in 1682, 1740, and 1762. Sweden in 1772. North America in 1776. France in 1789. Venice took place May 17, 1797. Rome, February 26, 1798.

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Palmistry, or Hand-Reading.

Palmistry is one of the methods by which it is possible to read the past and future from the lines in the palm of the hand. It is a science to be closely studied and relied upon. The "line of life," *a c*, for instance, as shown in diagram, is the crease running around the base of the thumb. If it be distinctly marked and of definite color, life is predicted as long and prosperous; but if it be pale, broad, and indefinite, life will be full of unhappiness. The years begin at *a* as marked in the diagram, and extend to *c*, in divisions from four to a hundred years. The divisions stand in their consecutive order as follows: 4, 8, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 80, 90, 100.

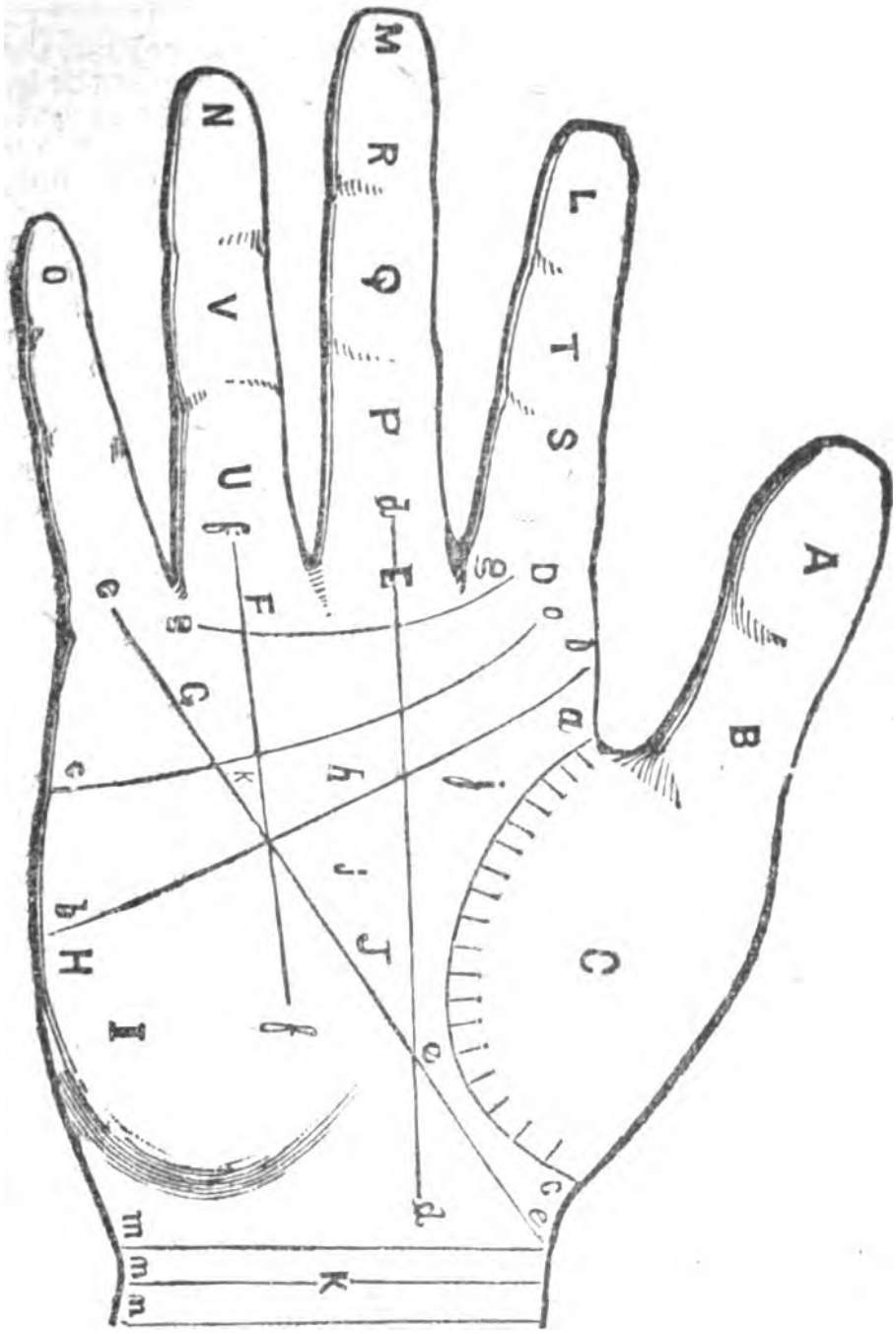
The direction and appearance of *b b*, the line of the head, bears a relation to the mental attributes. If the line be strongly marked, long and definite, there is much strength of character; but if the line is wanting, or incomplete, there is weakness of character and vacillation, and the mind has but little control over the passions and appetites. The line *c o*, is that of the heart. If it be distinct and fully traced, the one on whose hand it is found has a warm heart, full of affection, and will be true to friends. The line *d d*, called saturn or fate, when clear and distinct, and with few, if any, breaks is considered a sure index of the person being fortunate in most undertakings. The line *e e* is that of the liver, and by its degree of completeness the state of the health is judged. *f f*—In eastern Asia this line's development is watched with much solicitude as the youth advances in years, and if well defined at maturity, there is great rejoicing over the good fortune which it is supposed to indicate. The belt of Venus, shown by *g g*, is an evil line.

The appearance of the lines *m m* are indications by which the length and success of life are foretold. The triple bracelet, *m m m*, having three distinct marks, means a long and happy life.

The varieties in the shape and appearance of the fingers have their subtle meanings, as follows: Smooth fingers, to which belong inspiration, passion, instinct, intuition, grace; the finger with the square tip (L), accompanying theories, methods, intellectual taste, science, combination. literature; the spatulated finger (M), implying a love of things useful and physically perceptible, practical, commercial, agricultural, gymnastic; the conical finger (N), to which belong the plastic arts—painting, sculpture, architecture; the pointed finger (O), which belongs to contemplation, ideality, carelessness of material interests, poetry of the soul and of the heart, a desire for beauty in form and essence.

Similar interpretations are given to the variations in the shape of the hand. There are seven forms of the human hand, as follows: (1) The hand elementary, or hand with a large palm, the owner of which is content with simple fields of labor, and is not likely to soar above those avocations in which muscle, rather than skill, is required; (2) the hand

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EXPLANATION OF DIAGRAM OF PALM.

(A) The Will. (B) Logic. (C) The Mount of Venus. (D) The Mount of Jupiter. (E) The Mount of Saturn. (F) The Mount of the Sun. (G) The Mount of Mercury. (H) The Mount of Mars. (I) The Mount of the Moon. (J) The Plain of Mars. (K) The Rascette. (L) Square finger. (M) Spatulate finger. (N) Conic finger. (O) Pointed finger. (P) The first phalange. (Q) The second phalange. (R) The third phalange. (S) The first joint (order). (T) The second joint (philosophy). (a c) The line of life. (b b) Line of the head. (c o) Line of the heart. (d d) Line of Saturn, or fate. (e e) Line of the liver. (f f) Line of the Sun, or fortune. (g g) Belt of Venus. (h) The quadrangle. (i) The triangle. (j) The upper angle. (k) The inner angle. (m m m) The bracelets of life.

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necessary, or spatulated, which goes a little beyond the first, and aspires to be head gardener, or foremen over the laborer; (3) the hand artistic, or conical, devoted to the fine arts, taste in form and colors, and the beautiful in nature; (4) the useful, or square hand which is practical, ready for anything, fond of order and system, willing to work either at one thing or another; (5) the knotted hand, which is philosophical, accompanying a delight in the field of research and thought, experiment and application; (6) the psychological, or pointed hand, which loves perfection in mind, and seeks beauty of soul, refinement and culture; (7) the mixed hand, blending the qualities of others of these different types.

The tendencies and traits as shown by the hand should agree with those indicated by the fingers, and also those of the finger joints. The entire hand is read by the palmist, and not simply the lines upon it.

Hands of middle size show a spirit of synopsis, the conception and grouping of details. To large hands often belongs a spirit of minutiæ and trifling detail. The hard, stiff hand, which is opened wide and straight with difficulty, indicates intractability, a mind without pliancy, fond of going in grooves.

The person whose fingers tend to bend backward, through suppleness and elasticity, is endowed with sagacity, curiosity, and address. Fingers short and thick indicate cruelty. Fingers long and straggling are those of the intriguing and impostors, cheats and sharpers. Persons with very smooth, transparent fingers are curious and indiscreet. If the fingers are smooth and conical it is a sign of talkativeness and levity of mind. The musical mind is accompanied by long, well-formed fingers. If the fingers lie perfectly parallel, so that when held together no light can be seen between them, it is a sign of avarice. Strong and knotted fingers mean prudence and capacity.

The swelled muscles or "mounts" in the hand indicate, according to which of them predominate [see explanation] the ruling planets. The sons of Jupiter are strong, easy, jovial, frank; but his step-children are dissipated, vindictive, and quarrelsome. The Saturnians are long, thin, pale, gloomy, morose, grumbling. Another class of them are greedy, idle, hungry, sharpers. The children of the Sun are endowed with beauty and grandeur of soul, cheerful but wise. His less favored offspring are small, vain, boasting. The men born under the influence of Mercury are slim, wiry, active, boyish, animated, clever, and skillful. The sons of Mars are large, stong-built, red-faced, bold, reckless, great eaters and drinkers, fighters, politicians. They may also be burglars, garroters, thieves, brawlers, and demagogues. The descendants of the Moon are changeable, capricious, restless, cold, indolent, untruthful, mystical rather than religious, and full of curiosity. The children of Venus are fond of gay clothing, love pleasure, and are amiable, affectionate, compassionate.

Bread.

In the year 1754, the quartern loaf was sold for four pence; three years afterward, in the year 1757, it rose to ten pence, and in March, 1800, to the enormous price of seventeen pence, when new bread was forbid, under the penalty of five shillings per loaf, if the baker sold it until twenty-four hours old.

How to Judge Any one's Character by their Finger-Nails.

A white mark on the nail bespeaks misfortune.

Pale or lead-colored nails indicate melancholy people.

Broad nails indicate a gentle, timid, and bashful nature.

Lovers of knowledge and liberal sentiments have round nails.

People with narrow nails are ambitious and quarrelsome.

Small nails indicate littleness of mind, obstinacy and conceit.

Choleric, martial men, delighting in war, have red and spotted nails.

Nails growing into the flesh at the points or sides indicate luxurious tastes.

People with very pale nails are subject to much infirmity of the flesh, and persecution by neighbors and friends.

Roman Money Mentioned in the New Testament,

With equivalent values in American money. A mite=00.343 cents; a farthing=about 00.687 cents; a penny, or denarius =13.75 cents; a pound, or mina=$13.75.

Scriptural Measures of Length, with English Equivalents.

The great cubit was 21.888 ins. 1,824 ft. and the less 18 ins. A span the longer=½ a cubit=10.944 ins.=.912 ft. A span the less=⅓ of a cubit=7.296 ins.=.608 ft. A hand's breadth=1 6 of a cubit=3.648 ins.=304 ft. A finger's breadth=1.24 of a cubit=.912 ins.=.076 ft. A fathom=4 cubits=7.296 ft. Ezekiel's Reed=6 cubits=10.944 ft. The mile=4,000 cubits=7,296 ft. The Stadium, 1-10 of their mile=400 cubits=729.6 ft. The Parasang, 3 of their miles=12,000 cubits, or 4 English miles and 560 ft. 33.164 miles was a day's journey—some say 24 miles; and 3,500 ft. a Sabbath day's journey; some authorities say 3,648 ft.

Scriptural Measures of Capacity, with English Equivalents.

The Chomer or Homer in King James' translation was 75.625 gals. liquid, and 32.125 pecks dry. The Ephah or Bath was 7 gals. 4 pts., 15 ins. sol. The Seah, ⅓ of Ephah, 2 gals. 4 pts., 3 in. sol. The Hin=1 6 of Ephah, 1 gal. 2 pts., 1 in. sol. The Omer=1-10 of Ephah, 5 pts., 0.5 ins. s 1. The Cab=1-18 of Ephah, 3 pts., 10 ins. sol. The Log=7 1-72 of Ephah, ½ pt., 10 ins. sol. The metretes of Syria (John ii. 6)=Cong. Rom. 7⅛ pts. The Cotyla Eastern=1-100 of Ephah, ½ pt., 3 in. sol.

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This Cotyla contains just 10 ozs. Avordupois or rain water. Omer, 100; Ephah, 1,000; Chomer or Homer, 10,000.

Religious and Lingual Statistics.

Forms of religion practiced in the world (estimated).....1,000
Languages spoken in the world.....3,064

Warmth and Strength Derived From Various Articles of Food.

Grains of strength yielded by one pound of 7,000 grains.	Grains.	Grains of warmth yielded by one pound of 7,000 grains.	Grains.
Beer or Porter	1	Whey	150
Parsnips	12	Turnips	238
Turnips	12	Beer and Porter	315
Whey	13	Buttermilk	335
Greens	14	Skimmed Milk	351
Potatoes	24	New Milk	378
Skimmed Milk	34	Carrots	380
New Milk	35	Parsnips	425
Buttermilk	35	Potatoes	770
Barley	70	Fresh Fish	980
Rice	70	Beef Liver	1,220
Bacon	78	Red Herrings	1,455
Rye Bread	89	Baker's Bread	1,990
Baker's Bread	90	Fresh Beef	2,300
Pearl Barley	91	Molasses	2,300
Fresh Pork	108	Skim Milk Cheese	2,350
Seconds Flour	120	Cheddar Cheese	2,550
Corn Meal	125	Seconds Flour	2,700
Fresh Fish	129	Rye Bread	2,700
Cocoa	139	Rice	2,750
Oatmeal	140	Barley Meal	2,790
Mutton	140	Indian Meal	2,800
Fresh Beef	172	Sugar	2,900
Beef Liver	200	Fresh Pork	3,100
Split Peas	250	Bacon	4,200
Cheddar Cheese	310	Butter	4,700
Skim Milk Cheese	360	Lard	4,800
		Drippings	5,500

Weight of Different Woods in Pounds and Ounces Per Cubic Foot.

Ash, green, 58.3; do. seasoned, 50. Beech, green, 60; do. seasoned, 50. American pine, green, 44.12; do. seasoned, 30.11. Cedar, green, 32; do. seasoned, 28.4. English Oak, green, 71.10; do. seasoned, 43.8. Riga Fir, green, 48.12; do. seasoned, 35.8.

Freezing Point, Contraction, Expansion, and Heat Conducting Powers of Various Substances.

Mercury freezes at 40 degrees below zero, and melts at 39 degrees. Ether freezes at 47 degrees below zero; wine freezes at 20 degrees; sea water freezes at 28.3 degrees. Alcohol has been exposed to 110 degrees and 120 degrees below zero without freezing. Granite decomposes at a red heat. The second's pendulum, of 39.139 ins., is lengthened by 30 degrees of temperature 128th of an inch, or 8 vibrations in 24 hours.

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The heat conducting powers of metals, etc., are as follows: Gold, 1.000 deg.; platinum, 981 deg.; silver, 973 deg.; copper, 898.2 deg.; iron, 374.3 deg.; zinc, 363 deg.; tin, 303.9 deg.; lead, 179.6 deg.; marble, 23.6 deg.; porcelain, 12.2 deg.; fine clay, 11.4 deg.

One pound of coke melts 94 lbs. of ice; 1 lb. of coal, 90 lbs; 1 lb. of wood, 52 lbs.; 1 lb. of charcoal, 95 lbs.; 1 lb. of peat, 19 lbs. The capacity of the solar heat all over the globe is the ability to melt an icy covering 46 feet in thickness.

Percentage of Nutrition in Various Articles of Food.

Raw Cucumbers	2	Raw Beef	26
Raw Melons	3	Raw Grapes	27
Boiled Turnips	4½	Raw Plums	29
Milk	7	Broiled Mutton	30
Cabbage	7½	Oatmeal Porridge	75
Currants	10	Rye Bread	79
Whipped Eggs	13	Boiled Beans	87
Beets	14	Boiled Rice	88
Apples	16	Barley Bread	88
Peaches	20	Wheat Bread	90
Boiled Codfish	21	Baked Corn Bread	91
Broiled Venison	22	Boiled Barley	92
Potatoes	22½	Butter	92
Fried Veal	24	Boiled Peas	93
Roast Pork	24	Raw Oils	95
Roast Poultry	26		

Shrinkage in Dimensions of Timber by Seasoning.

Woods.	Inches.	Woods	Inches.
Pitch pine, South	18⅜ to 18¼	Cedar, Canada	14 to 13¼
Spruce	8½ to 8⅜	Elm	11 to 10¾
White pine, Am	12 to 11⅞	Oak, English	12 to 11⅝
Yellow pine	18 to 17⅞	Pitch pine	10x10 to 9¾x9¾

Powers of Locomotion of Animals, and Average Velocities of Various Bodies.

	Per hour.		Per sec.
A man walks	3 miles,	or	4 feet.
A horse trots	7 "	or	10 "
A horse runs	20 "	or	29 "
Steamboat runs	18 "	or	26 "
Sailing vessel runs	10 "	or	14 "
Slow rivers flow	3 "	or	4 "
Rapid rivers flow	7 "	or	10 "
A moderate wind blows	7 "	or	10 "
A storm moves	36 "	or	52 "
A hurricane moves	80 "	or	117 "
A rifle ball moves	1,000 "	or	1,466 "
Sound moves	743 "	or	1,142 "
Light moves	192,000 miles per second.		
Electricity moves	288,000 miles per second.		

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Percentage of Alcohol in Various Liquors.

Scotch Whisky	54.53	Currant Wine	20.50
Irish Whisky	53.9	Port	22.90
Rum	53.68	Madeira	22.27
Gin	51.6	Teneriffe	19.79
Brandy	53.39	Sherry	19.17
Burgundy	14.57	Claret	15.1
Cape Muscat	18.25	Elder	8.79
Champagne (still)	13.80	Ale	6.87
Champagne (sparkling)	12.61	Porter	4 02
Cider	5.2 to 9.8	Malaga	17.26
Constantia	19.75	Rhenish	12.8
Gooseberry Wine	11.48	Small Beer	1 28

Comparative Yield of Various Grains, Vegetables, and Fruits.

	Lbs. per acre.		Lbs. per acre.
Hops	442	Grass	7,000
Wheat	1,260	Carrots	6,800
Barley	1,600	Potatoes	7,500
Oats	1,840	Apples	8,000
Peas	1,920	Turnips	8,420
Beans	2,000	Cinque foil grass	9,600
Plums	2,000	Vetches, green	9,800
Cherries	2,000	Cabbage	10,900
Onions	2,200	Parsnips	11,200
Hay	4,000	Mangel Wurzel	22,000
Pears	5,000		

Character by the Month.

Here is an old astrological prediction, said to indicate, with tolerable certainty, the character of the girl according to the month she happens to be born in.

If a girl is born in January, she will be a prudent housewife, given to melancholy, but good-tempered.

If in February, a humane and affectionate wife and tender mother.

If in March, a frivolous chatter-box, somewhat given to quarreling.

If in April, inconstant, not intelligent, but likely to be good-looking.

If in May, handsome and likely to be happy.

If in June, impetuous, will marry early and be frivolous.

If in July, passably handsome, but with a sulky temper.

If in August, amiable and practical, and likely to marry rich.

If in September, discreet, affable, and much liked.

If in October, pretty and coquettish, and likely to be unhappy.

If in November, liberal, kind, of a mild disposition.

If in December, well proportioned, fond of novelty, and extravagant.

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The Child's Prophecy.

There are some lines which are known universally throughout America as the prophecy for one's life, counting from the day of his birth. One set runs:

Monday's child is fair of face;
Tuesday's child is full of grace;
Wednesday's child is merry and glad
Thursday's child is sorry and sad;
Friday's child is loving and giving;
Saturday's child must work for his living;
Sunday's child is blithe, bonny, good and gay.

Another set goes:

Monday for health,
Tuesday for wealth,
Wednesday the best day of all;
Thursday for crosses,
Friday for losses,
Saturday no luck at all.

Large Libraries in the United States.

Place.	Name.	Founded.
Augusta, Me	State Library	1827
Boston, Mass	Athenæum	1807
	Public	1852
	State	1826
Springfield, Mass	City	1861
	Natural History	1860
Worcester, Mass	Antiquarian	1812
	Public	1859
New Haven	Yale Univerity	1700
New York	Astor	1820
	Columbia College	1754
	Society	1700
	Theological	1836
Princeton, N. J	College	1748
	Theological	1812
Philadelphia, Pa	Natural Science	1812
	Library Company	1731
	Mercantile	1821
Annapolis, Md	State	1827
Georgetown, D. C	College	1789
Washington	Congressional	1802
	Patent	1840
	Surgeon-General	1865
Cincinnati	Mercantile	1835
	Public	1867
Chicago	Public	1874
	Newberry	1889
St. Louis	University	1829
	Public School	1865
	Mercantile	1846
San Francisco	Mercantile	1853
	Odd Fellows	1854

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Large European Libraries.

Place.	Name.	Founded.
Cambridge	University	1475
Dublin	Trinity	1601
Edinburgh	Advocates	1680
	University	1580
Glasgow	University	1473
London	British Museum	1758
Manchester	Public	1852
Oxford	Bodleian	1598
Bordeaux	City	1738
Paris	City	1759
	Arsenal	1781
Berlin	Royal	1650
Hamburg	City	1529
Heidelburg	University	1703
Leipsic	University	1543
Munich	University	1543
	City	1677
Vienna	Imperial	1440
Bologna	University	1600
Naples	National	1780
Rome	Vatican	1378
	Anglecia	1605
	Casanateuse	1700
Madrid	National	1712
Lisbon	National	1796
Venice	St Marks	1468
Brussels	Royal	1400
Copenhagen	Royal	1550
Stockholm	Royal	1540
Moscow	University	1755
St. Petersburg	Science	1726
	Imperial	1714
Athens	University	1837

Ancient Libraries.

The first private library was the property of Aristotle. 534 B. C. The first public library, of which we have any certain account in history, was founded at Athens, by Hipparchus, 526 B. C. The second of any note was founded at Alexandria by Ptolemy Philadelphus, 284; it was burnt when Julius Cæsar set fire to Alexandria, 47 B. C. (400,000 valuable books in MS. are said to have been lost by this catastrophe.) The first library at Rome was established 167. At Constantinople, founded by Constantine the Great, about 335 A. D.; destroyed 477. A second library formed from the remains of the first at Alexandria, by Ptolemy's successors, and reputed to have consisted of 700,000 volumes, was totally destroyed by the Saracens, who heated the water for their baths, for six months, by burning books instead of wood, by command of Omar, Caliph of the Saracens, 642. The Vatican, at Rome, by

Pope Nicholas V., 1446; rebuilt and the library considerably improved by Sixtus V., 1538. The Royal, of Paris, by Francis I., about 1520. The Escurial, at Madrid, by Philip II., 1557. Of Florence, by Cosmo de Medicis, 1500. The Cottonian, formerly kept at Cotton House, Westminster, founded by Sir Robert Cotton, about 1600. Appropriated to the public use and benefit by William III., 1701; partly destroyed by fire, 1731; removed to the British Museum, 1753.

Valuable Information for Business Men.

Demand notes are payable on presentation, without grace, and bear legal interest after a demand has been made, if not so written. An indorser on a demand note is holden only for a limited time, variable in different States.

A negotiable note must be made payable either to bearer, or be properly indorsed by the person to whose order it is made. If the indorser wishes to avoid responsibility, he can indorse "without recourse."

A joint note is one signed by two or more persons, who can each become liable for the whole amount.

Three days' grace are allowed on all time notes, after the time for payment expires; if not then paid, the indorser, if any, should be legally notified, to be holden.

Notes falling due Sunday, or on a legal holiday, must be paid the day previous.

Notes dated Sunday are void.

Altering a note in any manner, by the holder, makes it void.

Notes given by minors are void.

The maker of a note that is lost or stolen is not released from payment if the amount and consideration can be proven.

Notes obtained by fraud, or given by intoxicated persons, cannot be collected.

An indorser has a right of action against all whose names were previously on a note indorsed by him.

Shoemaker's Maxims.

Worn on the side soon a rich man's bride,
Worn on the toes spend as he goes,
Worn on the heel thinks a good deal,
Worn on the vamp he's surely a scamp.

Duration of Life of Various Animals.

Elephant, 100 years and upward; Rhinoceros, 20; Camel, 100; Lion, 25 to 70; Tigers, Leopards, Jaguars, and Hyenas (in confinement), about 25; Beaver, 50; Deer, 20; Wolf, 20; Fox, 14 to 16; Llamas, 15; Chamois, 25; Monkeys and Baboons, 16 to 18; Hare, 8; Squirrel, 7; Rabbit, 7; Swine, 25; Stag, under 50; Horse, 30; Ass, 30; Sheep, under 10. Cow, 20; Ox, 30; Swans, Parrots, and Ravens, 200; Eagle, 100; Geese, 80; Hens and Pigeons, 10 to 16; Hawks, 30 to 40; Crane, 24; Blackbird, 10 to 12; Peacock, 20; Pelican, 40 to 50; Thrush, 8 to 10; Wren, 2 to 3; Nightingale, 15; Blackcap, 15; Linnet, 14 to 23; Goldfinch, 10 to 24; Redbreast, 10 to 12; Skylark, 10 to 30; Titlark, 5 to 6;

Chaffinch, 20 to 24; Starling, 10 to 12; Carp, 70 to 150; Pike, 30 to 40; Salmon, 16; Codfish, 14 to 17; Eel, 10; Crocodile, 100; Tortoise, 100 to 200; Whale, estimated, 1,000; Queen Bees live 4 years; Drones, 4 months; Worker Bees, 6 months.

Limit of Perpetual Snow, and Growth of Trees.

On the Andes, in lat. 2 deg., the limit of perpetual show is 14,760 ft. In Mexico, lat. 19 deg., the limit is 13,800 ft.; on the peak of Teneriffe, 11,454 ft.; on Mount Etna, 9,000 ft.; on Caucasus, 9,900 ft.; on the Pyrenees, 8,400 ft.; in Lapland, 3,100 ft.; in Iceland, 2,890 ft. The walnut ceases to grow at an elevation of 3,600 ft.; the yellow pine at 6,200 ft.; the ash at 4,800 ft.; and the fir at 6,700 ft. The loftiest inhabited spot on the globe is the Port House of Ancomarca, on the Andes, in Peru, 16,000 ft. above the level of the sea. The 14th peak of the Himalayas, in Asia, 25,695 feet high, is the loftiest mountain in the world.

The Oldest Piece of Iron.

The oldest pieces of wrought iron now known are probably the sickle blade found by Belzoni under the base of a sphinx in Karnac near Thebes; the blade found by Colonel Vyse, imbedded in the masonry of the great pyramids; the portion of a cross-cut saw exhumed at Nimrod by Mr. Layard—all of which are now in the British Museum. A wrought bar of Damascus steel was presented by King Porus to Alexander the Great, and the razor steel of China for many centuries has surpassed all European steel in temper and durability of edge. The Hindoos appear to have made wrought iron directly from the ore, without passing it through the furnace, from time immemorial, and elaborately wrought masses of iron are still found in India which date from the early centuries of the Christian era.

Architects' and Builders' Tables and Estimates.

ROOF ELEVATIONS.

By the "pitch" of a roof is meant the relation which the height of the ridge above the level of the roof-plates bears to the span, or the distance between the studs on which the roof rests.

The length of rafters for the most common pitches can be found as follows, from any given span:

If ¼ pitch, multiply span by 559, or 7-12 nearly.
If ⅓ pitch, multiply span by .6, or 3-5 nearly.
If ⅜ pitch, multiply span by 625, or ⅝ nearly.
If ½ pitch, multiply span by .71, or 7-10 nearly.
If ⅝ pitch, multiply span by .8, or 4-5 nearly.
If full pitch, multiply span by 1.12, or 1⅛ nearly.

To lengths thus obtained must be added amount of projection of rafters at the eaves.

As rafters must be purchased of even lengths, a few inches more or less on their lengths will make a difference to the pitch so slight that it cannot be detected by the eye.

Example.—To determine the length of rafters for a roof con-

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structed one-half pitch, with a span of 24 feet—24×.71=17.04; or, practically, just 17 feet. A projection of one foot for eaves makes the length to be purchased 18 feet.

SHINGLES REQUIRED IN A ROOF.

To the square foot it takes 9 if exposed four inches; 8 if exposed 4½ inches, and 7 1-5 if exposed 5 inches to the weather.

Find the number of shingles required to cover a roof 38 feet long, and the rafters on each side 14 feet. Shingles exposed 4½ inches.

28×38=1064 (square feet) ×8=8512 shingles. Ans.

To find the length of rafters, giving the roof one-third pitch; take three-fifths of the width of the building. If the building is 30 feet wide, they must be 18 feet long, exclusive of projection.

The following very useful and practical calculations will be found exceedingly handy, as guides to the builder, in making up his figures when he is called upon to estimate for all portions of a job, many of which are not entirely in his own particular line:

HOW TO BUILD STRONG FRAMES.

Sheathing put on diagonally acts as a brace over the whole surface, and requires no more lumber than if put on horizontally. It is well to run the sheathing from each side up parallel with the rafters, if at the gable ends, and at similar angles at the sides. Roofing boards can be put on in the same manner. Studs can be allowed to project above the plates and the rafters spiked to the sides of studs. Partitions should be braced with waste stuff, and in such ways a building can be so strengthened that it can be rolled over and over without coming to pieces, and the extra cost will simply consist in a few hours of extra labor.

In some parts of the West, and especially in Nebraska, a framed sill is in use, which combines qualities that will make it of service to builders in many localities. A piece of 2x6 or 2x8 is laid upon the wall, and flush with one side of this a 2-inch piece of the same width as the joists is placed on edge and securely spiked on, thus making the bottom and one side of a trough. These can be fastened before being put in place. The joists are placed with their ends upon the bed of the sill and against the side, and spiked to both. The studs are halved down, in this case 8 inches, and nailed to side of sill and joists. The sides of the sill, running parallel with the joists, are formed by two of the joists themselves, either set flush with the face of the wall and the studs let down back, or set back two inches and the studs let down in front.

When the frame is finished, and before the floor is laid, the wall is built up behind and over the sill; thus holding all in place, guarding against wind, as the wall must be torn up before the building will go; and also, incidentally, against rats and other vermin. It will be found fully as strong and much cheaper than timber.

If posts are used for the foundation a modification of this

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arrangement will prove equally serviceable. The principal on which it depends is explained at length further on. It is well known that a thin piece of timber put on edge, as in joists, etc., will support a much greater weight than if laid on its side. The strength of a piece is in direct proportion to the square of its depth and nearly inversely as its length. Thus it will be found that simply the 2x12 8 feet long, without considering the support afforded to it by the walls, would have a strength equal to four 2x4s 16 feet long. It might be objected that the joists would not rest on the 2x12, but on the 2x6. This is partly true, but the joists are spiked to the 2x12, and are nailed to the studs, which rest on the sill, thus binding the whole together. Particular care must be taken to spike the 2x12 side of the sill to the 2x4 or 2x6 base at short intervals. All the parts must be well nailed together, and especially the studs to the joists, and the sills to the posts. This form will have abundant strength and stiffness if the posts are not over 8 feet apart. A sill constructed in this way, of these dimensions, contains the same number of feet as a 6x6 sill, but will sustain a weight a third greater than the latter, if the weights are placed at the centers, but as the studs are fastened together by the sheathing, the weight will be partly transferred from the sills to the posts. It can also be made of any lengths that will reach from post to post, and the cost can thus be made less.

DURABILITY OF DIFFERENT WOODS.

Experiments have been lately made by driving sticks, made of different woods, each 2 feet long and 1½ inches square, into the ground, only one-half an inch projecting outward. It was found that in five years, all those made of oak, elm, ash, fir, soft mahogany, and nearly every variety of pine, were totally rotten. Larch, hard pine, and teak wood were decayed on the outside only; while acacia, with the exception of being also slightly attacked on the exterior, was otherwise sound. Hard mahogany and cedar of Lebanon were in tolerably good condition; but only Virginia cedar was found as good as when put in the ground. This is of some importance to builders, showing what woods should be avoided, and what others used by preference in underground work.

The duration of wood when kept dry, is very great, as beams still exist which are known to be nearly 1,100 years old. Piles driven by the Romans prior to the Christian era, have been examined of late, and found to be perfectly sound after an immersion of nearly 2,000 years.

The wood of some tools will last longer than the metals, as in spades, hoes, and plows. In other tools the wood is first gone, as in wagons, wheelbarrows, and machines. Such wood should be painted or oiled; the paint not only looks well, but preserves the wood; petroleum oil is as good as any other.

Hard wood stumps decay in five or six years; spruce stumps decay in about the same time; hemlock stumps in eight to nine years; cedar, eight to nine years; pine stumps, never.

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Cedar, oak, yellow pine, and chestnut, are the most durable woods in dry places.

NUMBER OF BRICK REQUIRED TO CONSTRUCT ANY BUILDING.

(Reckoning 7 brick to each superficial foot.)

Superficial Feet of Wall.	Number of Bricks to thickness of					
	4 inch	8 inch	12 inch.	16 inch.	20 inch.	24 inch.
1	7	15	23	30	38	45
2	15	30	45	60	75	90
3	23	45	68	90	113	135
4	30	60	90	120	150	180
5	38	75	113	150	188	225
6	45	90	135	180	225	270
7	53	105	158	210	263	315
8	60	120	180	240	300	360
9	68	135	203	270	338	405
10	75	150	225	300	375	450
20	150	300	450	600	750	900
30	225	450	675	900	1,125	1,350
40	300	600	900	1,200	1,500	1,800
50	375	750	1,125	1,500	1,875	2,250
60	450	900	1,350	1,800	2,250	2,700
70	525	1,050	1,575	2,100	2,625	3,150
80	600	1,200	1,800	2,400	3,000	3,600
90	675	1,350	2,025	2,700	3,375	4,050
100	750	1,500	2,250	3,000	3,750	4,500
200	1,500	3,000	4,500	6,000	7,500	9,000
300	2,250	4,500	6,750	9,000	11,250	13,500
400	3,000	6,000	9,000	12,000	15,000	18,000
500	3,750	7,500	11,250	15,000	18,750	22,500
600	4,500	9,000	13,500	18,000	22,500	27,000
700	5,250	10,500	15,750	21,000	26,250	31,500
800	6,000	12,000	18,000	24,000	30,000	36,000
900	6,750	13,500	20,250	27,000	33,750	40 500
1,000	7,500	15,000	22,500	30,000	37,500	45,000

FACTS FOR BUILDERS.

1,000 shingles, laid 4 inches to the weather, will cover 100 square feet of surface, and 5 lbs. of shingle nails will fasten them on.

One-fifth more siding and flooring is needed than the number of square feet of surface to be covered, because of the lap in the siding and matching.

1,000 laths will cover 70 yards of surface, and 11 lbs. of lath nails will nail them on. Eight bushels of good lime, sixteen bushels of sand, and one bushel of hair, will make enough good mortar to plaster 100 square yards.

A cord of stone, three bushels of lime, and a cubic yard of sand, will lay 100 cubic feet of wall.

Five courses of brick will lay 1 foot in height on a chimney,

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16 bricks in a course will make a flue of 4 inches wide and 12 inches long, and 8 bricks in a course will make a flue 8 inches wide and 16 inches long.

Cement, one bushel, and sand, two bushels, will cover 3½ square yards one inch thick, 4½ square yards ¾ inch thick, 6¾ square yards ½ inch thick. One bushel cement and one of said will cover 2¼ square yards one inch thick, three square yards, ¾ inch thick, and 4½ square yards, ½ inch thick.

NUMBER OF NAILS AND TACKS PER POUND.

Nails.	Size.	No. per lb.
6 penny, fence	2 in.	80 nails
8 " "	2½ "	50 "
10 " "	3 "	34 "
12 " "	3¼ "	29 "
3 " fine	1½ "	760 "
3 "	1¾ "	480 "
4 "	1½ "	300 "
5 "	1¾ "	200 "
6 "	2 "	160 "
7 "	2¼ "	128 "
8 "	2½ "	92 "
9 "	2¾ "	72 "
10 "	3 "	60 "
12 "	3¼ "	44 "
16 "	3½ "	32 "
20 "	4 "	24 "
30 "	4½ "	18 "
40 "	5 "	14 "
50 "	5½ "	12 "

Tacks.	Length.	No. per lb.
1 oz.	½ inch	16,000
1¼ "	3-16 "	10,666
2 "	¼ "	8,000
2½ "	5-16 "	6,400
3 "	⅜ "	5,333
4 "	7-16 "	4,000
6 "	9-16 "	2,666
8 "	⅝ "	2,000
10 "	11-16 "	1,600
12 "	¾ "	1,333
14 "	13-16 "	1,143
16 "	⅞ "	1,000
18 "	15-16 "	888
20 "	1 "	800
22 "	1 1-16 "	727
24 "	1⅛ "	666

NUMBER OF NAILS REQUIRED IN CARPENTER WORK.

To case and hang one door, 1 lb.
To case and hang one window, ¾ lb.
Base, 100 lineal feet, 1 lb.
To put on rafters, joists, etc., 3 lbs. to 1,000 feet.
To put up studding, same.
To lay a 6-inch pine floor, 15 lbs. to 1,000 feet.

LABOR.

To place joists, etc., on wall, $4 per 1,000.
Put up jambs and case a door, $1.50.
Hanging door and locking, 50c. to 75c.
Fitting sash, 50c. to 75c.
Casing window, stool and apron, $1.00.
Hang outside blinds, 50c.
Hang inside blinds, 75c.; if boxed, $1.00.
Lay pine floor, 6 in., 30c. per square.
Lay pine floor, 4 in., 40c. per square.
Lay walnut floor, 3 in., $1 per square.
Roof and sheathing, 25c. per square.
To lay shingles, per 1,000, 75c. per square.

BUILDERS' ESTIMATING TABLES.

Table showing quantity of material in every four lineal feet

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of exterior wall in a balloon frame building, height of wall being given:

Length of Studs.....	Size of Sills.....	Size of Studs, Braces, etc.	Quantity of Rough Lumber.	Quantity of Inch Boarding....	Siding in sup. feet.....	Tar paper in sup. feet.....
8	6x 6	2x4 studs.	42	36	40	74
10	6x 8	4x4 brackets.	52	44	50	80
12	6x10	4x4 plates.	62	53	60	96
14	6x10	1x6 ribbons.	69	62	70	112
16	8x10		82	71	80	128
18	8x10	studs	87	80	90	144
20	8x12	16 inches from	98	88	100	160
22	9x12	centers.	109	97	110	176
24	10x12		119	106	420	192
18	10x10	2x6 studs.	122	80	90	144
20	10x12	6x6 braces.	137	88	100	160
22	10x12	4x6 plates.	145	97	110	176
24	12x12	1x6 ribbons.	162	106	120	192
26	10x14		169	114	130	208
28	12x14	studs 16 inch centers.	176	123	140	224
30	12x14		198	132	150	240

Table showing amount of lumber in rafters, collar-piece and boarding, and number of shingles to four lineal feet of roof, measured from eave to eave over ridge. Rafters 16-inch centers.

Width of house. Feet.	Size of rafters	Size of Collar-piece.	Quantity of Lumber in Rafter and Collar-piece.	Quant'y of board'g. Feet.	No. of Shingles.
14	2x4	2x4	39	91	560
16	2x4	2x4	45	70	640
18	2x4	2x4	50	79	720
20	2x4	2x4	56	88	800
22	2x4	2x4	62	97	880
24	2x4	2x4	67	106	960
20	2x6	2x6	84	88	800
22	2x6	2x6	92	97	880
24	2x6	2x6	101	106	960
26	2x6	2x6	109	115	1,040
28	2x6	2x6	117	124	1,120
30	2x6	2x6	126	133	1,200

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MASON WORK—BRICK.

One and one-eight barrels of lime and ⅛ yard sand will lay 1,000 bricks.

One man with 1¼ tenders will lay 1,800 to 2,000 brick per day.

RUBBLE.

One and quarter barrels of lime and one yard of sand will lay 100 feet of stone.

One man will lay 150 feet of stone per day with one tender.

CEMENT.

One and a quarter barrels of cement and ¼ yard sand will lay 100 feet rubble stone. Same time as to mason and tender as rubble.

COST OF PAINTERS' WORK.

One coat shellac, 50c. per square.
One coat lead and oil, 75c. per square.
Two coats lead and oil, $1.50 per square.
Three coats lead and oil, $2.50 per square.
Sanding, one coat, 75c. per square.
Grain oak, two coats, $2.50 per square.
Grain walnut, two coats, $3 per square.
To set glass, 10 per cent. of cost.
Kalsomining, 60c. to 75c. per square.
One coat varnish, 50c. per square.

Age and Growth of Trees.

An oak tree in three years grows 2 feet 10½ inches. A larch 3 feet 7½ inches; at seventy years it is full grown, and a tree of seventy-nine years was 102 feet high and 12 feet girth, containing 233 cubic feet. Another of eighty years was 90 feet and 17 feet, and 300 cubic feet. An elm tree in three years grows 8 feet 3 inches. A beech, 1 foot 8 inches. A poplar, 6 feet. A willow, 9 feet 3 inches. An elm is full grown in 150 years and it lives 500 or 600. Ash is full grown in 100 and oak in 200. The mahogany is full grown in 200 years to a vast size. A Polish oak 40 feet round had 600 circles. An oak in Dorsetshire in 1755 was 68 feet round, two near Cranborne Lodge are 38 feet and 36 feet. There are yews from 10 to 20 feet in diameter, whose age is from 1,000 to 2,000 years. A lime in the Crisons is 51 feet round and about 600 years old. An elm in the Pays de Vaud is 18 feet in diameter and 360 years old. The African baobab is the patriarch of living organizations; one specimen by its circles is estimated at 5,700 years old by Adamson and Humboldt. The trunk is but 12 or 15 feet to the branches, and often 75 feet round. A cypress in Mexico is 120 feet round, and is estimated by De Candolle to be older than Adamson's baobab. The cypress of Montezuma is 41 feet round. Strabo wrote of a cypress in Persia as being 2,500 years old. The largest tree in Mexico is 127 feet round and 120 high, with branches of 30 feet. A chestnut tree on Mount Etna is 106 feet round close to the ground, and five of its branches resemble great trees. De Candolle

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says there are oaks in France 1,500 years old. The Wallace oak near Paisley is nearly 800 years old. The yew trees at Fountain's Abbey are about 1,200 years old. That at Crowhurst, 1,500. That at Fortingal, above 2,000. That at Braburn, 2,500 to 3,000. Ivys reach 500 or 600 years. The larch the same. The lime 600 or 700 years. The trunk of a walnut tree 12 feet in diameter, hollowed out, and furnished as a sitting-room, was imported from America and exhibited in London. The trunk was 80 feet high without a branch, and the entire height 150 feet, the bark twelve inches think, and the branches from three to four feet in diameter. The California pine is from 150 to 200 feet high and from twenty to sixty feet in diameter. The forests in watered, tropical countries are formed of trees from 100 to 200 feet high, which grow to the water's edge of rivers, presenting a solid and impenetrable barrier of trunks ten or twelve feet in diameter. The dragon tree is in girth from 40 to 100 feet, and 50 or 60 feet high, and a misosa in South America is described whose head is 600 feet round.

Rates of Speed at Which Birds Fly Per Hour.

Hawks, 150 miles; sparrows, 92 miles; ducks, 90 miles; falcons, 74 miles; crows, 25 miles.

Seasoning and Preserving Timber.

For the purpose of seasoning, timber should be piled under shelter, where it may be kept dry, but not exposed to a strong current of air. At the same time there should be a free circulation of air about the timber, with which few slats or blocks of wood should be placed between the pieces that lie over each other, near enough to prevent the timber from bending.

In the sheds the pieces of timber should be piled in this way, or in square piles, and classed according to age and kind. Each pile should be distinctly marked with the number and kind of pieces, and the age or the date of receiving them.

The piles should be taken down and made over again at intervals, varying with the length of time which the timber has been cut.

The seasoning of timber requires from two to four years, according to its size.

Gradual drying and seasoning in this manner is considered the most favorable to the durability and strength of timber, but various methods have been prepared for hastening the process. For this purpose, steaming and boiling timber has been applied with success; kiln-drying is serviceable only for boards and pieces of small dimensions, and is apt to cause cracks, and to impair the strength of wood, unless performed very slowly.

Timber of large dimension is improved by immersion in water for some weeks, according to its size, after which, it is less subject to warp and crack in steaming.

Oak timber loses about one-fifth of its weight in seasoning, and about one-third of its weight in becoming dry.

LUMBER AND LOG MEASUREMENT AT SIGHT.

Showing net proceeds (fractions of feet omitted) of logs in 1 inch boards, deducting saw kerf and slabs. If the required dimension is not in the table, unite two or three suitable numbers together. The length will be found in the left hand column and the diameter in inches on the head of the other columns.

Length, feet	Diam. 10	Diam. 11	Diam. 12	Diam. 13	Diam. 14	Diam. 15	Diam. 16	Diam. 17	Diam. 18	Diam. 19	Diam. 20	Diam. 21	Diam. 22	Diam. 23	Diam. 24	Diam. 25	Diam. 26	Diam. 27	Diam. 28	Diam. 29	Diam. 30	Diam. 31	Diam. 32	Diam. 33	Diam. 34	Diam. 35	Diam. 36
10	23	31	40	50	62	75	90	105	122	140	160	180	202	225	250	275	302	330	360	391	422	456	490	526	562	601	640
11	25	34	44	55	69	83	99	116	135	154	176	198	223	248	275	302	333	363	396	430	465	502	539	578	619	661	704
12	27	37	48	61	75	91	108	126	147	169	192	217	243	271	300	331	363	397	432	469	507	547	588	631	675	721	768
13	29	40	52	66	81	98	117	137	159	183	208	235	263	293	325	358	393	430	468	508	549	592	637	684	731	781	832
14	32	43	55	71	88	106	126	148	171	197	224	253	283	313	350	386	433	463	504	547	591	638	686	736	787	841	896
15	34	46	60	76	94	113	135	158	184	211	240	271	303	336	375	413	453	496	540	586	633	683	735	789	844	901	960
16	36	49	64	81	100	121	144	169	196	225	256	289	324	359	400	441	484	530	576	625	676	729	784	842	900	961	1024
17	38	52	68	86	106	128	153	179	208	239	272	307	344	383	425	468	514	563	612	664	718	774	833	895	956	1021	1088
18	41	55	72	91	112	135	162	190	220	253	288	325	364	406	450	496	544	596	648	703	761	820	882	946	1012	1081	1152
19	43	58	76	96	119	143	170	201	232	267	304	343	384	429	475	523	574	630	684	742	803	865	931	999	1069	1141	1216
20	46	61	80	101	125	151	180	211	244	280	320	361	404	452	500	550	605	661	720	782	845	912	980	1052	1125	1202	1280
21	48	64	84	106	131	158	189	222	257	293	336	379	425	473	525	579	635	693	756	820	887	957	1029	1103	1181	1261	1344
22	50	67	88	111	137	166	198	232	269	309	352	397	445	496	550	605	665	726	792	860	930	1004	1078	1156	1238	1322	1408
23	52	70	92	116	144	174	207	243	281	323	368	415	465	519	575	632	695	760	828	898	972	1049	1127	1209	1295	1381	1472
24	54	74	96	122	150	181	216	254	294	338	384	433	486	541	600	662	726	794	864	938	1014	1094	1176	1262	1350	1442	1536
25	56	77	100	127	156	189	225	264	308	351	400	451	506	562	625	689	756	827	900	977	1056	1139	1225	1315	1408	1501	1600
26	59	80	104	133	163	196	234	274	318	365	416	470	526	586	650	716	786	860	936	1016	1098	1184	1274	1368	1462	1562	1664
27	61	83	108	137	169	204	243	285	330	380	432	488	546	606	675	744	826	893	972	1056	1140	1230	1323	1420	1518	1622	1728
28	63	86	112	142	175	212	252	296	342	394	448	506	568	626	700	772	866	926	1008	1094	1182	1276	1372	1472	1574	1682	1792
29	65	89	116	147	182	219	261	306	353	408	464	524	586	649	725	799	886	959	1044	1133	1224	1321	1421	1525	1631	1742	1856
30	68	92	120	152	188	226	270	316	368	422	480	542	606	672	750	826	906	992	1080	1172	1266	1366	1470	1578	1688	1802	1920
31	70	95	124	157	193	234	279	327	380	436	496	560	627	695	775	854	937	1026	1116	1211	1309	1412	1519	1631	1744	1862	1984
32	72	98	128	162	200	242	288	338	392	450	512	578	648	718	800	882	968	1060	1152	1250	1352	1458	1568	1684	1800	1922	2048
33	74	101	132	169	206	249	297	348	404	464	528	596	668	742	825	909	998	1093	1188	1289	1394	1503	1617	1737	1856	1982	2112
34	77	104	136	172	212	256	306	358	416	478	544	614	688	766	850	936	1028	1126	1224	1328	1436	1548	1666	1790	1912	2042	2176
35	79	107	140	177	219	263	315	369	428	492	560	632	708	789	875	964	1058	1159	1260	1367	1479	1594	1715	1841	1968	2102	2240
36	81	110	144	182	224	272	324	380	440	506	576	650	728	812	900	992	1088	1192	1296	1408	1522	1640	1764	1892	2024	2162	2304

LUMBER MEASUREMENT TABLE.

Square timber and scantling brought down to one inch board measure. Example—To find the number of feet in a beam 6x10 and 24 feet in length, consult the table, and opposite 24 and under 6x10 you will find 120, the correct number of feet. Fractions of feet omitted.

Ft.	2x4	2x5	2x6	2x7	2x8	3x3	3x4	3x5	3x6	3x7	3x8	4x4	4x5	4x6	4x7	4x8	4x9	5x5	5x6	5x7	5x8	6x6	6x7	6x8	6x9	6x10
6	4	5	6	7	8	5	6	7	9	10	12	8	10	12	14	16	18	12	15	17	20	18	21	24	27	30
7	4	5	7	8	9	5	7	8	10	12	14	9	11	14	16	18	21	14	17	20	23	21	24	28	31	35
8	5	6	8	9	10	6	8	10	12	14	16	10	13	16	18	21	24	16	20	23	26	24	28	32	36	40
9	6	7	9	10	12	6	9	11	13	15	18	12	15	18	21	24	27	18	22	26	29	27	31	36	40	45
10	6	8	10	11	13	7	10	12	15	17	20	13	16	20	23	26	30	21	25	29	33	30	35	40	45	50
11	7	9	11	12	14	8	11	13	16	19	22	14	18	22	25	29	33	22	27	32	36	33	38	44	49	55
12	8	10	12	14	16	9	12	15	18	21	24	16	20	24	28	32	36	25	30	36	40	36	42	48	54	60
13	8	10	13	15	17	9	13	16	19	22	26	17	21	26	30	34	39	27	32	37	43	39	45	52	58	65
14	9	11	14	16	18	10	14	17	21	24	28	18	23	28	32	37	42	29	35	40	46	42	49	56	63	70
15	10	12	15	17	20	11	15	18	22	26	30	20	25	30	35	40	45	31	37	43	50	45	52	60	67	75
16	10	13	16	18	21	12	16	20	24	28	32	21	26	32	37	42	48	33	40	46	53	48	56	64	72	80
17	11	14	17	19	22	12	17	21	25	29	34	22	28	34	39	45	51	35	42	49	56	51	59	68	76	85
18	12	15	18	21	24	13	18	22	27	31	36	24	30	36	42	48	54	37	45	52	60	54	63	72	81	90
19	12	16	19	22	25	14	19	23	28	33	38	25	31	38	44	50	57	39	47	55	63	57	66	76	85	95
20	13	16	20	23	26	15	20	25	30	35	40	26	33	40	46	53	60	41	50	58	66	60	70	80	90	100
21	14	17	21	24	28	15	21	26	31	36	42	28	35	42	49	56	63	43	52	61	70	63	73	84	94	105
22	14	18	22	25	29	16	22	27	33	38	44	29	36	44	51	58	65	45	55	64	73	66	77	88	98	110
23	15	19	23	26	30	17	23	28	34	40	46	30	38	46	53	61	69	47	57	67	76	69	80	92	103	115
24	16	20	24	28	32	18	24	30	36	42	48	32	40	48	56	64	72	50	60	70	80	72	84	96	108	120
25	16	20	25	29	33	18	25	31	37	45	50	33	41	50	58	66	75	52	62	72	83	75	87	100	112	125
30	26	25	30	35	40	22	30	37	45	52	60	40	50	60	70	80	90	62	75	87	100	90	105	120	135	150
34	22	28	34	39	45	25	34	42	51	59	68	45	58	68	79	90	102	70	85	99	113	102	119	136	153	170
40	26	33	40	46	53	30	40	50	60	70	80	53	66	80	93	106	120	83	100	116	133	120	140	160	180	200
42	28	35	42	49	56	31	42	52	63	73	84	56	70	84	98	112	126	87	105	122	140	126	147	168	189	210
44	29	36	44	51	58	33	44	55	66	77	88	58	73	88	102	117	132	90	110	128	146	132	154	176	198	220

BOARD AND PLANK MEASUREMENT AT SIGHT.

This table gives the sq. ft. and in. in board from 6 to 25 in. wide, and from 8 to 36 ft. long. If a board be larger than 30 ft. unite two numbers. Thus, if a board is 40 ft. long and 16 in. wide, add 30 and 10 and you have 33 ft. 4 in. For a two inch plank double the product.

Feet Long.	6 in W.		7 in W.		8 in W.		9 in W.		10 in W.		11 in W.		12 in W.		13 in W.		14 in W.		15 in W.		16 in W.		17 in W.		18 in W.		19 in W.		20 in W.		21 in W.		22 in W.		23 in W.	
	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in
8	4	0	4	8	5	4	6	0	6	8	7	4	8	0	8	8	9	4	10	0	10	8	11	4	12	8	12	8	13	4	14	0	14	8	15	4
9	4	6	5	3	6	0	6	9	7	6	8	3	9	0	9	9	10	6	11	3	12	0	12	9	13	6	14	3	15	0	15	9	16	6	17	3
10	5	0	5	10	6	8	7	6	8	4	9	2	10	0	10	10	11	8	12	6	13	4	14	2	15	0	13	10	16	8	17	6	18	4	19	2
11	5	6	6	5	7	4	8	3	9	2	10	1	11	0	11	11	12	10	12	9	14	8	15	7	16	6	17	5	18	4	19	3	20	2	21	1
12	6	0	7	0	8	0	9	0	10	0	11	0	12	0	13	0	14	0	15	0	16	0	17	0	18	0	19	0	20	0	21	0	22	0	23	0
13	6	6	7	7	8	8	9	9	10	10	11	11	13	0	14	1	15	2	16	3	17	4	18	5	19	6	20	7	21	8	22	9	23	10	24	11
14	7	0	8	2	9	4	10	6	11	8	12	10	14	0	15	2	16	4	17	6	18	8	19	10	21	0	22	2	23	4	24	6	25	8	26	10
15	7	6	8	9	10	0	11	3	12	6	13	9	15	0	16	3	17	6	18	9	20	0	21	3	22	6	23	9	25	0	26	3	27	6	28	9
16	8	0	9	4	10	8	12	0	13	4	14	8	16	0	17	4	18	8	20	0	21	4	22	8	24	0	25	4	26	8	28	0	29	4	30	8
17	8	6	9	11	11	4	12	9	14	2	15	7	17	0	18	5	19	10	21	3	22	8	24	1	25	6	26	11	28	4	29	9	31	2	32	7
18	9	0	10	6	12	0	13	6	15	0	16	6	18	0	19	6	21	0	22	6	24	0	25	6	27	0	28	6	30	0	31	6	33	0	34	6
19	9	6	11	1	12	8	14	3	15	10	17	5	19	0	20	7	22	2	23	9	25	4	26	11	28	6	30	1	31	8	33	3	34	10	36	5
20	10	0	11	8	13	4	15	0	16	8	18	4	20	0	21	8	23	4	25	0	26	8	28	4	30	0	31	8	33	4	35	0	36	8	38	4
21	10	6	12	3	14	0	15	9	17	6	19	3	21	0	22	9	24	6	26	3	28	0	29	9	31	6	33	3	35	0	36	9	38	6	40	3
22	11	0	12	10	14	8	16	6	18	4	20	2	22	0	23	10	25	8	27	6	29	4	31	2	33	0	34	10	36	8	38	6	40	4	42	2
23	11	6	13	5	15	4	17	3	19	2	21	1	23	0	24	11	26	10	28	9	30	8	32	7	34	6	36	5	38	4	40	3	42	2	44	1
24	12	0	14	0	16	0	18	0	20	0	22	0	24	0	26	0	28	0	30	0	33	0	34	0	36	0	38	0	40	0	42	0	44	0	46	4
25	12	6	14	7	16	8	18	9	20	10	22	11	25	0	27	1	29	2	31	3	34	4	35	5	37	6	39	7	41	8	43	9	45	10	47	11
26	13	0	15	2	17	4	19	6	21	8	23	10	26	0	28	2	30	4	32	6	35	8	36	10	39	0	41	2	43	4	45	6	47	8	49	10
27	13	6	15	9	18	0	20	3	22	6	24	9	27	0	29	3	31	6	33	9	36	0	38	3	40	6	42	9	45	0	47	3	49	6	51	9
28	14	0	16	4	18	8	21	0	23	4	25	8	28	0	30	4	32	8	35	0	37	4	39	8	42	0	44	4	46	8	49	0	51	4	53	8
29	14	6	16	11	19	4	21	9	24	2	26	7	29	0	31	5	33	10	36	3	38	8	41	1	43	6	45	11	48	4	50	9	53	2	55	7
30	15	0	17	6	20	0	22	6	25	0	27	6	30	0	32	6	35	0	37	6	40	0	42	6	45	0	47	6	50	0	51	6	55	0	57	6

LUMBER MEASUREMENT AT SIGHT.

One inch board measure. For plank, double or treble the product, as may be required. A board or plank is longer or wider than the dimensions here given, add two suitable numbers together. The left-hand column contains the length in feet: the width in inches heads each column.

Feet long.	6 in		7 in		8 in		9 in		10 in		11 in		12 in		13 in		14 in		15 in		16 in		17 in		18 in		19 in		20 in		21 in		22 in		23 in		24 in		25 in	
	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in
8	4	0	4	8	5	4	6	0	6	8	7	4	8	0	8	8	9	4	10	0	10	8	11	4	12	0	12	8	13	4	14	0	14	8	15	4	16	0	16	8
9	4	6	5	3	6	0	6	9	7	6	8	3	9	0	9	9	10	6	11	0	12	0	12	9	13	6	14	3	15	0	15	9	16	6	17	3	18	0	18	9
10	5	0	5	10	6	8	7	6	8	4	9	2	10	0	10	10	11	8	12	6	13	4	14	2	15	0	15	10	16	8	17	6	18	4	19	2	20	0	20	10
11	5	6	6	5	7	4	8	3	9	2	10	1	11	0	11	11	12	10	13	9	14	8	15	7	16	6	17	5	18	4	19	3	20	2	21	1	22	0	22	11
12	6	0	7	0	8	0	9	0	10	0	11	0	12	0	13	0	14	0	15	0	16	0	17	0	18	0	19	0	20	0	21	0	22	0	23	0	24	0	25	0
13	6	6	7	7	8	8	9	9	10	10	11	11	13	0	13	1	15	2	16	3	17	4	18	5	19	6	20	7	21	8	22	9	23	10	24	11	26	0	27	1
14	7	0	8	2	9	4	10	6	11	8	12	10	14	0	15	2	16	4	17	6	18	8	19	10	21	0	22	2	23	4	24	6	25	8	26	10	28	0	29	2
15	7	6	8	9	10	0	11	3	12	6	13	9	15	0	16	3	17	6	18	9	20	0	21	3	22	6	23	9	25	0	26	3	27	6	28	9	30	0	31	3
16	8	0	9	4	10	8	12	0	13	4	14	8	16	0	17	4	18	8	20	0	21	4	22	8	24	0	25	4	26	8	28	0	29	4	30	8	32	0	33	4
17	8	6	9	11	11	4	12	9	14	2	15	7	17	0	18	5	19	10	21	3	22	8	24	1	25	6	26	11	28	4	29	9	31	2	32	7	34	0	35	5
18	9	0	10	6	12	0	13	6	15	0	16	6	18	0	19	6	21	0	22	6	24	0	25	6	27	0	28	6	30	0	31	6	33	0	34	6	36	0	37	6
19	9	6	11	1	12	8	14	3	15	10	17	5	19	0	20	7	22	2	23	9	25	4	26	11	28	6	30	1	31	8	33	3	34	10	36	5	38	0	39	7
20	10	0	11	8	13	4	15	0	16	8	18	4	20	0	21	8	23	4	25	0	26	8	28	4	30	0	31	8	33	4	35	0	36	8	38	4	40	0	41	8
21	10	6	12	3	14	0	15	9	17	6	19	3	21	0	22	9	24	6	26	3	28	0	29	9	31	6	33	3	35	0	36	9	38	6	40	3	42	0	43	9
22	11	0	12	10	14	8	16	6	18	4	20	2	22	0	23	10	25	8	27	6	29	4	31	2	33	0	34	10	36	8	38	6	40	4	42	2	44	0	45	10
23	11	6	13	5	15	4	17	3	19	2	21	1	23	0	24	11	26	10	28	9	30	8	32	7	34	6	36	5	38	4	40	3	42	2	44	1	46	0	47	11
24	12	0	14	0	16	0	18	0	20	0	22	0	24	0	26	0	28	0	30	0	32	0	34	0	36	0	38	0	40	0	42	0	44	0	46	0	48	0	50	0
25	12	6	14	7	16	8	18	9	20	10	22	11	25	0	27	1	29	2	31	3	33	4	35	5	37	6	39	7	41	8	43	9	45	10	47	11	50	0	52	1
26	13	0	15	2	17	4	19	6	21	8	23	10	26	0	28	2	30	4	32	6	34	8	36	10	39	0	41	2	43	4	45	6	47	8	49	10	52	0	54	2
27	13	6	15	9	18	0	20	3	22	6	24	9	27	0	29	3	31	6	33	9	36	0	38	3	40	6	42	9	45	0	47	3	49	6	51	9	54	0	56	3
28	14	0	16	4	18	8	21	0	23	4	25	8	28	0	30	4	32	8	35	0	37	4	39	8	42	0	44	4	46	8	49	0	51	4	53	8	56	0	58	4
29	14	6	16	11	19	4	21	9	24	2	26	7	29	0	31	5	33	10	36	3	38	8	41	1	43	6	45	11	48	4	50	9	53	2	55	7	58	0	60	5
30	15	0	17	6	20	0	22	6	25	0	27	6	30	0	32	6	35	0	37	6	40	0	42	6	45	0	47	6	50	0	52	6	55	0	57	6	60	0	62	6
31	15	6	18	1	20	8	23	3	25	10	28	5	31	0	33	7	36	2	38	9	41	4	44	0	46	9	49	4	51	11	54	6	57	1	59	8	62	0	64	6
32	16	0	18	8	21	4	24	0	26	8	29	4	32	0	34	8	37	4	40	0	42	8	45	4	48	0	50	8	53	4	56	0	58	8	61	4	64	0	66	8
33	16	6	19	3	22	0	24	9	27	6	30	3	33	0	35	9	38	6	41	3	44	0	46	9	49	6	52	3	55	0	57	9	60	6	63	3	66	0	68	9
34	17	0	19	10	22	8	25	6	28	4	31	2	34	0	36	10	39	8	42	6	45	4	48	2	51	0	54	0	56	8	59	6	62	4	65	2	68	0	70	8
35	17	6	20	5	23	4	26	3	29	2	32	1	35	0	37	11	40	10	43	9	46	8	49	7	52	6	55	5	58	4	61	3	64	2	67	1	70	0	73	0
36	18	0	21	0	24	0	27	0	30	0	33	0	36	0	39	0	42	0	45	0	48	0	51	0	54	0	57	0	60	0	63	0	66	0	69	0	72	0	75	0

Logs Reduced to Running Board Measure. Logs Reduced to 1 Inch Board Measure.

If the log is longer than contained in the table, take any two lengths. Fractional parts of inches are not given. The diameter of timber is usually taken 20 ft. from the butt. All logs short of 20 ft., take the diameter at the top or small end. To find the number of feet of boards which a log will produce when sawed, take the length of feet in the first column on the left hand, and the diameter at the top of the column in inches. Suppose a log 12 ft. long and 24 in. in diameter. In the left hand column is the length, and opposite 12 under 24 is 300, the number of feet of boards in a log of that size.

Feet long.	Diam. 12	Diam. 13	Diam. 14	Diam. 15	Diam. 16	Diam. 17	Diam. 18	Diam. 19	Diam. 20	Diam. 21	Diam. 22	Diam. 23	Diam. 24	Diam. 25	Diam. 26	Diam. 27	Diam. 28	Diam. 29	Diam. 30	Diam. 31	Diam. 32	Diam. 33	Diam. 34
10	54	66	76	93	104	107	137	154	179	194	210	237	256	283	309	339	359	377	407	440	456	486	496
11	59	72	83	102	114	131	151	169	186	213	231	261	270	311	340	374	396	415	447	484	502	535	546
12	64	78	90	111	124	143	164	184	213	233	252	285	300	340	371	408	432	453	488	528	548	584	596
13	69	84	97	120	134	154	177	199	231	251	273	308	327	369	404	442	469	491	530	572	594	633	646
14	74	90	104	129	144	166	191	214	249	270	295	332	360	397	438	476	505	529	571	616	640	682	696
15	79	96	111	138	154	177	204	229	266	289	314	355	376	426	468	511	541	567	612	662	686	731	746
16	84	102	118	146	164	189	217	244	284	308	336	379	401	455	496	545	578	605	653	706	732	780	796
17	89	108	126	155	173	200	231	259	301	327	356	403	426	484	527	579	614	643	694	751	778	829	846
18	94	114	133	164	183	212	244	274	319	346	377	426	451	512	558	613	650	681	735	795	824	878	896
19	99	121	140	173	193	223	257	289	336	365	398	450	476	541	589	647	686	719	776	839	870	927	946
20	104	127	147	182	203	235	271	304	354	384	419	473	501	569	621	681	724	757	817	884	916	976	996
21	109	133	154	191	213	247	284	319	371	403	440	497	527	597	652	716	760	796	858	928	962	1025	1046
22	114	139	161	200	223	259	297	334	389	422	461	520	552	627	684	750	796	834	900	972	1008	1074	1096
23	119	146	169	209	233	270	311	349	407	441	481	543	576	655	715	784	833	872	941	1017	1054	1123	1146
24	124	151	176	218	243	282	325	364	424	460	502	566	613	684	746	818	869	910	982	1061	1100	1172	1196
25	129	157	183	227	253	294	337	379	442	479	523	591	638	713	777	853	906	949	1023	1105	1146	1221	1246
26	134	163	190	236	262	305	350	394	459	498	544	615	663	742	808	887	942	986	1064	1149	1192	1270	1295
27	139	169	197	245	272	316	363	409	477	517	565	639	688	771	839	921	979	1024	1106	1193	1238	1319	1346
28	144	175	204	254	282	328	376	424	494	536	586	663	714	800	870	955	1015	1062	1146	1237	1284	1368	1396
29	149	181	211	263	293	339	389	439	512	556	607	687	738	829	901	989	1052	1100	1187	1281	1330	1417	1446
30	154	187	218	272	303	351	402	454	529	574	628	711	763	858	932	1023	1088	1138	1228	1326	1376	1466	1496
31	159	193	226	281	313	362	415	469	547	593	649	736	788	887	963	1057	1125	1176	1269	1369	1422	1515	1546

WOOD AND BARK MEASUREMENT AT SIGHT.

The cord of wood or bark is 8 ft. long, 4 ft. high, and 4 ft. wide, as established by law in most of the States and the Dominion of Canada. If the wood is 8 ft. long, double the product. Fractions of feet are omitted in the table. Price will be found heading the columns, number of feet in the left hand column.

Feet long.	$1 50	$1 75	$2 00	$2 25	$2 50	$2 75	$3 00	$3 25	$3 50	$4 00	$4 50	$5 00	$5 50	$6 00	$6 50	$7 00
1	01	01	01	02	02	02	02	02	02	03	03	03	04	04	05	05
2	02	02	03	03	04	04	05	05	05	06	07	07	08	09	10	10
3	03	04	04	05	06	06	07	07	08	09	10	11	12	14	15	16
4	05	06	06	07	08	09	09	10	10	12	14	15	17	18	20	21
5	06	07	08	09	10	11	12	13	13	15	17	19	21	23	25	27
6	07	08	09	11	12	13	14	15	16	18	21	23	25	28	30	32
7	08	10	11	12	14	15	16	17	19	21	24	27	30	32	35	38
8	09	11	12	14	16	18	19	20	21	24	28	31	34	37	40	43
16	19	22	25	28	31	35	37	40	43	49	56	62	68	74	81	87
24	28	33	37	42	47	52	56	61	65	75	84	93	1 03	1 12	1 22	1 31
32	38	44	50	56	63	69	75	81	85	1 00	1 12	1 25	1 37	1 50	1 62	1 75
40	47	55	62	70	78	86	94	1 02	1 09	1 25	1 40	1 56	1 72	1 87	2 03	2 19
48	56	66	75	84	94	1 03	1 12	1 22	1 31	1 50	1 68	1 87	2 06	2 25	2 44	2 62
56	61	77	88	98	1 09	1 20	1 13	1 42	1 53	1 75	1 98	2 18	2 40	2 62	2 84	3 06
64	75	88	1 00	1 13	1 25	1 38	1 50	1 62	1 75	2 00	2 25	2 50	2 75	3 00	3 25	3 50
72	84	98	1 13	1 27	1 41	1 55	1 69	1 83	1 96	2 25	2 53	2 81	3 09	3 37	3 65	3 93
80	94	1 09	1 25	1 41	1 56	1 72	1 88	2 03	2 18	2 50	2 81	3 13	3 43	3 74	4 06	4 37
84	98	1 15	1 31	1 48	1 64	1 81	1 97	2 13	2 29	2 62	2 95	3 28	3 60	3 94	4 26	4 59
88	1 03	1 20	1 38	1 55	1 72	1 89	2 06	2 23	2 40	2 75	3 09	3 43	3 78	4 12	4 47	4 81
92	1 08	1 26	1 44	1 62	1 80	1 98	2 15	2 33	2 51	2 87	3 23	3 59	3 95	4 30	4 67	5 03
96	1 13	1 31	1 50	1 69	1 88	2 06	2 25	2 44	2 62	3 00	3 37	3 75	4 12	4 49	4 87	5 25
104	1 22	1 42	1 63	1 83	2 03	2 23	2 44	2 64	2 84	3 25	3 65	4 06	4 47	4 87	5 28	5 69
112	1 31	1 53	1 75	1 97	2 19	2 41	2 62	2 84	3 06	3 50	3 93	4 38	4 80	5 24	5 69	6 12
120	1 41	1 64	1 88	2 11	2 34	2 58	2 81	3 05	3 28	3 75	4 21	4 68	5 15	5 62	6 09	6 56
128	1 50	1 75	2 00	2 25	2 50	2 75	3 00	3 25	3 50	4 00	4 50	5 00	5 50	6 00	6 50	7 00

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TIMBER MEASUREMENT TABLE.

Showing the cubical contents of round logs, masts, spars, etc. Fractions of feet omitted. Length of log is shown in left-hand column. Diameter is shown at the head of column. If the desired dimensions are not shown, double some numbers.

Feet.	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
8....	4	5	6	7	8	10	11	12	14	16	17	19	21	23	25	27	29	32	34	37	39	42	45	48	50	53	57	60
9....	5	6	7	8	9	11	12	14	16	18	20	22	24	26	28	31	33	36	38	41	44	47	50	53	57	60	64	67
10....	5	7	8	9	10	12	14	16	18	20	22	24	26	29	31	34	37	40	43	46	49	52	56	59	63	67	71	75
11....	6	7	8	10	12	13	15	17	19	22	24	26	29	32	35	37	41	43	47	50	53	57	61	65	69	73	77	82
12....	6	8	9	11	13	15	17	19	21	24	26	29	32	34	38	41	44	47	51	55	58	62	67	71	76	80	85	90
13....	7	8	10	12	14	16	18	20	23	26	28	31	34	37	41	44	48	51	55	60	63	68	72	77	82	87	92	97
14....	7	9	11	13	15	17	19	22	25	28	31	34	37	40	44	48	52	55	60	64	68	73	78	83	88	94	99	105
15....	8	10	12	14	16	18	21	23	27	30	33	36	40	43	47	51	55	59	64	69	73	78	84	89	95	100	106	112
16....	9	11	13	14	17	20	22	25	28	32	35	38	42	46	50	55	59	63	68	73	78	83	89	95	101	107	113	114
17....	9	11	13	16	18	21	24	27	30	33	37	41	45	49	53	58	63	68	73	78	83	89	95	101	107	114	121	127
18....	10	12	14	16	19	22	25	28	31	35	39	43	48	52	57	61	66	72	77	82	88	94	100	106	114	120	128	134
19....	10	13	15	17	21	23	27	30	33	37	41	45	50	55	60	65	70	75	81	87	93	99	106	112	120	127	135	142
20....	11	13	16	18	21	25	28	31	36	39	44	48	53	58	63	68	74	79	85	91	98	105	112	118	126	134	142	149
21....	11	14	16	19	22	26	29	33	37	41	46	50	55	61	66	71	77	83	90	96	103	111	117	124	132	140	149	157
22....	12	15	17	20	23	27	31	35	39	43	48	53	58	64	69	75	81	87	94	101	109	116	123	130	139	147	156	164
23....	12	16	18	21	24	28	32	36	41	45	50	55	61	66	72	78	85	91	98	105	113	121	128	136	145	154	163	172
24....	13	16	19	22	26	30	34	38	42	47	52	58	63	69	75	82	88	95	102	111	118	127	134	143	151	160	170	179
25....	14	17	20	23	27	31	35	39	44	49	54	60	66	72	79	85	92	99	107	116	123	131	139	149	158	167	178	187
26....	14	17	20	24	28	32	36	41	46	51	57	63	69	75	82	89	96	103	111	120	128	137	145	154	164	174	185	194
27....	15	18	21	25	29	33	38	42	48	53	59	65	71	78	85	92	99	107	115	125	133	142	151	160	170	180	192	202
28....	15	19	22	26	30	35	39	44	49	55	61	67	74	81	88	95	103	111	120	129	136	147	156	166	177	187	198	209
29....	16	19	23	27	31	36	41	45	51	57	63	70	77	84	91	99	107	115	124	134	143	153	162	172	183	194	206	217
30....	16	20	24	28	32	37	42	47	53	59	65	72	79	86	94	102	110	119	128	138	148	158	168	177	189	200	213	224
31....	17	20	24	29	33	38	43	49	55	61	67	74	82	89	98	106	114	123	132	143	152	163	173	182	195	207	220	232
32....	17	21	25	30	34	40	45	50	57	63	70	77	85	92	100	108	118	127	137	148	157	169	178	188	202	214	227	239
33....	18	22	26	30	35	41	46	52	58	65	72	79	87	95	104	112	121	130	141	152	162	174	184	194	208	220	234	247
34....	19	22	27	31	36	42	48	53	60	67	74	82	89	98	107	116	125	135	145	157	167	179	190	200	214	227	241	254
35....	19	23	28	32	37	43	49	55	62	69	76	84	93	101	110	119	129	139	149	161	172	182	196	205	220	234	248	261
36....	20	24	28	33	39	44	50	57	64	71	79	86	95	104	113	123	133	143	154	166	177	190	201	212	227	240	256	269

LUMBER MEASUREMENT TABLE.

Square timber and scantling. Measurement at sight. Dimensions in inches head each column, and the length will be found in the left-hand column. If the required dimensions cannot be found in the table, add two lengths or breadths together, or take part of some length or breadth, as the case may require.

Feet.	6.11.	6.12.	7.7.	7.8.	7.9.	7.10.	7.11.	7.12.	8.8.	8.9.	8.10.	8.11.	8.12.	9.9.	9.10.	9.11.	9.12.	10.10.	10.11.	10.12.	11.11.	11.12.	12.12.
6	33.	36.	24. 6	28.	31.6	35.	38. 6	42.	32.	36.	40	44.	48.	40.6	45.	49.6	54.	50.	55.	60.	60. 6	66.	72.
7	38.6	42.	28. 7	32.8	36.9	40.10	41.11	49.	37.4	42.	46.8	51.4	56.	47.3	52.6	57.9	63.	58.4	64. 2	70.	70. 7	77.	84.
8	44.	48	32. 8	37.4	42.	46. 8	55. 4	56.	42.8	48.	53.4	58.8	64.	54.	60.	66.	72.	66.8	73. 4	80	80. 8	88.	96.
9	49.6	54.	36 9	42.	47.3	52. 6	57. 9	63.	48.	54.	60.	66.	72.	60.9	67.6	74.3	81.	75.	86. 6	90.	90. 9	99.	108.
10	55.	60.	40.10	46.8	52.6	58. 4	64. 2	70.	53.4	60.	66.8	73.4	80.	67.6	75.	82.6	90.	83.4	91. 8	100.	100.10	110.	120.
11	60.6	66.	40.11	51.4	57.9	64. 2	70. 7	77.	58.8	66.	73.4	80.8	88.	74.3	82,6	90.9	99.	91.8	100.10	110.	110.11	121	132.
12	66.	72.	49.	56.	63.	70.	77.	84.	64.	72.	80.	88.	96.	81.	90.	99.	108.	100.	110.	120.	121.	132.	144.
13	71.6	78.	53. 1	60.8	68.3	75.10	83. 5	91.	69.4	78.	86.6	95.4	104.	87.9	97.6	107.3	117.	108.4	119. 2	130.	131. 1	143.	156.
14	77.	84.	57. 2	65.4	73.6	81. 8	89.10	98.	74.8	84.	93.4	102 8	112.	94.6	105.	115.6	126.	116.8	128. 4	140.	141. 2	154.	168.
15	82.6	90.	61. 3	70.	78.9	87. 6	96. 3	105.	80.	90.	100.	110.	120.	101.3	112.6	123.9	135.	125.	137. 6	150.	151. 3	165.	180.
16	88.	96.	64. 4	74.8	84.	93. 4	102. 8	112.	85.4	96.	106.8	117.4	128.	108.	120.	132.	144.	133.4	146. 8	160.	161. 4	176.	192.
17	93.6	102.	69. 5	79.4	89.3	99. 2	109. 1	119	90.8	102.	113 4	124.8	136.	114.9	127,6	140.3	153.	141.8	155.10	170.	171. 5	187.	204.
18	99.	108.	73. 6	84.	94.6	105.	115. 6	126.	96.	108.	120.	132.	144.	121.6	135.	148.6	162.	150.	165.	180.	181. 6	198.	216.
19	104.6	114.	77. 7	88.8	99.9	110.10	121.11	133.	101.4	114.	126.8	139.4	152.	128.3	142.6	156.9	171.	158.4	174. 2	190.	191. 7	209.	228.
20	110.	120.	81. 8	93.4	105.	116. 8	128. 4	140.	106.8	120.	133.4	146.8	160.	135.	150.	165.	180.	166.8	183. 4	200.	201. 8	220.	240.
21	115.6	126.	85. 9	98.	110.3	122. 6	134. 9	147.	112.	126.	140.	154.	168.	141.9	157.6	173.3	189.	175.	192. 6	210.	211. 9	231.	252.
22	121.	132.	89.10	102.8	115.6	128. 5	141. 2	154.	117.4	132.	146.8	161.4	176.	148 6	165.	181.6	198.	183.4	201. 8	220.	221.10	242.	264.
23	126.6	138.	93.11	107.4	120.9	134. 2	147. 7	161.	122.8	138.	153.4	168.8	184.	155.3	172.6	189.9	207.	191.8	210.10	230.	231.11	253.	276.
24	132.	144.	98.	112.	126.	140.	154.	168.	128.	144.	160.	176.	192.	162.	180.	198.	216.	200.	220.	240.	242.	264.	288.
26	143.	156.	106. 2	121.4	136.6	151. 8	166.10	182.	138.8	156.	173.4	190.8	208.	175.6	195.2	214.6	234.	216.8	238. 4	260.	262. 2	286.	312.
28	154.	168.	114. 4	130.8	147.	163.	179. 8	196.	148.8	168.	186.8	205.4	224.	189.	210.	231.	252.	233.8	256. 8	280.	282. 4	308.	336.
30	165.	180.	122. 6	140.	157.6	175.	192. 6	210.	160.	180.	200.	220.	240.	202.6	225.	247.6	270.	250.	275. 6	300.	302. 6	330.	370.
	176.	192.	128. 8	149.4	168.	186. 8	205. 4	224.	170.8	192.	213.8	234.8	256.	216.	240.	264.	288.	266.8	293. 4	320.	322. 8	352.	384.

Weights of Cordwood.

One cord.	Lbs.	Carbon.	One cord.	Lbs.	Carbon.
Hickory	4,468	100	Canada Pine	1,870	42
Hard Maple	2,564	58	Yellow Oak	2,920	61
Beech	3,234	64	White Oak	1,870	81
Ash	3,449	79	Lombardy Poplar	1,775	41
Birch	2,368	49	Red Oak	3,255	76
Pitch Pine	1,903	43			

A Stock Broker's Technicalities.

A Bull is one who operates to depress the value of stocks, that he may buy for a rise.

A Bear is one who sells stocks for future delivery, which he does not own at the time of sale.

A Corner is when the Bears cannot buy or borrow the stock to deliver in fulfillment of their contracts.

Overloaded is when the Bulls cannot take and pay for the stock they have purchased.

Short is when a person or party sells stocks when they have none, and expect to buy or borrow in time to deliver.

Long is when a person or party has a plentiful supply of stocks.

A Pool or Ring is a combination formed to control prices.

A broker is said to carry stocks for his customer when he has bought and is holding it for his account.

A Wash is a pretended sale by special agreement between buyer and seller, for the purpose of getting a quotation reported.

A Put and Call is when a person gives so much per cent. for the option of buying or selling so much stock on a certain day, at a price fixed the day the option is given.

Are the Planets Inhabited?

This question is one which very naturally arises, when we think of the planets as worlds in so many respects similar to our own. Many think that the only object God can possibly have in making any world is to form an abode for man. Our own earth was evidently fitted up, although perhaps not created, for this purpose. Coal and oil for fuel and light, forests for timber, metals for machinery, rivers for navigation, and plains for corn. Our bodies, the air, light, and heat are all fitted to each other with exquisite nicety. When we turn to the planets, we do not know but God has other races of beings who inhabit them, or different ends to attain. We are assured that, if inhabited, the conditions on which life is supported vary much from those familiar to us. No human being could reside on Mercury, while no inhabitant could endure the intense cold of polar Uranus. At the sun, one of our pounds would weigh 29 pounds; on our moon the pound weight would become only about 2 ounces; while on Vesta, one of the planetoids, a man could easily spring sixty feet in the air and sustain no shock. Yet, while we speak of these

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peculiarities, we do not know what modification of the atmosphere or physical features may exist even on Mercury to temper the heat, or on Uranus to reduce the cold. With all these diversities, we must admit the power of an all-wise Creator to create beings adapted to a life or land different from our own.

Chinese Method of Preserving Grapes.

The Chinese have a method of preserving grapes, so as to have them at their command during the entire year. The method adopted consists in cutting a circular piece out of a ripe pumpkin or gourd, making an aperture large enough to admit the hand. The interior is then completely cleaned out, the ripe grapes are placed inside, and the cover replaced and pressed in firmly. The pumpkins are then kept in a cool place, and the grapes will be found to retain their freshness for a very long time. A very careful selection must be made of the pumpkin, the common field pumpkin, however, being well adapted for the purpose in question.

Preservation of Milk and Cream.

Put the milk into bottles, then place them in a saucepan with cold water, and gradually raise it to the boiling point; take it from the fire, and instantly cork the bottles, then raise the milk once more to the boiling point for half a minute. Finally let the bottles cool in the water in which they were boiled. Milk thus treated will remain perfectly good for six months. Emigrants, especially those having children, will find the above hint adding much to their comfort during their voyage.

Table for Engineers and Machinists.

Size and strength of cast iron columns. Iron 1 inch thick.

Diameter in inches.	Height in feet.										
	4	6	8	10	12	14	16	18	20	22	24
	Load in cwt.										
2	72	60	49	40	32	26	22	18	15	13	11
2⅓	119	105	91	77	65	55	47	40	34	29	25
3	178	143	145	128	111	97	84	73	64	56	49
3⅓	247	232	214	191	172	156	135	119	106	94	83
4	326	318	288	266	242	220	198	178	160	144	130
4⅓	418	400	379	354	327	301	275	251	229	208	189
5	522	501	479	452	427	394	365	337	310	285	262
6	607	592	573	550	525	497	469	440	413	386	360
7	1032	1013	989	959	924	887	848	808	765	725	686
8	1333	1315	1289	1259	1224	1185	1142	1097	1052	1005	959
9	1716	2697	1672	1640	1603	1561	1515	1461	1461	1364	1311
10	2119	2100	2077	2045	2007	1964	1916	1865	1811	1755	1697
11	2570	2550	2520	2490	2450	2410	2358	2305	2248	2189	2127
12	3050	3040	3020	2970	2930	2900	2830	2780	2730	2670	2600

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How Van Buskirk's Sozodont is Made.

Castile soap, 1¼ drams; glycerine, 1¼ drams; alcohol, 1 ounce; soft water, 4 ounces; oil of wintergreen, oil of cinnamon, oil of anise (either), sufficient to flavor. Mix. Accompanying this is a powder which is composed of equal parts of chalk (prepared), orris root, and carbonate of magnesia.

How to Preserve Meat.

Meat of any kind may be preserved in a temperature of from 80° to 100° for a period of ten days after it has been soaked in a solution of 1 pint of salt dissolved in 4 gallons of cold water and ½ gallon of a solution of bisulphate of calcium. By repeating this process the preservation may be extended by the addition of a solution of gelatine or the white of an egg to the salt and water.

How to Cut or Bore Glass.

Any hard steel tooth will cut glass with great facility when kept wet with camphor dissolved in turpentine. A drill bow may be used, or even the hand alone. A hole may be readily enlarged by a round file. The ragged edges of glass vessels may also be thus easily smoothed by a flat file. Flat window glass can readily be sawed with a watch-spring saw by the aid of this solution. In short, the most brittle glass can be wrought almost as easily as brass, by the use of cutting tools kept constantly wet with camphorated oil of turpentine.

How to Make Hens Lay in Winter.

Give a portion of minced meat, mixed with their other food, every day, or as often as convenient, and see that they have plenty of gravel, old plastering, or powdered egg-shells. The latter may be mixed with their food. Without some substance of this kind, which cannot be obtained when the ground is frozen or covered with snow, there will be nothing to form the shell.

The "Sun" Cholera Mixture.

Tincture of opium, 2 oz.; tincture of camphor, 2 oz.; tincture of capsicum, 2 oz.; tincture of rhubarb, 2 oz.; tincture of peppermint, 2 oz. Mix. Dose—A teaspoonful in water after each evacuation of the bowels.

Of What Muscles Consist, and How Many Muscles a Human Body Has.

A muscle consists of three parts muscular flesh or belly, fascia and tendon, the two last attachments brought together by the swelling of the belly. The head has 77 muscles; the eye, 8; the nose, 1; hips, 8; jaw, 8; tongue, 11; larynx, 11; ear, 11; head and neck, 17; to move the hairy scalp, 1; the eyebrows, 1; the chest, abdomen, and loins, 5; the shoulder, 15; the arm and wrist, 15; the hands and fingers, 23; the hip, 10; the thigh, 14; leg and foot, 24. Contracting muscles are called *flexor* muscles; expanding muscles, *extensor*.

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Human Respiration.

In the ordinary respiration of man 16 or 17 cubic inches of atmospheric air pass into the lungs 20 times a minute, or a cubic foot every 5¼ minutes; 274 cubic feet in 24 hours. The lungs hold 280 cubic feet. At each respiration 1.375 of oxygen is converted into carbonic acid gas. The nitrogen inspired and expired is exactly equal. During the act of inspiration the lungs have been found to be the coldest part of the body.

Rule for Making Family Wines from the Various Fruits.

Ripe fruit, crushed, 24 pounds; soft water, 1 gallon; loaf sugar, 4 pounds; cream of tartar, 1¼ ounces; brandy, 1 quart. Dissolve the cream of tartar in water, mix all the ingredients and let them stand for one week before drawing off.

How to Alloy Various Metals.

Copper and tin make bath metal.
Copper and zinc make bell metal.
Tin and copper make bronze metal.
Tin, antimony, copper, and bismuth make britannia ware.
Tin and copper make cannon metal.
Copper and zinc make Dutch gold.
Copper, nickel, and zinc, with a little iron, German silver.
Gold and copper make standard gold.
Gold, copper, and silver make old-standard gold.
Tin and copper make gun metal.
Copper and zinc make mosaic gold.
Tin and lead make pewter.
Lead and a little arsenic make sheet metal.
Silver and copper make standard silver.
Tin and lead make solder.
Lead and antimony make type metal.
Copper and arsenic make white copper.

Facts of Great Value to Housekeepers.

A little quicklime placed in the infested places will drive away any kind of ants.

How to Make Leather Waterproof—Saturate it with castor oil; to stop shoes squeaking, drive a peg into the middle of the sole.

How to Wash Colored Calicoes.—Dissolve 5 cents worth of sugar of lead in 3 to 4 quarts of pure water (rain-water is best), and, after the garments are washed and rinsed, let them be dipped in and wrung out; it sets the color and keeps it.

A good cement for glass is made by dissolving an ounce of isinglass in 2 wine glasses of spirits of wine.

How to Remove Clinkers from Stove or Fire-Brick.—Put in about half a peck of oyster shells on top of a bright fire. This may need repeating.

How to Remove Tar from Cloth.—Rub it well with turpentine, and every trace of tar will be removed.

How to Set the Color in Lawn.—Dissolve a half-pound of

saltpeter in a pailful of water, and dip the lawn in it several times before washing.

How to Remove Egg Stains from Spoons.—Rub with common salt.

How to Remove the Stains of Fruit from the Hands.—Wash your hands in clear water, dry slightly, and while yet moist, strike a sulphur match and hold your hands around the flame. The stains will immediately disappear.

How to Clean Furniture.—Rub with cotton waste, dipped in boiled linseed oil; then rub clean and dry with a soft flannel cloth.

How to Test Whether an Article is Gilt or Made of a Gold-Colored Alloy.—A solution of bichloride of copper makes a brown spot on alloy, but produces no effect on a surface of gold.

How to Restore Gilt Frames.—Rub with a sponge moistened in turpentine.

How to Clean Gloves.—Pour a little benzine into a basin and wash the gloves in it, rubbing and squeezing them until clean. If much soiled, they must be washed through clean benzine, and rinsed in a fresh supply. Hang up in the air to dry.

How to Clean Hair Brushes.—Dissolve a little soda in warm water, and pour in a small amount of ammonia. Hold the brushes with the bristles downward, and avoid wetting the back as far as possible; shake until the grease is removed. Then rinse in cold water, and put in the air to dry.

How to Clean Hair.—Wash well with a mixture of soft water, 1 pint, sal-soda, 1 ounce, cream tartar, ½ ounce.

How to Remove Iron Rust and Ink Stains.—Rub lemon juice on the stain, then cover it with salt and lay the articles in the sun. If necessary repeat the process two or three times. Spots from most kinds of ink are similarly taken out. Vinegar will sometimes do it.

How to Remove Stains from Linen.—Wet the part stained, and lay on it some salt of wormwood; then rub without diluting it with more water.

How to Clean Marble.—Take 2 parts of common soda, 1 part of pumice-stone, and 1 part of finely powdered chalk; sift it through a fine sieve, and mix it with water; then rub it well all over the marble, and the stains will be removed; wash with salt and water.

How to Remove Mildew from Cloth.—Put a teaspoonful of chloride of lime into a quart of water, strain it twice, then dip the mildewed places in this weak solution; lay in the sun. If the mildew has not disappeared when dry, repeat.

How to Cure Musquito Bites.—Put 10 drops of refined carbolic acid into an ounce of rose water; shake well, and apply as needed. If you hold your breath when a musquito has its bill in you it cannot withdraw it until you breathe again.

How to Get Rid of Moths.—Sprinkle furniture and cushions thoroughly with benzine. It will not spot or injure the most delicate fabric, but it is sure death to moths. The work must

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be done in a place where there is neither a fire nor a lighted lamp, for the benzine is very explosive.

How to Remove Oil or Grease Spots from Carpets.—Lay a piece of blotting paper over the spot, and set a flat-iron on top, the iron just hot enough not to scorch. Change the paper as often as it becomes greasy. After most of the oil has been extracted, apply whiting; leave it on for a day or two, then brush off, and the spot will have disappeared.

How to Remove Paint from Dress Goods.—When the color of a fabric has been destroyed by an acid, ammonia is applied to neutralize the same; after which an application of chloroform will, in almost all cases, restore the original color.

How to Color Dress Goods Red.—1 ounce of cochineal, 1 ounce of muriate of tin, and a little cream of tartar for each pound of goods, dissolved in enough water to cover them. Boil the goods in this dye 10 minutes. Hang up to dry.

How to Remove a Rusty Screw.—Apply a red-hot iron to the head for a short time, the screw-driver being applied immediately while the screw is hot.

How to Clean Silver-ware.—When it wants polish rub it with whiting on chamois skin.

How to Prevent Starch from Souring when Boiled.—Add a little sulphate of copper.

How to Raise the Pile on Velvet.—Cover a hot iron with a wet cloth, and hold the velvet over it. Brush it quickly while damp.

How to Mix Inks or Paints for Tints.

A larger quantity of the first-named color must always be used.

Dark green and purple make bottle green.
White and medium yellow make buff tint.
Red, black, and blue make dark brown.
Bronze blue, lemon yellow, and black make dark green.
White, medium yellow, and black make drab tint.
White, lake, and lemon yellow make flesh tint.
Lemon yellow and bronze blue make grass green.
White and black make gray tint.
White and purple make lavender tint.
Red, black, and medium yellow make maroon.
Lake and purple make magenta.
Medium yellow and purple make olive green.
Medium yellow and red make orange.
White, ultramarine blue, and black make pearl tint.
White and lake make pink.
Ultramarine blue and lake make purple.
Orange, lake, and purple make russet.
Medium yellow, red, and white make sienna.
White and ultramarine blue make sky blue.
Ultramarine blue, black, and white make slate.
Vermilion and black make Turkey red.
White, yellow, red, and black make umber.

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Cost of the United States Wars.

The war of the Rebellion cost the United States $6,189.929,900. The number of Federal troops was 2,859,132.

The Mexican war cost the United States $100,000,000. The number of troops engaged was 101,282.

The war of 1812 cost the United States $107,159,003. The number of troops engaged is estimated at 471,622.

The Revolutionary war cost the United States $135,193,703. The Colonies furnished, from 1775 to 1783, 395,064 troops.

How to Measure the Width of a River.

The approximate breadth of a river or other stream may be determined by means of the brim of a hat. The person desiring to ascertain this fact must place himself at the edge of one bank of the river and lower the brim of his hat till he finds the edge just cuts the other bank; then, after placing the hand under the chin, so as to steady his head and keep it in exactly the same position, he must turn round steadily till he faces some level ground on his own side of the river and observe when the edge of the peak again meets the ground. The measure of this distance will be the breadth of the river.

Greatest on Earth.

A block of coal exhibited at the Iowa State Fair is thought to be the largest ever mined; it weighed 7,000 pounds.

Queen Victoria has the largest bound book ever made. It is eighteen inches thick and weighs sixty-three pounds. It contains the jubilee addresses of congratulation.

The largest coal breaker in the world is in operation at Edwardsville colliery, Luzerne County, Pennsylvania. It prepares for market 4,000 mine cars of coal every ten hours.

A single sheet of paper 6 feet wide and 7¾ miles in length has been made at the Watertown (N. Y.) paper works. It weighed 2,207 pounds, and was made and rolled entire without a single break.

The greatest elevation ever attained by balloonists was 37,000 feet—about seven miles. The aeronauts were James Glaisher, F. R. S., and Mr. Coxwell. The ascent was made Sept. 5, 1862, at Wolverhampton, England.

The longest single span of wire in the world is used for a telegraph in India. It is stretched over the River Kistuah, between Bezorah and Sectauagrum. It is over 6,000 feet long, and is stretched from the top of one mountain to the top of another, each mountain being nearly 2,000 feet high.

The following is the seating capacity of the eight largest churches in the world; St. Peter's, Rome, 54,000 persons; Milan Cathedral, 37,000; St. Paul, London, 25,000; St. Sophia, Constantinople, 23,000; Notre Dame, Paris, 21,000; Florence Cathedral, 20,000; Pisa Cathedral, 13,000; St. Mark's, Venice, 7,000; St. Patrick's Cathedral, New York, 2,500, with standing room for 8,000.

The two largest castings in the world are in Japan, one at

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Nara and the other at Kamakura. Both are statues. The one at Nara is 53 feet and 9 inches from the base to the crown of the head. It was first cast in the eighth century, but was afterward destroyed and recast in the year 1223. The Kamakura statue is 47 feet high.

The Sydney (Australia) lighthouse is provided with the largest electric light in the world. It has a power of 180,000 candles and may be seen from ships fifty miles at sea. The next largest is in the Palais d'Industrie and has a power of 150,000 candles. San Jose, Cal., has the most powerful electric light in the United States, one of 24,000 candle power.

The stone pavement in front of the residence of the late William H. Vanderbilt, in New York city, is made up of the largest slabs of flagging stone ever put in a single pavement. The stones were taken from quarries in Pike County, Pennsylvania, west of Port Jervis, N. Y., and from the Bigelow quarries in Ulster County, New York. The large slab immediately in front of the residence is the largest slab of its kind ever transported from any quarry and cost the millionaire $9,200; the entire cost of the pavement was $47,000.

Wilson Waddingham, who in 1887 purchased 163,000 acres of land in San Miguel County, New Mexico, is the greatest individual land proprietor in the world. His present landed interests amount to 1,500,000 acres, about 500,000 acres more than are claimed for the duke of Westminster. A year ago the largest producing farm in the world was one of the same number of acres (1,500,000) situated in the southwest corner of Louisiana. This immense farm is operated by a northern syndicate, with J. B. Watkins as manager. The fencing alone cost over $50,000; enough to buy half the farms in a common county.

Facts About Railways.

The Manhattan Elevated Railroad, New York, carries more passengers than any other road in the world. The average number carried is 525,000 per day, or 191,625,000 per year.

It is claimed that the fastest time on record was made over the Philadelphia and Reading Railroad. The time was ninety-two miles in ninety-three minutes, one mile being made in forty-six seconds.

The chances for loss of life in railroad accidents in this country are one person killed for every 10,000,000 carried. Statisticians claim that more people are killed every year by falling out of windows than there are in railroad accidents.

The Canadian Pacific Railway extends farther east and west than any other road in the country. It runs from Quebec to the Pacific Ocean.

The cantilever span in the Poughkeepsie bridge is the longest railway bridge span in the United States. Its length is 548 feet.

The Kinzu viaduct, on the Erie railroad, is the highest railroad bridge in the United States. It is 305 feet high.

The longest railway tunnel in America is the Hoosac tun-

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nel, on the Fitchburg Railroad. It is four and three fourths miles long.

The Atchison, Topeka and Santa Fe system operates more mileage than any other single corporation in the United States. It covers about 8,000 miles.

What a Lemon Will Do.

Lemonade made from the juice of the lemon is one of the best and safest drinks for any person, whether in health or not. It is suitable for all stomach diseases, excellent in sickness, in cases of jaundice, gravel, liver complaint, inflammation of the bowels, and fevers. It is a specific against worms and skin complaints. The pippin crushed may be used with sugar and water, and taken as a drink. Lemon juice is the best antiscorbutic remedy known. It not only cures the disease, but prevents it. Sailors make daily use of it for this purpose. We advise every one to rub their gums with lemon juice to keep them in a healthy condition. The hands and nails are also kept clean, white, soft and supple by the daily use of lemon instead of soap. It also prevents chilblains. Lemon is used in intermittent fevers, mixed with strong, hot, black coffee, without sugar. Neuralgia, it is said, may be cured by rubbing the part affected with a cut lemon. It is valuable also to cure warts. It will remove dandruff by rubbing the roots of the hair with it. It will alleviate, and finally cure, coughs and colds, and heal diseased lungs, if taken hot on going to bed at night. Its uses are manifold, and the more we employ it internally the better we shall find ourselves. A doctor in Rome is trying it experimentally in malarial fevers with great success, and thinks that it will in time supersede quinine.

Table of Wages.

Six Days.	$1.00	$1.50	$2.00	$2.50	$3.00	$3.50	$4.00	$4.50	$5.00
1.....	.16⅔	.25	.33⅓	.41⅔	.50	.58⅓	.66⅔	.75	.83⅓
2.....	.33⅓	.50	.66⅔	.83⅓	1.00	1.16⅔	1.33⅓	1.50	1.66⅔
3.....	.50	.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50
4.....	.66⅔	1.00	1.33⅓	1.66⅔	2.00	2.33⅓	2.66⅔	3.00	3.33⅓
5.....	.83⅓	1.25	1.66⅔	2.08⅓	2.50	2.91⅔	3.33⅓	3.75	4.16⅔
6.....	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00

Six Dys	$5.50	$6.00	$6.50	$7.00	$7.50	$8.00	$9.00	$10	$11	$12
1 ...	.91⅔	1.00	1.08⅓	1.16⅔	1.25	1.33⅓	1.50	1.66⅔	1.83⅓	2.00
2 ...	1.83⅓	2.00	2.16⅔	2.33⅓	2.50	2.66⅔	3.00	3.33⅓	3.66⅔	4.00
3 ...	2.75	3.00	3.25	3.50	3.75	4.00	4.50	5.00	5.50	6.00
4 ...	3.66⅔	4.00	4.32⅓	4.66⅔	5.00	5.33⅓	6.00	6.66⅔	7.33⅓	8.00
5 ...	4.58⅓	5.00	5.41⅔	5.83⅓	6.25	6.66⅔	7.50	8.33⅓	9.16⅔	10.00
6 ...	5.50	6.00	6.50	7.00	7.50	8.00	9.00	10.00	11.00	12.00

To find wages at $13, $14, $15, $16, or more per week, find the amount at $6.50, $7, $7.50, $8, etc., and multiply by 2.

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Expense of Board Per Day.

The following table will be found convenient for the proprietors of hotels and boarding-houses in giving the price per day where the board is a certain specified price per week. Thus, if it is desired to find the price of five days' board at $5.00 per week, it will be found by reference to be $3.57. (See table). When the board exceeds $10 per week double the numbers.

Days.	50c.	75c.	$1.00	$1.25	$1.50	$1.75	$2	$2.25	$2.50
1	.7	.11	.14	.18	.21	.25	.29	.32	.36
2	.14	.21	.29	.36	.43	.50	.57	.64	.71
3	.21	.32	.43	.54	.64	.75	.86	.96	1.07
4	.29	.43	.57	.71	.86	1.00	1.14	1.29	1.43
5	.36	.54	.71	.89	1.07	1.25	1.43	1.61	1.79
6	.43	.64	.82	1.07	1.29	1.50	1.71	1.93	2.14
7	.50	.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50

Days.	$3	$3.50	$4	$4.50	$5	$6	$7	$8	$9	$10
1	.43	.50	.57	.64	.71	.86	1.00	1.14	1.29	1.43
2	.86	1.00	1.14	1.29	1.43	1.71	2.00	2.29	2.57	2.86
3	1.29	1.50	1.71	1.93	2.14	2.57	3.00	3.43	3.86	4.29
4	1.71	2.00	2.29	2.57	2.86	3.43	4.00	4.57	5.14	5.71
5	2.14	2.50	2.86	3.21	3.57	4.29	5.00	5.71	6.43	7.14
6	2.57	3.00	3.43	3.86	4.29	5.14	6.00	6.86	7.71	8.57
7	3.00	3.50	4.00	4.50	5.00	6.00	7.00	8.00	9.00	10.00

Nutriment in Different Kinds of Food for Animals.

There is in Every 100 Parts by Weight of—	Flesh-forming Material, viz., Gluten, etc.	Warmth giving and Fattening Material, viz.:		Bone-making Material or Mineral Substance.	Husk or Fiber	Water.
		Fat or Oil.	Starch.			
Beans and Peas	25	2	48	2	8	15
Oatmeal	18	6	63	2	2	9
Middling Thirds or Fine Sharps	18	6	53	5	4	14
Oats	15	6	47	2	20	10
Wheat	12	3	70	2	1	12
Buckwheat	12	6	58	1½	11	11½
Barley	11	2	60	2	14	11
Indian Corn	11	8	65	1	5	10
Hempseed	10	21	45	2	14	8
Rice	7	A trace	80	A trace	..	13
Potatoes	2½	..	41	2	..	50½
Milk	4½	3	5	¾	..	86¾

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Table of Time for Seeding, Weight per Bushel, Time of Sowing, and Quantity per Acre of Various Farm Products.

The letter s signifies the months when they may be sown:

Weight per bushel.	Products.	March	April	May	June	July	August	September	October	Quantity per Acre.
60	Peas	s	s	..	..	..	..	..	..	1½ to 2½ bushels.
60	White beans	..	..	s	s	..	..	..	..	½ to 1 "
..	Onions	s	s	..	..	..	..	..	..	4 to 6 pounds.
..	Parsnips	s	s	s	s	..	..	..	..	2 to 3 "
55	Turnips	s	s	s	..	..	s	s	..	½ to 1 "
..	Carrots	..	s	s	s	..	..	..	..	2 to 3 "
..	Beets	..	s	s	s	..	..	..	..	4 to 10 "
55	S. Potatoes	..	..	s	s	..	..	..	..	Transplant.
60	Potatoes	s	s	s	s	s	..	..	..	10 to 15 bushels.
52	Buckwheat	..	..	..	s	s	..	..	..	½ to ¾ "
32	Oats	s	s	s	..	..	..	..	..	2 to 3 "
48	Barley	s	s	s	..	..	s	s	..	1½ to 2 "
60	Wheat	s	s	..	..	..	s	s	..	1 to 2 "
56	Rye	s	s	..	..	..	..	s	s	1 to 2 "
56	Co	..	s	s	s	..	..	..	..	4 to 6 quarts.
56	Flax seed	..	s	s	s	..	..	..	..	1 to 3 bushels.
45	Sorghum seed	..	..	s	s	..	..	..	..	2 quarts.
50	Millet	..	..	s	s	..	..	..	..	½ to ¾ bushel.
50	Hung grass	..	..	s	s	..	..	..	..	½ to ½ "
14	Ky. blue grass	..	s	s	..	s	s	..	..	1½ to 2½ "
14	Red top	..	s	s	..	..	s	s	..	½ to 1 "
45	Timothy	s	s	..	..	..	s	s	..	½ to ½ "
60	Red clover	s	s	..	..	..	..	..	..	8 to 10 pounds.

Comparative Strength of Timber and Cast Iron.

Table showing the transverse strength of timber and of cast iron one foot long and one inch square:

Material.	Breaking Weight, lbs.	Weight Borne with Safety, lbs.
Ash, seasoned	175	105
Chestnut, seasoned	170	115
Hickory, seasoned	270	200
White Oak, seasoned	240	196
White Pine, seasoned	135	95
Yellow Pine, seasoned	150	100
Iron (cast)	5,781	4,000

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Table Showing the Cost of Smoking, with Six Per Cent. Compound Interest Semi-Annually.

From the Age of	Two Cigars a Day at 5 Cents Each.		Three Cigars a Day at 5 Cents Each.	
	Principal.	Prin. & Int.	Principal.	Prin. & Int.
20 to 25	$ 182.50	$ 209.21	$ 273.75	$ 313.95
20 to 30	365.00	490.39	547.50	745.74
20 to 35	574.50	868.25	821.25	1,314.72
20 to 40	730.00	1,376.08	1,095.00	2,081.16
20 to 45	912.50	2,058.44	1,368.75	3,110.74
20 to 50	1,095.00	3,094.99	1,642.50	4,494.41
20 to 55	1,277.50	4,567.46	1,916.25	6,353.87
20 to 60	1,460.00	6,678.73	2,190.00	8,855.02
20 to 65	1,642.50	8,378.52	2,463.75	12,215.36
20 to 70	1,825.00	11,469.25	2,737.50	16,216.37

From the Age of	Two Cigars a Day at 10 Cents Each.		Three Cigars a Day at 10 Cents Each.	
	Principal.	Prin. & Int.	Principal.	Prin. & Int.
20 to 25	$ 365.00	$ 418.43	$ 547.50	$ 627.95
20 to 30	730.00	980.78	1,095.00	1,471.56
20 to 35	1,095.00	1,736.52	1,642.50	2,717.85
20 to 40	1,460.00	2,752.20	2,190.00	4,281.24
20 to 45	1,825.00	4,115.92	2,737.50	6,382.47
20 to 50	2,190.00	5,949.88	3,285.00	9,205.16
20 to 55	2,555 00	8,414.47	3,832.50	12,998.64
20 to 60	2,920.00	11,738.03	4,380.00	18,100.14
20 to 65	3,285.00	16,093.51	4,927.50	24,952.72
20 to 70	3,650.00	21,937.72	5,475.00	34,162.14

Salaries of the United States Army and Navy Officers.

ARMY.		NAVY.	
General	$13,500	Admiral	$13,000
Lieutenant-General	11,000	Vice-Admiral	9,000
Major-General	7,500	Rear-Admiral	6,000
Brigadier-General	5,500	Commodore	5,000
Colonel	3,500	Captain	4,500
Lieutenant-Colonel	3,000	Commander	3,500
Major	2,500	Lieutenant-Commander	2,800
Captain	2,000	Lieutenant	2,400
Regimental Adjutant	1,800	Master	1,800
First Lieutenant	1,600	Ensign	1,200
Second Lieutenant	1,400	Midshipman	1,000

The Velocity of Insects' Wings.

According to a French physiologist, the wing of the ordinary house fly makes 330 strokes in one second; the wing of the bumble bee, 240, the wing of the honey bee, 190; the wing of the wasp, 110; the wing of the dragoon fly, 28; the

wing of the sparrow, 13; the wing of the wild duck, 9; the wing of the house pigeon, 8; the wing of the osprey, 6.

Tributes to the Fair Sex.

Confucius—"Woman is the masterpiece."

Herder—"Woman is the crown of creation."

Voltaire—"Women teach us repose, civility, and dignity."

John Quincy Adams—"All that I am my mother made me."

Ruskin—"Shakespeare has no heroes—he has only heroines."

Whittier—"If woman lost us Eden, such as she alone can restore it."

Bulwer—"To a gentleman every woman is a lady in right of her sex."

Lamartine—"There is a woman at the beginning of all great things."

E. S. Barrett—"Woman is last at the cross and earliest at the grave."

Gladstone—"Woman is the most perfect when the most womanly."

Sandi—"A handsome woman is a jewel; a good woman is a treasure."

Richter—"No man can either live piously or die righteous without a wife."

N. P. Willis—"The sweetest thing in life is the unclouded welcome of a wife."

Heine—"Handsome women without religion are like flowers without perfume."

Beecher—"Women are a new race, recreated since the world received Christianity."

Voltaire—"All the reasonings of a man are not worth one sentiment of a woman."

Leopold Schefer—"But one thing on earth is better than a wife—that is a mother."

Michelet—"Woman is the Sunday of man; not his repose only, but his joy, the salt of his life."

Luther—"Earth has nothing more tender than a woman's heart when it is the abode of pity."

Shakespeare—"For where is any author in the world teaches such beauty as a woman's eyes?"

Margaret Fuller Ossoli—"Woman is born for love, and it is impossible to turn her from seeking it."

Louis Desnoyers—"A woman may be ugly, ill shaped, wicked, ignorant, silly, and stupid, but hardly ever ridiculous."

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ATLAS OF THE WORLD.

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OCEAN CURRENTS.

Ocean currents are due to the rotation of the earth round its axis from west to east, by which the water attains a westerly direction, greater at the equatorial regions where the rotation is quicker, and to the sun's influence on those parts of the ocean which pass most directly under it, causing evaporation, and a consequent inrush of the surrounding water to supply its place; this heating of the water also diminishes its density, expands its bulk, and causes it to overflow on each side of the equator toward the poles.

The Atlantic Currents originate in the Antarctic Drift, which upon reaching the south coast of Africa, and turning back the Agulhas Current, is joined by a small portion of the latter, and sets up the West African coast as the South Atlantic Current to the equator. Here known as the South Equatorial Current, it passes westwardly across the Atlantic to the South American coast. Off Cape St. Roque it divides into two: one branch, the Brazil Current, runs south-west, till at the Rio de la Plata, it recurves to the east. The other and greater branch proceeds, along the north coast of South America, into the land locked basins of the Caribbean Sea and Gulf of Mexico, from which latter the pent-up waters escape by the Strait of Florida, as the celebrated Gulf Stream. The deep indigo-blue waters of this river of the ocean flow, with gradually diminishing force, across the Atlantic, till, near the Azores, they divide into the Gulf Stream Drift, proceeding along the northern coasts of Europe, and the North Equatorial Current, flowing west to rejoin the original stream at various parts of its course. Between the North and South Equatorial Current, the warm Guinea Current flows to the east along the African coast into the Gulf of Guinea.

In the Pacific the North and South Equatorial Currents flow on either side of the equator toward Asia, repelled by which the waters give rise to the Equatorial Counter-Current, the East Australian Current, and the Japan Current. The latter, the most important current of the ocean, bending off Formosa to the north-east, proceeds in this direction, till, at Japan, the Kamtschatka Current flows toward Behring Strait, and the main part toward the American shores. The most important current of the south is the cold Peruvian or Humboldt's Current.

The South Equatorial Current of the Indian Ocean, proceeding westerly from Australia across the southern part of the ocean, strikes the north coast of Madagascar, and, as the Mozambique Current, rushes down the East African coast to Cape Colony, where it assumes the name Agulhas Current. Thence deflected by the Antarctic Drift, the current travels south and then east toward the south-west corner of Australia with diminished strength. Here it divides into the West Australian and South Australian Currents, the former going to form the beginning of the South Equatorial Current.

The Arctic Currents from the northern shores of Asia and America flow along the east and west coasts of Greenland, to

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OCEAN CURRENTS—(Continued.

the Atlantic, being known respectively as the East Greenland and Davis Strait Currents. South of Greenland these unite to form the Labrador Current, which flows south to Newfoundland, where, meeting the Gulf Stream, it divides—one branch flowing south-west as a counter-current, and known as the United States Current; the other branch flowing south as an under-current to the Caribbean Sea.

RIVER SYSTEMS.

As a great highland with steep descent to the sea encircles the Pacific and Indian Oceans, while a great plain slopes gently to the Atlantic and Arctic Oceans, the extent of land which drains to the former is comparatively small, as compared with that draining to the latter. In the great plain division areas of continental drainage occur with no outlet to the sea. Where, as in Africa and Central Asia, considerable rivers drain into these, they terminate in inland seas like the Caspian. The following are the areas of the river systems belonging to each of the oceans, and of the continental systems of the world: Area draining to the Atlantic Ocean, 19,050,000 square miles; Area draining to the Arctic Ocean, 8,613,800 square miles; Area draining to the Pacific Ocean, 8,460,000 square miles; Area draining to the Indian Ocean, 6,693,600 square miles; Antarctic Ocean drainage (Antarctic continent). 3,565,550 square miles; United areas of Continental drainage, 11,486,350 square miles.

ANNUAL ISOTHERMAL LINES.

RESULTS FROM A UNIFORM EARTH'S SURFACE. — Were the earth a perfect sphere, entirely covered with land of equal elevation, the temperature would decrease regularly poleward, the isothermal lines run parallel with the degrees of latitude, a d the temperature of any place be told accurately from its latitude.

CIRCUMSTANCES WHICH MODIFY CLIMATE.—But our earth has by no means such uniformity of surface. On the contrary, it presents a most irregular distribution of land and water, of elevation and depression. Thes · circumstances alone exert a powerful influence upon the reception of heat. Water absorbs heat more slowly than land, but retains it longer, while barren land radiates heat more quickly than land clothed with vegetation. But there are other factors which produce a modifying effect, chief of which are the currents and winds.

EFFECT OF ELEVATION.—Ascending from the surface of the earth the temperature decreases about 1 deg. F. for every 300 ft.

EFFECT OF WINDS AND CURRENTS.—The western shores and adjoining seas of Europe and North America are warmer than their central and eastern parts. This is due to the prevailing westerly winds which blow directly on the western shores of these continents, north of the 40th parallel, and raise the British Isles 11 deg., and the corresponding part of North America 7 deg. above their normal temperature due to position. In the southern hemisphere conditions the reverse of

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ANNUAL ISOTHERMAL LINES—(Continued).

those in the north prevail, and the western sides of the continents are colder than the eastern. This is especially noticeable in South America, and is due to the cooler atmosphere brought by the trade wind from the south-east, and to the cold antarctic current which sets up the west coast.

AREAS OF GREATEST COLD AND HEAT.—The greatest cold in the world is experienced at Verkhoyansk in East Siberia, the mean annual temperature being 2 deg. F. The warmest isotherm surrounds two tropical areas, one extending from Africa far into the Pacific, the other surrounding the equatorial part of the South American continent.

WINDS AND STORMS.

CONSTANT WINDS.—The Trade Winds are due to the inrush of cold air from the poles toward the equator in order to supply the place of the heated column of air which ascends from the latter; owing to the eastward rotation of the earth, the air proceeding from the N. becomes a N. E. wind, and that from the S. a S. E. wind. The heated air flows to the poles as an upper current, and, cooling, descends to the surface to form the westerly winds, or Anti-trades, of the temperate zones.

VARIABLE WINDS.—When in turn each of the northern and southern hemispheres is brought directly under the sun's influence, a heated column ascends, and a consequent inrush of the surrounding air takes place, giving rise to the periodical winds or Monsoons.

PECULIAR WINDS.—The more important are the Mistral, Fohn, and Scirocco, confined to the countries of the Mediterranean. A hot, dry wind blows from Central Africa, termed variously the Khamsin in Egypt, Scirocco in Algeria, Shume in Morocco, and the Harmattan in Upper Guinea. A hot wind occurs on the coasts of Australia, termed the Australian Harmattan. Cold, dry winds, the "Northers," occur in the Western Mississippi and Gulf of Mexico. The cold Puna winds of South America blow west from the ice-topped cordillera. The Pamperos, strong, dry, sudden S. W. winds, occur in the S. E. of South America.

CALMS.—At the meeting line of the trade winds in the equatorial regions a belt of calms is observed, called the Equatorial Calms. Between the beginning of the westerly winds and that of the trades, there is a second series termed the Calms of Cancer and Capricorn.

WHIRLWINDS occur in the desert regions of the tropics during the hot season, and are caused by the friction of two winds moving in opposite directions, the direction of rotation being taken from the wind which prevails.

HURRICANES are vast whirlwinds of great velocity and destructive power, experienced in certain areas of the tropical and adjoining temperate zones.

The TYPHOONS of eastern seas are similar to hurricanes in effect, and are probably due to the meeting of the S. W. Monsoon with the N.E. Trade.

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WINDS AND STORMS—(Continued).

TORNADOES are a species of hurricane met with on the west coast of Africa and in West Indian seas between 10 deg. S. and 20 deg. N. lat.

EUROPEAN STORMS have a course from S. W. to N. E., and seldom extend over an area of less than 600 miles in breadth.

EUROPE.

CONFIGURATION.—Owing to the great irregularity of its outline, and its situation with regard to Asia and Africa, Europe has both on the north and on the south a number of landlocked or nearly landlocked seas. White Sea, 45,000 square miles; North Sea, 244,000 square miles; Baltic, 135,000 square miles; Mediterranean, 1,150,000 square miles; Black Sea, 180,000 square miles. Straits—The Sound, 3 miles wide; Dover, 21 miles; Gibraltar, 13 miles; Dardanelles, 1 mile; Bosporus, 1 mile; Yenikale, 4 miles. Islands—Great Britain, 88,000 square miles; Ireland, 32,531 square miles; Iceland, 40,410 square miles; Sicily, 11,289 square miles; Sardinia, 9,399 square miles; Candia, 3,327 square miles.

OROGRAPHY.—In accordance with the varied outline is the diversified relief of the surface. The highlands are divided into a southern region extending from Spain to Turkey, and a northern region appearing in Scandinavia and Britain, separated from each other by the great lowland, which, embracing the vast continental area of Russia, sends out arms across Western Europe to the Pyrenees. Culminating Points—Caucasus, Mt. Elburz, 18,572 feet; Alps, Mont Blanc, 15,784 feet; Pyrenees, Pic de Nethou, 11,168 feet; Apennines, Gran Sasso, 9,580 feet; Carpathians, Tatra, 8,705 feet; Scandinavian Mts., Galdhoppig, 8,544 feet; Urals, Toll-poss, 5,549 feet; British Mts., Ben Nevis, 4,406 feet. Area of plains, 2,548,000 square miles; Area of highlands, 1,200,000 square miles. Mean elevation of continent, 958 feet.

CLIMATE.—Mean annual temperature and rainfall—Mediterranean countries, 59 to 66 deg. F., 23 to 43 inches; Atlantic coasts, 37 to 59 deg. F., 19 to 118 inches; Baltic d strict, 37 to 50 deg. F., 15 to 23 inches; Black Sea district, 41 to 53 deg. F., 7 to 19 inches; Subarctic Europe, 19 to 32 deg. F.

ETHNOGRAPHY.—Three great families and several minor races, viz:—I. Germanic, 104,500,000—English, 32,900,000; German, 55,500,000; Dutch, 7,300,000; Scandinavian, 8,800,000. II. Romanic, 103,000,000—French, 42,800,000; Italian, 30,000,000; Spanish and Portuguese, 21,400,000; Roumanian, 8,800,000. III. Slavonic, 95,900,000—Russians, 66,100,000; Poles, 12,400,000; Czechs and Wends, 7,300,000; Servians, 7,300,000; Bulgarians, 2,800,000. Minor races, 36,600,000.

THE BRITISH ISLES.

The British Isles are situated in the Atlantic Ocean, within the parallels of 49 deg. and 61 deg. N., and the meridians of 1 deg. 44 min. E. and 10 deg. 30 m. W., and comprise about 500 islands, of which one-half is inhabited. Great Britain, the

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THE BRITISH ISLES—(Continued).

largest island, with an area of about 90,000 square miles (England and Wales about 60,000, and Scotland about 30,000 square miles), is about 600 miles long from Dunnet Head to Land's End. The breadth varies; between Dornoch Firth and Loch Broom it is 26½ miles; between the Firths of Forth and Clyde, 30 miles; between the Humber and Ribble, 80 miles; and from the Naze to St. David's Head, 290 miles. Ireland, the second island of any size, has an area of about 32,000 square miles: it is separated from Great Britain by the North Channel, Irish Sea, and St. George's Channel, and is 287 miles long from Malin Head to Mizen Head, and 195 miles broad from the east of Down to Achill Head.

AREA.—The total area of the British Isles is 121,115 square miles.

POPULATION.—England and Wales (1881), 25,974,439; Scotland 3,735,573; Ireland, 5,174,836. exclusive of army, navy, and merchant service abroad. Total population of Great Britain and Ireland, inclusive of above, 35,241,482.

RELIGION.—Church of England (Episcopal), about 14,000,000; Church of Scotland (Presbyterian), about 1,400,000; Roman Catholics, about 6,000,000; Dissenters, 6,000,000; Jews, 60,000.

GOVERNMENT.—Hereditary limited Monarchy. Executive, the Sovereign. Legislative, the Sovereign, House of Lords, composed of 4 Royal Princes, 2 Archbishops, 22 Dukes, 19 Marquises, 114 Earls, 28 Viscounts, 24 Bishops, 286 Barons, 16 Scottish Representative Peers, and 28 Irish Representative Peers; 1 of the former and 2 of the latter are Peers of England. Total, 540. And lastly, the House of Commons, composed of 670 members, elected every Parliament—465 for England, 30 for Wales, 72 for Scotland, and 103 for Ireland.

Scotland is naturally divided into three parts, the Highlands, the Central Lowlands, and the Southern Uplands.

The Highlands lie north of a line drawn S.W. from Stonehaven to the Firth of Clyde, and are naturally separated by Glenmore into the North-West and South-East Highlands; Ben Attow, 4,000 feet, is the highest point of the former; Ben Nevis, 4,406 feet, and Ben Mac Dhui, 4,296 feet, the summits of the latter are also the highest peaks of Great Britain.

The Central Lowlands lie south of the Highlands, and are limited on the south by a line stretching N.E. to S.W. from Dunbar to Girvan. They consist of a slightly elevated plateau, inclosed by two interrupted belts of hills—the Northern Heights facing to the Highlands, and the Southern Heights to the Uplands—with Tinto Hill, 2,335 feet, as culminating point.

Within the Southern Uplands is included all the land lying between the Central Lowlands and the English border, numerous cultivated valleys breaking in on all sides, such as Tweeddale, Teviotdale, etc. Mount Merrick, 2,764 feet, is the dominant point.

South of the Cheviot Hills begins the long Pennine Chain, stretching due south into the heart of England. Cross Fell,

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THE BRITISH ISLES—(Continued).

2,893 feet, is the highest point. West of this chain, with Scaw Fell, 3,161 feet, as summit, rise the Cumbrain Mountains; to which, as a corresponding group, the Yorkshire moorlands and wolds occur on the east. The Cambrian Mountains in Wales are the highest and most broken highlands in South Britain, Mount Snowdon, 3,570 feet, their summit, being also the highest peak in England. The other important highlands are the Exmoor, Dartmoor, and Cornish Heights, in the S. E. The central part of England—a plateau from 300 to 400 feet high—extends south to the Thames, where the Cotswolds rise to 1,100 feet, and the Chiltern Hills to 800 feet.

Farther south the North and South Downs, 500 feet high, inclose the agricultural district of the Weald. The uplands are continued from this to Salisbury Plain, 400 feet high, whence they proceed into Dorsetshire.

The mountains of Ireland are generally coast ranges, the mean elevation being less than in Great Britain. In the north the Derryveagh, Sperrin, and Antrim Mountains are the principal, with Mount Errigal, 2,466 feet as the highest point. The Mourne and Wicklow Mountains rise on the east coast, the latter with Lugnaquilla, 3,039 feet, form the highest mass of land in Ireland. The groups of Comeragh, Galty, Knockmealdown, and Kerry occur in the south, Carrantuohill, 3,414 feet, in the west, the summit, being also the highest point of Ireland. High mountains occur on the coasts of Galway and Mayo, and another coast group, with Cuilgach, 2,188 feet, unites the western to the northern heights.

The chief plains of Scotland are the Plain of Caithness and Glenmore in the north, Strathmore, between the Grampian and Sidlaw Hills, the Carses of Stirling, Falkirk, and Gowrie, stretching along the Forth and Tay, and in the south, the Valley of the Tweed and Vale of Eden extending into England.

In England the chief are the Plain of York in the northeast, the Fen District south of the Wash, the Eastern Plain between the Wash and the Thames, the Valley of the Thames, the Plain of Cheshire, and the Valley of the Severn, extending from the Irish Sea to the estuary of the Thames in the south.

Within the circle of coast ranges lies the Great Plain of Ireland, with an average height of 200 feet, subdivided into the northern, central, eastern, and western plains; between the two latter occurs the Bog of Allen, lying at an elevation of 250 feet.

ENGLAND AND WALES.

England and Wales form the southern and larger part of Great Britain, and are bounded on the north by Scotland, on the east by the North Sea, on the south by the Strait of Dover and the English Channel, and on the west by the Atlantic Ocean, St. George's Channel, and the Irish Sea.

AREA.—England 50,823 square miles, Wales 7,363 square

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ENGLAND AND WALES—(Continued).

miles, total 58,186 square miles. England is divided into 40 counties, Wales into 12. Largest county is Yorkshire (3,882,851 acres). Smallest county is Rutland (94,889 acres).

POPULATION.—1881 (census), 25,974,439 (England, 24,613,926; Wales, 1,360,513). 1887 (estimated) 28,247,151. England 518, Wales 254 per square mile.

RELIGION.—State religion, Protestant, Episcopal, 13,500,000. Dissenters, 12,500,000 (Methodists have 13,270 chapels; Independents, 2,603; Baptists, 2,243). Roman Catholics, 1,058,000; Jews, 60,000.

EDUCATION.—There are 5 universities (Oxford, 3,090 students; Cambridge, 2,894; Victoria, 1,310; Durham, 181; and London); 13 university colleges, with 6,800 students; 9 "great public schools," with 3,940 pupils, a large number of private and higher class schools, and 19,022 elementary schools attended by 4,505,825 pupils. Government grant, 1886, £2,958,705.

INDUSTRIES AND PRODUCTIONS.—In England 80 per cent. of the whole area is productive, in Wales 60 per cent. Cereal crops occupy a fourth of the productive area of England, and a sixth in Wales. But manufactures, mining, and trade entirely outstrip agricultural industry. Minerals—Coal, 1886, 137,039,441 tons annually, iron, lead, tin, copper, zinc, slate, salt, and shale. Factories—Cotton, 2,481 (465,654 employees); woolen, 1,503 (108,634); silk, 681 (40,134). Total number of textile factories, 6,359. Employees, 814,474.

RAILWAYS.—1886, 13,678 miles were open.

POST-OFFICE.—Telegraph, 42,320,185 dispatches in 1886-87. Letters 1,239,900,000, or 44 per head.

The docks at Liverpool are on both sides of the river Mersey, extending on the side next the city 6¼ miles, with a water area of 333½ acres, and a lineal quayage of 22 miles. This great system of floating docks was commenced by the corporation in 1709. It was for a century under control of the City Council, but since 1856 has been managed by a board which controls the structures on both sides of the river. The amount of capital invested in the docks is £10,000,000, of which £7,000,000 is in Liverpool proper. The docks are large water-tight inclosures, with flood-gates, which are opened during the flowing, and closed during the ebbing tide, so that vessels within can be kept afloat and at the same level, while being loaded and unloaded. It may be said that Liverpool owes her great commercial prosperity to her great system of docks, as without them the Mersey would never have given anything more than a harbor for fishing smacks. The great landing stage at Liverpool is the finest structure of the kind in the world. It was originally built in 1857, and was greatly enlarged in 1874, but almost immediately upon its completion, July 28, 1874, it accidentally caught fire, and as the timber was impregnated with creosote, it was entirely consumed. It was again built in the most substantial manner. Its length is 2,063 feet, and its breadth 80 feet. It is supported on floating pontoons rising and falling with the tide.

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ENGLAND AND WALES—(Continued).

connected with the quay by seven bridges, besides a floating bridge for heavy traffic 550 feet in length. The southern half is devoted to the traffic of the river ferries, and the northern half is used for sea-going steamers, and for the tenders of the great ships of the line. The revenue of these docks is over one and one-fourth million pounds sterling annually, derived mainly from tonnage and dock rates. Vessels in the docks at Liverpool are protected by a sea-wall, which is over five miles in length, eleven feet in average thickness, and forty feet in average height from its foundations.

LONDON.

In extent, population, and wealth, London, the capital of the British Empire excels all the cities of the world. Situated on the Thames, thirty miles from its mouth, and embracing parts of Middlesex, Essex, Kent, and Surrey, it occupies an area of 117 square miles, while, in 1881, the population included within its limits numbered 3,816,483 or one-sixth of the entire inhabitants of England and Wales. In commerce, industry and finance, as also in art and literature, London stands as the chief center. All kinds of manufactures are engaged in, and as a seaport it ranks first in the world. In 1886 the total customs of the United Kingdom amounted to £17,920,460, to which sum London alone contributed £10,073,200. Among the numerous and magnificent buildings the most important are Westminster Abbey, St. Paul's Cathedral, Buckingham Palace, the Houses of Parliament, and the Tower.

Her postal districts extend over a scope of 144 square miles; that of the police over 690 square miles. It stands on four counties, covering the most of each. It has 1,500,000 foreigners from every quarter of the globe, and is said to have more Catholics than Rome herself and more Jews than all Palestine. Within the limits of the city there is a birth every five minutes and a death every eight minutes, day and night. Each year adds 45,000 to the population. There are 7,000 miles of streets and 1,200 miles of street railway within the city limits. Each year an average of 28 miles of new streets are opened.

SCOTLAND.

Scotland forms the northern and smaller part of Great Britain, and is bounded on the north by the Atlantic Ocean and Pentland Firth, on the east by the North Sea, on the south by England and the Solway Firth, and on the west by the North Channel and the Atlantic Ocean.

AREA.—29,820 square miles. Scotland is divided into 33 counties. Largest county, Inverness (2,616,498 acres); smallest county, Clackmannan (30,477 acres).

POPULATION.—1881 (census), 3,735,573, *i. e.* 125 per square mile; 1889 (estimated), 3,991,499.

RELIGION.—Established Church of Scotland, 579,043 members; Free Church of Scotland, 333,098 members; United

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SCOTLAND—(Continued).

Presbyterian, 182,170 members; Episcopal, 76,989; Roman Catholic, 320,000.

EDUCATION.—There are 4 universities (Aberdeen, 830 students; Edinburgh, 3,164; Glasgow, 2,231; St. Andrews, 212); 1 college (Dundee, 332 students); nearly 300 higher class schools with about 70,000 pupils; and 3,092 elementary schools with (1886) 615,498 scholars. Government grant (1887), £445,883.

INDUSTRIES AND PRODUCTIONS.—The total area of Scotland is 19,084,659 acres, and out of this number 14,613,446 acres consist of woods, bog, and waste land, water, and hill-land. Only 25 per cent. of the whole area is productive. Cereal crops occupy a fourth of the productive area, and agriculture is limited to the plains and valleys of the east and south. Minerals—Coal (20,373,478 tons in 1886), iron, lead, slate, etc. Factories—Cotton, 147 (37,167 employees); woolen, 274 (27,546); flax, 152 (39,086); jute, 105 (36,269). Total number of textile factories, 776 with 152,279 employees.

RAILWAYS.—3,022 miles in 1886.

POST-OFFICE.—Telegraph 5,106,774 dispatches in 1886-87. Letters 129,100,000 or 33 per head.

EMIGRATION.—25,363 in 1886.

IRELAND.

Ireland has the Atlantic Ocean on all sides except the east, where it is separated from Great Britain by St. George's Channel, the Irish Sea, and the North Channel.

AREA.—32,531 square miles. Ireland is divided into the four provinces of Leinster, Munster, Ulster, and Connaught, which are subdivided into 32 counties. The largest county is Cork 1,838,021 acres. Smallest county, Louth (201,123 acres.)

POPULATION.—1881 (census), 5,174,836, *i.e.*, 160 per square mile. 1887 (estimated), 4,852,914. Population in 1801, 5,395,456; in 1841, 8,175,124.

RELIGION.—1881, Roman Catholics, 3,960,891; Protestant Episcopalians, 620,000; Presbyterians, 470,734; Methodists, 48,839; Jews, 472.

EDUCATION.—There are 2 universities (Dublin, 1,258 students, and the Royal University); 3 Queen's Colleges, Belfast (400), Cork (249), Galway (94); 1,500 superior schools, with 200,000 pupils; 8,024 elementary schools (1886) with an average attendance of 490,484. Government grant (1887), £888,966.

INDUSTRIES AND PRODUCTIONS.—Ireland is essentially an agricultural country: the mineral resources are small, and mining is not prosecuted with vigor. Of the whole area 74 per cent. is productive, and cereal crops occupy one-ninth of this. Minerals—Coal is extensively distributed; but from its inferior quality and its not being found near iron, it is not much wrought—only 105,563 tons having been produced in 1886. Iron ore is common, but smelting cannot be carried on for want of fuel. Manufactures—The chief manufacture is linen, which is mostly confined to Ulster. Factories—Linen,

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IRELAND—(Continued).

166 (61,749 employees); woolen, 141 (3,136); cotton, 7 (1,248). Total number of textile factories, 330, with 68,158 employees.

RAILWAYS.—2,632 miles open in 1886.

POST-OFFICE.—Telegraph 2,816,680 dispatches in 1886. Letters 90,900,000 or 29 per head.

EMIGRATION.—1885, 61,297 (1851 to 1885, 3,051,361).

SPAIN.

Spain is bounded on the north by France and the Bay of Biscay, on the west by the Atlantic Ocean and Portugal, and on the south and east by the Mediterranean Sea.

AREA.—196,173 square miles.

POPULATION.—17,268,600.

RELIGION.—Roman Catholic, except 34,000 (6,654 Protestants.

GOVERNMENT.—Constitutional Monarchy. Executive, the King (Alfonse XIII., *b.* 1886. Queen Regent—Maria Christina). Legislative, the King, and Cortes, composed of the Senate with 360 members, and Congress of 431 members.

ARMY.—100,000 men, 1,020 horses.

NAVY.—135 ships (13 iron-clads); 22,000 men.

EDUCATION.—30,000 elementary schools, with 1,700,000 pupils, 10 universities with 15,700 students.

RAILWAYS.—In 1886, 5,654 miles were open.

POST-OFFICE.—Telegraph, 27,000 miles of wire, conveying, in 1885, 3,000,000 messages. Letters delivered, 150,000,000.

There are elections in Spain, but universal suffrage is not dreamed of. The franchise is peculiar. A Spaniard, to vote, must be of age, domiciled 25 years, contributing 25 pesetas ($5) as a real estate tax, and double that as an industrial tax. Politicians in power do not try to increase voters, but to diminish their number. Madrid, with 400,000 population, has an actual register of 12,000. All parish priests, and their curates, members of academies, and ecclesiastical chapters can vote.

PORTUGAL.

On the east and north Portugal is bounded by Spain, and on the west and south by the Atlantic Ocean.

AREA.—Continental, 34,606 square miles.

POPULATION.—4,708,178.

RELIGION.—Roman Catholic; 500 Protestants.

GOVERNMENT.—Hereditary Limited Monarchy. Executive, the King (Louis I.) and cabinet. Legislative, the Cortes, composed of House of Peers with 162 members, and House of Commons of 149 members.

ARMY.—32,120 men, 3,600 horses.

NAVY.—39 steamers and 16 sailing vessels with 3,400 men.

EDUCATION.—5,500 schools with 240,000 pupils. One university with 670 students.

RAILWAYS.—About 1,000 miles were open in 1886.

POST-OFFICE.—Telegraph, 7,300 miles of wire, conveying in 1884 1,200,000 dispatches. Letters, post cards, journals, etc., delivered in 1885, 38,000,000.

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FRANCE.

France is bounded on the north by the English Channel; on the west by the Bay of Biscay; on the south by Spain and the Mediterranean Sea; and on the east by Belgium, Germany, Switzerland, and Italy.

AREA.—204,090 square miles.

POPULATION.—1886, 37,885,905.

RELIGION.—Roman Catholic. About 693,000 Protestants.

GOVERNMENT. — Republican. Executive, the President of the Republic (M. Sadi Carnot). Legislative, the Senate and the Chamber of Deputies. The former composed of 300 members, and the latter of 584 members.

ARMY.—523,000 men, 140,000 horses.

NAVY.—507 vessels, including 63 iron-clads and 140 torpedo vessels and boats, manned by 70,000 men.

EDUCATION.—The education is entirely under Government supervision. There are 16 "facultes des lettres et des sciences," 14 "facultes de droit," and 6 "facultes de medecine," with (1884) 12,195 students. Elementary and secondary schools, 86,000 with over 6,000,000 pupils.

RAILWAYS.—About 19,000 miles were open in 1886.

POST-OFFICE.—Telegraph—160,000 miles of wire conveying, in 1885, 23,000,000 messages. Letters, post cards, journals, etc., delivered (1884) 1,400,000,000.

PARIS.

Paris, the strongly fortified capital of France, and one of the greatest, richest, most beautiful, and most industrious cities of the world, is situated on both banks of the Seine, and on two islands in its center. The fortifications, the interior circumference of which is 21 miles, inclose 2,344,550 inhabitants within an area of 30 square miles. This space is divided into two distinct portions; the first comprises all within the old city wall, the second includes the suburbs embraced between the former and the line of fortifications. The first portion is in many parts covered with splendid monuments, magnificent hotels and gardens. It is divided into two parts by the Seine, that on the right bank of the river being the most extensive, richest, and most industrious. It contains the greatest number of public offices, and the center is occupied by the *Bourse* (Exchange) of Paris. Among its splendid edifices are the Triumphal Arch, erected by Napoleon in 1806, and the Palace of the Louvre.

The other part situated on the left bank of the river includes the chief educational establishments, the Palace of the Luxembourg, the Hotel des Invalides, the Champs-de-Mars, and the Jardin des Plantes. In the second division, inclosed between the old city wall and the fortifications, the population has greatly increased within recent years, though large portions of it are still occupied by fields or gardens. The approach to its line of fortifications is guarded by sixteen detached forts.

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BELGIUM.

On the west Belgium is bounded by the North Sea, on the north by the Netherlands, on the east by Holland, and on the south by France.

AREA.—11.373 square miles.

POPULATION.—1886, 5,909,975. French is the official language and that of the upper classes. In 1880 45 per cent. spoke Flemish, 40 per cent. French, and 8 per cent. spoke both languages.

RELIGION.—The Roman Catholic religion is professed by nearly the entire population, though full liberty and social equality is granted to all confessions. There are 15,000 Protestants, and 3,000 Jews.

GOVERNMENT.—Constitutional and hereditary monarchy. Executive, the King (Leopold II., *s.* 1865) and ministry. Legislative, vested in the King, the Chamber of Representatives, and the Senate. The Chamber consists of 138 members, and the Senate of 69.

ARMY.—Peace footing, 1888, 54,818 men, 8,900 horses. War footing, 103,860 men, 13,800 horses.

EDUCATION.—There are 4 universities (Brussels, Ghent, Liege, and Louvain), attended in 1886-87 by 4,990 students, 150 higher class schools, with 27,675 pupils, and 6,350 primary and infant schools with 673,928 pupils in 1885.

CHIEF EXPORTS, 1886.—Threads, $27,000,000; raw textiles, $20,000,000; hides and skins, $14,000,000. In 1886, 17,253,144 tons (metric) of coal were produced.

RAILWAYS.—In 1887, 2,763 miles were open for traffic.

POST-OFFICE.—Telegraph, 17,900 miles of wire conveying 6,798,108 dispatches in 1886. Letters, post cards, newspapers, etc., delivered in 1886, 281,098,941.

IMMIGRATION.—Excess of immigration over emigration in 1886, 2,775.

THE NETHERLANDS.

The Netherlands are bounded on the west and north by the North Sea, on the south by Belgium, and on the east by Germany.

AREA.—Exclusive of Luxemburg 12,680 square miles.

POPULATION.—1886, 4,390,000. Emigration, 1886, 2,024.

RELIGION.—Census, 1879—Protestants, 2,469,814; Roman Catholics, 1,439,137; Jews, 81,693.

GOVERNMENT.—Hereditary and constitutional monarchy. Executive, the King (William III., *s.* 1849). Legislative, the King and Parliament or States-General, composed of the First Chamber with 50 members, and the Second Chamber with 100.

ARMY.—Peace footing, 53,500 men. War footing, 65,570, with 114,000 militia.

NAVY.—120 vessels (24 iron-clads) manned by 10,200 men.

EDUCATION.—There are 4 universities—Leyden, Groningen, Utrecht, and Amsterdam—attended by (1886) 2,110 students; 1,278 private and higher class schools, with (1885) 174,604

THE NETHERLANDS—(Continued).

scholars; 2,923 public elementary schools, with 440,851 pupils; and 1,017 public and private infant schools, with 107,563 pupils.

RAILWAYS.—In 1887, 2,096 miles were open for traffic.

POST-OFFICE.—Telegraph, 10,577 miles of wire in 1887, conveying 3,622,810 messages (1885). Letters, post cards, newspapers, etc., in 1886, 169,796,641.

GRAND DUCHY OF LUXEMBURG.

AREA.—998 square miles.

POPULATION.—1885, 213,283.

RELIGION.—All Roman Catholic, with exception of 2,200.

GOVERNMENT.—In 1867 the Duchy was proclaimed neutral territory, the King of the Netherlands being declared the Grand Duke; but in all other respects it is independently administered.

RAILWAYS.—320 miles now open.

POST-OFFICE.—Telegraph, 1,653 miles of wire conveying 83,960 dispatches. Letters delivered in 1885, 3,103,500.

SWITZERLAND.

Bounded on the east by Austria, on the south by Italy, on the west and north-west by France, and on the north by Germany. It is the most mountainous country in Europe, the immense mass of Mt. St. Gothard forming the center or nucleus of a system of mountains, covered with perennial snow, the peaks of which rise from 5,000 to 15,000 feet above sea level. The chief ranges are the Alps (subdivided into numerous ranges), which cover the interior and the southern and eastern frontiers, occupying over one-half of its surface (Mont Rosa 15,217 ft.), and the Jura Mountains along the north-western frontier (Mt. Dole 5,900 ft.).

CHIEF PASSES.—St. Bernard, 8,120 feet; Cervin, 10,938 feet; Simplon, 6,595 feet; St. Gothard, 6,936 feet; Splugen, 6,945 ft.

AREA.—15,981 square miles.

POPULATION.—1884 (estimated) 2,906,752.

RELIGION.—58 per cent. Protestants; 41 per cent. Roman Catholic.

GOVERNMENT.—Federal Republic of 22 Cantons. Executive, Federal Council of 7, including the President (M. Zemb). Legislative, the State Council of 44 members, and the National Council of 145 representatives.

ARMY.—Federal Army, 117,179 men; Landwehr (militia), 84,046; total, 201,225.

EDUCATION.—Compulsory. There are four universities (Basel, Bern, Zurich, and Geneva) with 1,500 students, and 5,500 elementary and secondary schools with 500,000 pupils.

RAILWAYS.—1,925 miles (Alpine Tunnels—St. Gothard, 48,911 feet; Mount Cenis, 40,124 feet; Arlberg, 33,672 feet).

POST-OFFICE.—Telegraph, 10,480 miles of wire conveying, in 1885, 3,000,000 messages. Letters, post cards, etc., delivered in 1885, 220,000,000.

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GERMANY.

On the north Germany is bounded by the North Sea, Denmark, and the Baltic Sea; on the east by Russia, on the south by Austria and Switzerland, and on the west by France, Belgium, and the Netherlands.

AREA.—209,810 square miles.

POPULATION.—1885, 46,852,450.

RELIGION.—1880, Protestants, 28,330,970; Roman Catholics, 16,232,600; Jews, 561,610.

GOVERNMENT.—The 26 States which comprise the German Empire are united into a Confederation. The supreme direction of the military and political affairs is vested in the King of Prussia, controlled by the Bundesrath, or Federal Council, consisting of 62 members appointed by the individual states of the empire, and the Reichstag, or Diet of the Realm, composed of 397 members elected by universal suffrage.

ARMY.—Peace footing, 489,943 men, 90,492 horses. War footing, 1,567,600 men, 312,730 horses.

NAVY.—105 vessels (27 iron-clads) and 110 torpedo boats, with 18,800 men.

EDUCATION.—There are 21 universities attended in 1887 by 27,784 students, 57,000 elementary schools, with 7,100,000 pupils, and 1,484 higher class and technical schools with 266,228 pupils.

RAILWAYS.—In 1887, 24,197 miles were open for traffic.

POST-OFFICE.—Telegraph, 191,272 miles of wire conveying 20,510,294 dispatches in 1886. Letters, post cards, newspapers, etc., delivered in 1886, 1,964,060,893. EMIGRATION—1886, 76,687.

BERLIN.

Berlin, the capital, is by far the largest town in Germany, and for the beauty and size of its buildings, the regularity of its streets, the importance of its institutions of science and art, and its activity, industry, and trade, is one of the finest cities in Europe. Built in a sandy plain on both banks of the Spree, it is ten miles in circumference, and contains 1,315,287 inhabitants. The most celebrated street is that called "Unter den Linden," a broad and imposing avenue, planted with four rows of lime trees, ornamented by an equestrian statue of Frederick the Great, and terminated at one end by the Brandenburg gate—a colossal structure, surmounted by a statue of Victory in a car drawn by four horses, and by the royal palace at the other. Around the principal squares and streets are grouped numerous public buildings, among which are the royal castle and palace, the arsenal, the university, museum, exchange, opera-house, theaters, and palaces of the princes. Berlin is the great center of instruction and intellectual development in Northern Germany, and its educational establishments are numerous and celebrated, including the university, which is annually attended by over 4,000 students. It is also the first city in Germany for the variety and importance of its manufacturing products, which comprise, among other things, the beautiful cast iron ornaments known as Berlin jewelery.

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NORWAY AND SWEDEN.

These two kingdoms forming the Scandinavian Peninsula are bounded on the north by the Arctic Ocean; on the east by Russia, the Gulf of Bothnia, and the Baltic Sea; on the south by the Baltic Sea, the Sound, the Cattegat, and Skager Rack; and on the west by the Atlantic Ocean.

NORWAY.

AREA.—121,740 square miles.

POPULATION.—1875, 1,925,000.

RELIGION.—Lutheran Protestant with the exception of 7,238.

GOVERNMENT.—Norway and Sweden together form a Hereditary and Limited Monarchy, the King of Sweden being also King of Norway, but each country having a separate legislative government. Executive, the King (Oscar II.). Legislative, the Storthing, consisting of the Lagthing of 28 members, and the Odelsthing of 86 members.

ARMY.—Including reserves 54,000 men.

NAVY.—44 ships (4 iron-clads), 645 sailors.

EDUCATION.—There are 6,600 elementary schools with 279,000 pupils; and 1 university with 1,350 students.

RAILWAYS.—In 1886, 970 miles were open.

POST-OFFICE.—Telegraph, 10,050 miles of wire conveying 890,000 messages. Letters delivered, 1884 (exclusive of journals, etc.), about 19,000,000.

SWEDEN.

AREA.—173,974 square miles.

POPULATION.—1886, 4,717,189.

RELIGION.—Lutheran Protestant, with 21,000 exceptions.

GOVERNMENT.—Executive, the King. Legislative, the Diet, composed of two Chambers, the first with 142 members, and the second with 214 members.

ARMY.—164,339 men, 5,649 horses.

NAVY.—68 ships (15 iron-clads) with 4,000 men.

EDUCATION.—There are 2 universities with 2,500 students, and 10,000 elementary and other schools with 700,000 pupils.

RAILWAYS.—4,280 miles open in 1885.

POST-OFFICE.—Telegraph, 13,020 miles of wire conveying 1,166,000 dispatches; 86,000,000 letters, post cards, journals, etc., delivered in 1884.

AUSTRO-HUNGARIAN MONARCHY.

Austria is bounded on the north by Poland, Silesia, and Saxony; on the west by Bavaria and Switzerland; on the south by Venetia, the Adriatic, and the Balkan States; and on the east by Moldavia and West Russian.

AREA.—240,942 square miles (excluding Bosnia, Herzegovina, and Novi Bazar, 23,577 square miles).

POPULATION.—39,640,834 (1886); Bosnia, etc., 1,504,090 (1885).

RELIGION.—Roman Catholics, 25,598,000; Protestants, 3,630,000; Jews, 1,646,000.

GOVERNMENT.—Austria and Hungary form a hereditary dual-monarchy, each country having its own Parliament, Ministry, and Administration. They are both united under

AUSTRO-HUNGARIAN MONARCHY—(Con'd).

a hereditary sovereign, the Emperor of Austria (Franz Josef I., s. 1848), being also King of Hungary, and a controlling body known as the "Delegations."

ARMY.—Peace footing, 286,507 men, 50,362 horses. War footing, 1,068,628 men, 211,462 horses.

NAVY.—98 vessels (12 iron-clads, 38 torpedo boats) manned by 9,764 men.

EDUCATION.—Austria has 8 universities, attended, in 1887, by 14,540 students; 1,824 higher class schools with 180,163 pupils; and 17,419 elementary schools with 2,781,220 pupils. Hungary has 2 universities attended, in 1887, by 4,169 students; 374 higher class schools with (1885) 49,400 pupils; and 16,717 elementary schools, with 1,841,668 pupils.

RAILWAYS.—In 1887, 14,355 miles were open for traffic.

POST-OFFICE.—Telegraph, 105,570 miles of wire in 1886, conveying in 1885-86, 12,711,495 messages. Letters, newspapers, etc., delivered in 1886, 738,365,120.

ITALY.

The Peninsula of Italy projects into the Mediterranean Sea, which forms its southern boundary. On the north it is bounded by Austria and Switzerland; on the west by France and the Tyrrhenian Sea; and on the east by the Adriatic Sea.

AREA.—110,655 square miles. Length about 700 miles; breadth varies from 20 to 350 miles.

POPULATION.—1886, 29,699,785. Emigrants, 1885, 157,000.

RELIGION.—Roman Catholic, but about 62,000 Protestants, and 38,000 Jews.

GOVERNMENT.—Executive, the King (Humbert I). Legislative, the King and Parliament, consisting of two chambers—the Senate, consisting of the Royal Princes and any number of distinguished men above forty years of age who are nominated by the King. The second chamber, that of the Deputies, consists of 508 members elected by the people. The government of Italy is said to be a good deal disturbed by the constant drain of migration. Stringent laws have been enacted to prevent it, but the exodus goes on apparently unabated. In 1888 195,214 Italians left their homes for other lands, and in 1887 the number was 127,748. The country is over-populated, and the people must move out or go hungry. Hundreds of thousands have gone to the Argentine Republic, where they are said to be prospering. The productive land of Italy is only about equal to that of Illinois, while the population is over 30,000,000.

ARMY.—1887, 265,889. Militia Mobile, 379,908. Militia Territorial, 1,313,793. All men liable to serve.

NAVY.—Consists of 176 vessels. First-class war ships, 22; torpedo vessels and boats 107. Manned by 8,000 men.

EDUCATION.—Italy had (1884) 21 universities with 13,384 students.

RAILWAYS.—About 6,600 miles open.

TELEGRAPH.—About 19,000 miles open.

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DENMARK.

On the west Denmark is bounded by the North Sea; on the north-west by the Skager Rack; on the east by the Categat, the Sound, and the Baltic; and on the south by the Baltic and the Germanic province of Schleswig.

AREA.—15,284 square miles (including Faroe Islands).
POPULATION.—1885, 2,645,180 (including Faroe Islands).
RELIGION.—The State religion is Lutheran, though complete toleration is extended to every sect. In 1880, only 17,526 persons did not belong to the Lutheran Church. Of this number 3,946 were Jews and 2,985 Roman Catholics.

GOVERNMENT.—Hereditary limited monarchy. Executive, the King (Christian IX., *s.* 1863), and a Ministry. Legislative, the Rigsdag or Diet, composed of the Landsthing or Upper House with 66 members, and the Folkething or House of Commons with 102 members.

ARMY.—On the war footing 50,522 officers and men.
NAVY.—32 steam vessels (9 iron-clads) and 14 torpedo boats, with 1,477 men.

EDUCATION.—Elementary education is compulsory. The university at Copenhagen has about 1,300 students. There are 45 colleges and higher schools, and 2,940 parochial schools with 231,935 pupils.
RAILWAYS.—In 1886, 1,214 miles were open for traffic.
POST-OFFICE.—Telegraph, 6,800 miles of wire, conveying 1,300,187 messages in 1885. Letters, post cards, and newspapers delivered in 1885, 48,110,213.
EMIGRATION.—6,263 in 1886.

EUROPEAN RUSSIA.

European Russia is bounded on the east by Siberia and the Caspian Sea; on the south by Persia, the Black Sea, and Turkey; on the west by Austria, Germany, the Baltic Sea, and Sweden; and on the north by the Arctic Ocean.

AREA.—Including Caucasia, which forms geographically part of Asiatic Russia, 2,261,526 square miles.

POPULATION.—Including Caucasia, 94,385,343, or 90 per cent. of the whole population of the Russian Empire.

RELIGION.—The established religion is the Russo-Greek. Protestants, 4,766,000. Roman Catholics, 8,910,000.

GOVERNMENT.—Absolute hereditary monarchy. Executive and legislative, the Czar (Alexander III.). Administrative intrusted to four Councils, the Council of the Empire, the Ruling Senate, the Holy Synod, and the Committee of Ministers. Finland has a partly independent government—Grand Duke, the Czar.
ARMY.—757,238 men, 129,730 horses.
NAVY.—268 vessels (including 32 iron-clads and 139 torpedo boats), 29,000 men.

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EUROPEAN RUSSIA—(Continued).

EDUCATION.—Including Finland, there are 9 universities with 14,000 students, and 38,000 schools with 2,250,000 pupils. In 1882 only 19 per cent. of the Russian recruits could read and write.

RAILWAYS.—In 1887, 18,130 English miles were open.

POST-OFFICE.—154,000 miles of wire, conveying in 1884, 10,400,000 messages. Letters, post cards, journals, etc., delivered, 1883, 270,000,000.

TURKEY IN EUROPE.

The Ottoman Empire in Europe now, strictly speaking, only comprises the immediate provinces, the remainder of its territory being divided among the independent and tributary States of the Balkan Peninsula.

AREA.—Immediate provinces, 63,875 square miles; East Rumelia (autonomous province), 13,860 square miles; Bulgaria (trib. prin.) 24,700 square miles; Bosnia, Herzegovina, and Novi Bazar (occupied by Austria), 23,577 square miles.

POPULATION.—Immediate provinces, 4,500,000; East Rumelia, 976,100; Bulgaria, 2,007,919; Bosnia, etc., 1,504,090.

RELIGION.—More than one-half of the population are Christians, chiefly belonging to the Greek Church; the remainder consists of Mohammedans, with a few Jews.

GOVERNMENT.—Absolute monarchy. The Sultan (Abdul-Hamid II., *s.* 1876) is ruler, and his will is absolute, in so far as it is not in opposition to the precepts of the Koran. The legislative and executive authority is exercised, under the supreme direction of the Sultan, by the Grand Vizier, the head of the temporal government, and the "Sheik-ul-Islam," the head of the church.

ARMY.—Peace footing. 159,122 men, 23,025 horses. War footing, 612,000 men.

NAVY.—64 vessels (15 iron-clads) manned by 40,572 men.

EDUCATION.—See under "Turkey in Asia." Map 44.

RAILWAYS.—904 miles open for traffic in 1885.

POST-OFFICE.—Telegraph, 26,060 miles of wire, 1884, conveying 1,259,130 dispatches in 1882-83. Letters, newspapers, etc., delivered in 1883, 2,578,000.

GREECE.

Greece is bounded on the north by Turkey in Europe; on the east by the Ægean Sea; on the south by the Mediterranean Sea; and on the west by Turkey and the Ionian Sea.

AREA.—25,000 square miles.

POPULATION.—1,979,453 (1879).

RELIGION.—Greek Orthodox Church with the exception of 46,000.

GOVERNMENT.—Limited Monarchy. Executive, the King (Georgios I.). Legislative, the Boule (Chamber of Deputies) consisting of 150 Representatives.

ARMY.—1888, 26,340 men, 3,736 horses.

NAVY.—1888, 79 vessels (2 iron-clads), 2,135 men.

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GREECE—(Continued).

EDUCATION.—There are 2,600 schools attended by 140,000 pupils, and 1 university with 2,400 students.

RAILWAYS.—In 1886 there were 327 miles open.

POST-OFFICE.—In 1884 there were 4,570 miles of wire conveying 627,000 messages. Letters, post cards, journals, etc., delivered, 1884, 10,000,000.

MALTA.

The Maltese group is situated in 35 deg. 54 min. N. lat., and 14 deg. 31 min. E. long., and comprises the islands of Malta, Gozo, and Comino.

AREA.—119 square miles. Malta, 95 square miles; Gozo, 20 square miles; and Comino, 2 square miles.

POPULATION.—1886, 159,231 (excluding British soldiers).

GOVERNMENT.—The government is administered by a Governor, who is assisted by an Executive Council of 6 members, and by a Council of Government, 9 official and 8 elected members, of which the Governor is president.

ARMY.—The garrison consists of 5,216 British soldiers.

EDUCATION.—One university (Valetta), 87 public schools with 9,943 pupils in 1885, Government grant, £16,572, and 112 private schools, attended by 2,913 scholars.

RAILWAYS.—1886, 8½ miles open.

POST-OFFICE.—Letters, post cards, newspapers, etc., delivered in 1885, 1,483,372.

TELEGRAPH.—65 miles.

GIBRALTAR.

This celebrated fortress, commanding the entrance to the Mediterranean, is situated on a rocky promontory in the south of Spain.

AREA.—2 square miles.

POPULATION.—1886 (including military) 24,139.

GOVERNMENT.—The Governor in command of the garrison exercises all the Executive and Legislative authority.

ARMY.—The garrison consists of 5,753 British soldiers.

EDUCATION.—16 schools with 1,977 scholars, Government grant £1,763.

TELEGRAPH.—3 miles of wire.

HELIGOLAND.

Two islands in the North Sea, 25 miles from the mouth of the Elbe, situated in 7 deg. 51 min. E. long., and 54 deg. 11 min. N. lat.

AREA. ¾ square mile.

POPULATION.—1881, 2,000.

RELIGION.—Lutheran.

GOVERNMENT.—Governor assisted by an Executive Council.

EDUCATION.—One school with 366 pupils, Government grant, £250.

POST-OFFICE.—Letters, post cards, newspapers, etc., delivered in 1885, 127,189.

TELEGRAPH CABLE.—32 miles.

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CYPRUS.

An island situated in the most eastern basin of the Mediterranean Sea, with Asia Minor to the north of it, and Syria to the east, at distances of 60 and 41 miles respectively.

AREA.—3,584 square miles.

POPULATION.—1881, 186,173.

RELIGION.—One fourth Mohammedan, the remainder mainly Greek Church.

GOVERNMENT.—Cyprus is administered by Great Britain on behalf of the Ottoman Empire, the Legislature consisting of a High Commissioner, who is also Commander-in-Chief, with a Council of 18 members. Six members are non-elective, and three are chosen by the Mohammedan residents. Annual subsidy payable to Turkey, $460,000.

ARMY.—Garrison troops in 1887, 502 officers and men.

EDUCATION.—There are a number of schools on the island; the Government grant in 1886-87, inclusive of that for building purposes, was $15,000.

ICELAND.

This island, belonging to Denmark, lies in the Atlantic Ocean, about 600 miles west of Norway and about 250 miles east of Greenland, between 63 deg. 24 min., and 66 deg. 33 min. N. lat., and 13 deg. 30 min. and 24 deg. 30 min. W. long., and is immediately south of the Polar Circle. On the north it is bounded by the Arctic Ocean, and on all the other sides by the Atlantic Ocean.

AREA.—39,566 square miles.

POPULATION.—72,445 in 1880.

RELIGION. — All Protestants, belonging to the Lutheran Church.

GOVERNMENT. — The Legislative power is vested in the Althing, consisting of 36 members, 30 elected by popular suffrage, and 6 nominated by the King of Denmark. A minister for Iceland, nominated by the King and responsible to the Althing, is at the head of the administration; while the highest local authority is vested in the Governor, called Stiftamtmand, who resides at Reykjavik.

EDUCATION.—The natives are distinguished for their love of learning; notwithstanding their poverty and adverse circumstances, it is rare to find an Icelander who cannot read and write. There is a college at Reykjavik, attended by about 100 scholars.

COMMERCE.—Consists in the exchange of wool, butter, skins, fish, and oil for European manufactures.

ASIA.

POSITION.—The eastern and main part of the Old World.

EXTREME POINTS.—Greatest breadth, (Cape Chelyuskin 78 deg. 12 min. N.) to Cape Romania (1 deg. 10 min. N.), 5,300 miles. Greatest length, Cape Baba (26 deg. 3 min. E.) to East Cape 169 deg. 0 min. W.), 7,000 miles.

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ASIA—(Continued).

CONFIGURATION.—Northern coasts low-lying and comparatively even in outline; southern and eastern, rugged and broken. Coast line, 35,000 miles or 500 miles of surface to each mile of coast.

AREA.—17,300,000 square miles, nearly five times that of Europe, or one-third of the land surface of the globe.

POPULATION.—According to the latest estimates, there are 840,000,000 inhabitants, or one-half of the entire population of the world.

RELIGION.—Christians, 15,000,000; Mohammedans, 80,000,000; Brahmins, Buddhists, etc., 745,000,000.

State.	Chief Town.	Area Sq. Miles.	Population.	Pop. per Sq. Mile.
Turkey in Asia	Smyrna	680,000	16,333,000	24
Arabia	Mecca	1,219,000	5,000,000	4
Persia	Teheran	636,000	7,653,600	12
Afghanistan	Kabul	279,000	4,000,000	14
Baluchistan	Kelat	106,000	500,000	4
Khiva and Bokhara	Bokhara	114,600	2,750,000	22
Russia in Asia (exclusive of Caucasia	Irkutsk	6,195,763	10,028,435	1.6
Indian Peninsula	Calcutta	1,450,912	257,390,092	177
Ceylon	Colombo	24,702	2,825,090	114
Chinese Empire	Pekin	4,468,750	382,000,000	85
Korea	Seul	85,000	10,000,000	117
Japan	Tokia	147,669	37,388,997	242
Hong Kong		32	190,000	5,625
Siam	Bangkok	280,550	5,700,000	20
French Possessions	Saigon	196,830	18,425,000	93
British Possessions (Straits Settlements)	Singapore	1,385	540,000	389
Malacca States		31,470	300,000	9
East India Archipelago	Batavia	769,324	34,661,000	45
Upper Burma	Mandalay	140,000	3,500,000	37
Cyprus	Nicosia	3,584	186,173	52
Aden and Perim	Aden	70	35,165	502
Keeling, Lacadive, Maldive and Chagos Islands		3,402	164,585	48
	Total	16,834,043	800,021,137	

CONFIGURATION.—The great resemblance which Asia has to Europe in its rugged and broken shores, is still more remarkably shown—though on a grander scale—in the number and position of its peninsulas, islands, and landlocked seas.

OROGRAPHY.—Asia is the continent of great mountains and table-lands. Lowlands alone spread out extensively in the north-west. There the Plains of Siberia, separated from those of Europe by the wall-like Urals, have an enormous width. But as they advance eastward from the Caspian, the mountains approach nearer to the icy sea, and convert them into a comparatively small coast plain. The great mass of highlands, extending through the whole continent, is compressed

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ASIA—(Continued).

to its narrowest where the plains of India and Turkestan approach each other, and two unequal portions, an eastern and a western, are only united by the isthmus-like range of the Hindu Kush. Culminating points—Himalaya, Mt. Everest, 29,002 ft.; Karakoram, Dapsang, 28,280 ft.; Hindu Kush, Tirich-mir, 25,000 ft.; Thian Shan, Tengri-Khan, 23,982.; Elburz, Demavend, 18,464 ft.; Armenian Mts., Ararat, 16,964 ft.; Kamtschatka Mts., Kliutchev, 15,825 ft.; Mts. of Japan, Fusijama, 14,177 ft.; Altai, Bieluka, 11,000 ft.; Arabian Mts., Jebel Akhdar, 9,900 ft. Area of plains, 6,178,000 square miles. Highlands, 10,812,000 square miles. Mean elevation of continent, 2,884 ft.

HYDROGRAPHY.—The rivers of Asia contribute their waters to three ocean basins—the Arctic, Pacific, and Indian—and a continental river system—the Aralo-Caspian—from which there is no discharge to the sea. Length and drainage areas of chief rivers—I. Yenisei, 2,950 miles; 1,139,040 square miles, Obi, 2,626 miles, 1,306,020 square miles; Lena, 2,506 miles, 959,110 square miles. II. Yang-tse-kiang, 3,158 miles, 749,140 square miles; Amur, 2,718 miles, 520,880 square miles; Hoang-ho, 2,603 miles, 401,400 square miles. III. Ganges, 1,557 miles, 391,100 square miles; Indus, 1,800 miles, 372,700 square miles; Euphrates, 1,614 miles, 127,560 square miles. IV. Amu Daria, 944 miles, 200,780 square miles; Syr Daria, 1,500 miles, 320,000 square miles. Chief lakes—Caspian Sea, 170,264 square miles; Aral, 25,868 square miles; Balkash, 7,960 square miles; Baikal, 13,487 square miles; Issik Kul, 1,977 square miles.

CLIMATE.—Northern or Siberian Zone has a mean annual temperature of less than 32 deg. F., Verkhoyansk (the pole of greatest cold), mean temperature, 2 deg. F., January 56 deg. F., July 59.8 deg. F. Central zone has summer and winter of great extremes. Southern and Eastern Zones (monsoon region) have a regular alternation of seasons. Lahore (Panjab), mean temperature, 75 deg. F., January 53 deg. F., June 93 deg. F.

TURKEY IN ASIA.

Turkey in Asia, the western promontory of Asia, lies between 12 deg. 30 min. and 42 deg. N. lat., and 26 deg. and 48 deg. E. long. On the north-east it is bounded by Transcaucasia, on the east by the Black Sea and Sea of Marmara, on the west by the Ægean, Mediterranean, and Red Seas; on the south by Arabia and the Persian Gulf, and on the east by Persia and the Persian Gulf.

AREA.—680,000 square miles.

POPULATION.—16,174,100.

RELIGION.—The prevailing religion is Mohammedanism, of which there are 12,000,000 adherents, while about 3,000,000 are nominally Christians, including Greeks, Armenians, etc.

GOVERNMENT.—This, the greater part of the Turkish Empire, is divided for administrative purposes into 24 official provincial governments or vilayets. At the head of each of

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TURKEY IN ASIA—(Continued).

these is placed a Vali or Governor-General, who represents the Sultan, and is assisted by a provincial council.

EDUCATION.—Throughout the Turkish Empire, public schools have been long established in most considerable towns, while colleges, with public libraries, are attached to the greater number of the principal mosques. But the instruction afforded by these establishments is rather limited.

RAILWAYS.—In 1885, 390 miles were open for traffic.

ARABIA.

A huge peninsula of South-west Asia, bounded on the north by Turkey in Asia; on the east by the Persian Gulf and Gulf of Oman; on the south by the Indian Ocean and Gulf of Aden; and on the west by the Red Sea.

AREA.—Total area of peninsula, 1,219,000 square miles (independent Arabia, 966,952 square miles).

POPULATION.—(Estimated) 3,700,000. The inhabitants are either Bedouins or "wanderers," or "Hadesi" settled in towns and villages.

RELIGION.—With the exception of a few Jews the inhabitants are Mohammedans.

DIVISIONS.—At no time has Arabia been united into one harmonious whole, and at present large portions of its territory are claimed by foreign powers. Turkey claims as part of its Asiatic dominion the district of El Hasa bordering on the Persian Gulf, and the vilayets of Hedjaz and Yemen extending along the eastern shores of the Red Sea. Egypt holds possession of the Sinai peninsula and the old land of Midian which extends southward from the Gulf of Akaba. The territory belonging to Britain comprises the fortress of Aden, Perim Island at the entrance to the Red Sea, the Kuria Muria Islands off the south-east coast, and the island of Kamaran in the Red Sea. The remainder of the country embraces all the interior and the south and east coasts between the Bahrein Islands and Aden. It is divided among an uncertain number of petty and independent States, the chief of which are Oman in the extreme east, extending inland from the gulf of the same name, with Muscat for its capital, and Jebel Shammar and Nejd in the interior, the capital of the former being Hail, and of the latter Riad. Hadramaut, on the south coast, is split up into numerous little States or Principalities.

PALESTINE.

This interesting region, the scene of the grandest events in the history of the world, is a narrow belt of land, bounded on the north by the mountain ranges of Lebanon and Hermon; on the east it stretches over the table land of the Hauran to the Arabian desert; on the south it merges into the desert of Sinai; and on the west it is bounded by the Mediterranean Sea.

AREA.—11,000 square miles.

POPULATION.—Estimated, 700,000.

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PALESTINE—(Continued).

RELIGION.—Mohammedan (nearly 300,000 Christians in Lebanon).

GOVERNMENT.—Under Turkish rules for administrative purposes, Palestine is divided into the government of el Kuds (Jerusalem), comprising the country west of the Dead Sea and the Jordan, as far north as about 32 deg. 30 min.; the government of Jebel Libnan (Lebanon), occupied by the slopes of that range on either side; the remainder is included in the Vilayet of Syria.

PHYSICAL FEATURES.—One of the most striking features of Palestine is its natural division into four parallel strips—the Coast Plain, the Hill Country, the Jordan Valley, and the Eastern Plateau. The Coast Plain, from 10 to 20 miles wide, extends without a break from the desert on the south to Mount Carmel (1,810 feet) on the north. The Hill Country, commencing south of the Mediterranean, traverses the country from south to north (Mount Hermon, 9,400 feet; Mount of Olives, 2,683 feet). The Jordan Valley runs nearly parallel to the coast from the base of Mount Hermon to the Dead Sea, which occupies its deepest portion. The Eastern Plateau has a height of 2,500 to 3,000 feet, attaining its greatest altitude in Mount Hor (Jebel Horoun), 4,580 feet.

The one great river of Palestine is the Jordan, which, emerging from underground as a full-bodied stream at the Springs of Hasbeiya, 847 feet above the sea, flows first through the Waters of Merom, then through the Sea of Galilee, 682 feet below the Mediterranean, from which it passes down the wide valley of El Ghor, and finally falls into the Dead Sea, the surface of which is 1,292 feet below the Mediterranean.

PERSIA.

Persia is bounded on the north by the Caspian Sea and Asiatic Russia; on the west by Turkey in Asia; on the south by the Persian Gulf and Arabian Sea; and on the east by Afghanistan and Baluchistan.

AREA. 636,600 square miles.

POPULATION.—7,653,600.

RELIGION.—Mohammedan, with about 74,000 exceptions.

GOVERNMENT.—Despotic, the power of the Shah being absolute, in so far as it is not opposed to the accepted doctrines of the Koran. Under him, the Executive is carried on by a Council of 19 ministers.

ARMY.—101,750 men (60,700 regulars, 41,050 irregulars), though in time of war only 53,520 are liable for service.

NAVY.—2 vessels.

EDUCATION.—There are a large number of colleges supported by public funds, and numerous schools for children. A larger proportion of the population of Persia are possessed of the rudiments of education than of any other country in Asia, except China.

POST-OFFICE.—Telegraph, 6,124 miles of wire in 1885. Letters, post cards, newspapers, etc., delivered in 1884-5, 1,854,955.

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AFGHANISTAN, Etc.

Afghanistan, a country on the N. W. frontier of India, bounded on the north by Turkestan; on the east by India; on the south by Baluchistan; and on the west by Persia.

AREA.—298,235 square miles (inclusive of Kafiristan).

POPULATION.—4,500,000, mainly Mohammedans of the Sunni sect.

GOVERNMENT.—Amir. In consequence of its inaccessible highland tracts, its numerous races and their tribal organization, no civil administration can be said to exist beyond the collection of the revenue.

BALUCHISTAN,

is bounded on the north by Afghanistan; on the east by India; on the south by the Arabian Sea; and on the west by Persia.

AREA.—106,635 square miles.

POPULATION.—500,000; Mohammedans of Shiah and Sunni sects.

GOVERNMENT.—The Khan (Mir Khodadal Khan, *s.* 1856) concluded a treaty in 1876 with Britain, by which he has become a feudatory of the Empress of India. This treaty places the whole country at the disposal of the British Government for all military and strategetical purposes.

KHIVA AND BOKHARA,

two Khanates, bounded on the north by the Sea of Aral and Russian possessions; on the south by Afghanistan and Russian possessions; and on the west by the Trans-Caspian district; being separated from each other by the Oxus.

AREA.—Khiva, 22,290 square miles; Bokhara, 92,168 square miles.

POPULATION.—Khiva, 700,000; Bokhara, 2,130,000.

RELIGION.—The inhabitants of both states are Mohammedans.

GOVERNMENT.—Bokhara, since the capture of Samarkand by Russia, 1868, is little more than a vassal state of that country, though still allowed to enjoy a certain show of political independence under a Khan. Khiva.—The Russians captured Khiva in 1873, abolished slavery, and compelled the Khan to acknowledge himself a vassal of the Czar.

INDIA.

On the north India is bounded by the Himalaya Mountains; on the west by Afghanistan, Baluchistan, and the Indian Ocean, and on the east by the Bay of Bengal and Indo-China.

RELIGION.—187,000,000 Hindoos; 50,000,000 Mohammedans; 3,500,000 Buddhists; 1,862,634 Christians (Roman Catholics, 963,059; Protestants, 535,081; other sects, 364,494).

GOVERNMENT.—Executive, the Viceroy (Lord Dufferin, *b.* 1826). Administrative, the Secretary of State for India, and Council of 15 members.

ARMY.—1887, men, 225,873 (83,582 Europeans); horses, 33,500.

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INDIA—(Continued).

EDUCATION.—1885, 4 universities (Calcutta, Madras, Bombay, and the Panjab). Total number of educational institutions (1885-86), 122,516, with 3,332,851 students.

RAILWAYS.—13,390 miles, conveying 88,000,000 passengers in 1887.

POST-OFFICE.—Telegraph, 74,973 miles of wire, conveying 2,306,876 messages in 1885. Letters, newspapers, etc., delivered, 1886-7, 243,083,216.

AREA AND POPULATION OF THE POLITICAL DIVISIONS OF INDIA.

Division.	Area in Sq. Miles.	Population 1881.	Density of Population.
British Territory, exclusive of Upper Burma*	863,314	198,790,853	229
Native States . .	509,730	55,150,456	108
Ceylon	25,365	2,763,984	109
Nepal and Bhotan .	70,300	2,700,000	39
French Possessions .	203	273,611	1,347
Portuguese Possessions	2,365	475,172	200
Total .	1,471,277	260,154,076	

*Area of Upper Burma estimated at 140,000 square miles; population, 3,500,000.

CHINA AND JAPAN.

CHINA.

The Chinese Empire is bounded on the north and north-west by Asiatic Russia, on the south and south-west by British India, on the south-east by Indo-China, and on the east by the Pacific Ocean.

EXTENT.—Estimated area of the Empire, 4,469,200 square miles (China Proper, 1,554,000 square miles; Manchuria, 380,000 square miles; Mongolia and Zungaria, 1,452,000 square miles; Tibet, 651,500 square miles; Eastern Turkestan, 431,700).

POPULATION.—China Proper, 382,078,860; Manchuria, 12,000,000; Mongolia and Zungaria, 2,600,000; Tibet, 6,000,000; Eastern Turkestan, 580,000.

RELIGION.—Bulk of the people, Buddhists; religion of the state and higher classes, Confucianism; 30,000,000 Mohammedans; 1,000,000 Roman Catholics; 50,000 Protestants.

GOVERNMENT.—Despotic Monarchy. Emperor, Kwangsu (b. 1871); Regent, the Empress Dowager. Administrative, the "Nei-ko" or Cabinet (4 members and 2 assistants).

ARMY.—1884-5, 600,000 under arms, with militia 1,200,000 men.

NAVY.—124 vessels (30 men of war).

EDUCATION.—In China Proper few are unable to read and write.

COMMUNICATION.—20,000 miles of imperial roads, 40 miles of railway built but unused, and 5,482 miles of telegraph wire.

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CHINA AND JAPAN—(Continued).

JAPAN.

POSITION.—In the Pacific, east of China.

AREA.—147,487 square miles.

POPULATION.—1885, 37,868,987.

RELIGION.—Chiefly Buddhism (74,400 priests; Shintoism (15 058 priests; Christians, 1883, 40,524.

GOVERNMENT.—Absolute monarchy. Emperor or "Mikado," Mutso Hito (*b.* 1852).

ARMY.—Peace footing, 38,425 men; war footing, 131,000 men.

NAVY.—37 ships (6 iron-clads), 12,885 men.

EDUCATION.—1884, 1 university with 1,880 students; 29,233 elementary schools, with 3,233,226 scholars; and 1,636 high and other schools, with 89,879 pupils.

RAILWAYS.—370 miles in 1887.

POST-OFFICE.—Telegraph, 15,528 miles of wire, carrying, 1885, 2,558,575 dispatches. Letters, post cards, newspapers, etc., 118,837,859.

BURMA, SIAM, Etc.

Upper Burma until recently was an independent kingdom, governed by King Theebaw, a despotic monarch, but early in 1886 the king was deposed and pensioned, and the country annexed to the Indian Empire, being placed under the Chief Commissioner of Lower Burma.

AREA.—140,000 square miles (exclusive of Burmese Shan States, 40,000 square miles).

POPULATION.—3,500,000.

RELIGION.—Buddhism.

EDUCATION.—A complete national system of public instruction has been developed, and a knowledge of letters is universal.

SIAM,

the only remaining independent native state in the Indo-Chinese peninsula, is bounded on the north by the Burmese Shan States; on the west by Lower Burma; on the east by Anam; on the south by Cambodia and the Gulf of Siam; while a strip of the Malay peninsula, extending south almost to Perak, is also claimed by Siam.

AREA.—280,303 square miles.

POPULATION.—5,750,000.

GOVERNMENT.—Absolute monarchy. Legislative, the King assisted by a Council of Ministers and the Council of State. For administrative purposes the country is divided into 41 provinces with a Governor at the head of each.

ARMY.—2,000 men.

NAVY.—Four corvettes and 12 gun-boats.

East of Siam the remainder of the Indo-Chinese peninsula is occupied by the French colonies and protectorates of Anam, Tongking, Cochin China, and Cambodia.

AREA.—Anam, 106,290 square miles; Tongking, 35,000

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BURMA, SIAM, Etc.—(Continued).

square miles; Cochin China, 23,090 square miles; Cambodia, 32,380 square miles.

POPULATION.—Anam, 6,000,000; Tongking, 9,000,000; Cochin China (1883), 1,639,777; Cambodia, 1,500,000.

GOVERNMENT.—By a decree of October, 1887, the French possessions are placed under a Governor-General, under whom are 2 Residents-General for Tongking and Cambodia, a Resident for Anam, and a Lieutenant-Governor for Cochin China.

ARMY.—French army of occupation 12,000 men.

TELEGRAPH.—Cochin China and Cambodia, 1,434 miles in 1883; Tongking, 158 miles in 1884.

RUSSIA IN ASIA.

The Asiatic possessions of Russia are bounded on the north by the Arctic Ocean; on the east by the Pacific Ocean; on the south by the Chinese Empire, Bokhara, Afghanistan, Persia, and Turkey in Asia; and on the west by European Russia.

AREA.—6 645,720 square miles. Caucasia, 182,280; Trans-Caspian, 285,567; Central Asia, 1,163,956; Siberia, 4,818,626; Aral and Caspian Seas, 195,294.

POPULATION.—15,865,740. (Caucasia, 6,534,853; Trans-Caspian, 206,000; Central Asia, 5,237,354; Siberia, 4,093,535).

RELIGION.—Christianity and Mohammedanism prevail in Caucasia, while in Central Asia and Siberia, Christianity is professed by the Slavs, Buddhism, Shamanism, and Mohammedanism by the native races.

GOVERNMENT.—For administrative purposes the country is divided into 5 general governments—Caucasus, Turkestan, Stepnoye, Eastern Siberia, and Amur. At the head of each of these is either a Viceroy or a Governor-General, the representative of the Czar who as such has the supreme control and direction of all affairs, whether civil or military.

EDUCATION.—In Siberia the means provided for higher education consist of 15 gymnasia, 2 real schools, and 3 normal schools. Primary education is in a very unsatisfactory state, there being only 665 schools, scattered over the whole country, with an attendance of 23,470 pupils.

RAILWAYS.—Trans-Caspian line, 665 miles.

OCEANIA.

Oceania comprises all the islands and archipelagos in the Pacific Ocean and is usually divided into the four great sections of Malaysia, Micronesia, Melanesia or Australasia, and Polynesia.

TOTAL AREA.—4,211,093 square miles.

POPULATION.—39,161,370.

I. MALAYSIA is usually considered as part of Asia under the "East Indian Archipelago," but here it is included with Oceania. Chief Islands—Sumatra (189,290 square miles, population, 1884, 2,948,715; Java, 50,800 square miles, population 20,931,654; Borneo, 284,918 square miles, population 1,858,000;

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OCEANIA—(Continued).

Celebes, 77,179 square miles, population 933,823; Moluccas, 20,429 square miles, population 352,580; Philippines, 114,219 square miles, population 5,636,232; Lesser Dutch Islands, 42,489 square miles, population 2,000 000. The total area of its islands is 769,324 square miles, and the population 34,661,000.

II. MICRONESIA includes the Caroline and Pelew Islands, 1,450 square miles, population 36,000; Mariannes, 443 square miles, population 8,665; Gilbert Islands, 165 square miles, population, 35,200; Marshall Islands, 154 square miles, population, 11,600. Total area, 1,322 square miles, population 91,465.

III. MELANESIA or AUSTRALASIA comprises the great islands of Australia, 2,948,798 square miles, population, 1885, 2,631,553; Tasmania, 26,215 square miles, population 137,211; New Zealand, 104,403 square miles, population 578,482; Fiji Islands, 8,048 square miles, population 126,000; New Guinea, 311,580 square miles, population 2,500,000; New Caledonia and Loyalty Islands, 7,644 square miles, population 60,703; Solomon Islands, etc., 23,546 square miles, population 252,350. Total area, 3,430,234 square miles; population 4,229,155.

IV. POLYNESIA.—Chief groups, Friendly Islands, 384 square miles, population 25,000; Samoa Islands, 1,073 square miles, population 36,800; Society Islands, 636 square miles, population 16,300; Marquesas, 491 square miles, population 5,776; Sandwich Islands, 6,558 square miles, population 57,985. Total area, 10,313 square miles, population 179,550.

EUROPEAN POSSESSIONS.

British, 3,169,389 square miles, population, 3,223.041; Dutch, 718,800 square miles, population 28,500,000; Spanish, 116,250 square miles, population 5,680,665; German, 88,650 square miles, population, 345,600; French, 9,104 square miles, population 85,753; Portuguese, 6,290 square miles, population, 300,000.

AUSTRALIA.

AUSTRALIA is bounded on the north by Torres Strait, the Arafura and Timor Seas, on the west by the Indian Ocean, on the south by the Southern Ocean and Bass Strait, and on the east by the Pacific Ocean.

EXTREME POINTS.—Greatest length, Cape Byron (153 deg. 38 min. E.) to Steep Point (113 deg. E), 2,400 miles. Greatest breadth, Cape York (10 deg. 40 min. S.) to Cape Wilson (39 deg. 10 min. S.), 2,000 miles.

AREA.—2,948,798 square miles (Victoria 87,884 square miles; New South Wales, 310,700 square miles; Queensland, 668,224 square miles; South Australia, 903,690 square miles; West Australia, 978,300 square miles.)

CONFIGURATION.—Coast line little indented. Length 8,000 miles or 368 square miles of surface to each mile of coast.

OROGRAPHY.—The surface is for the most part a level plateau, with a mean elevation of 1,180 feet above sea level. A large part of the interior, particularly in the west, consists of sandy and stony desert. The mountainous region is almost

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AUSTRALIA—(Continued).

exclusively confined to the eastern and south-eastern coasts, where, at an average distance of sixty miles, a belt of about 150 miles in width is formed. The chief divisions of this range are the Australian Alps, whose summit, Mount Kosciusko, 7,308 feet, is the highest point in Australia, and the Dividing Range, extending north from Cape Wilson as far as Cape North.

HYDROGRAPHY.—The only great river system is that of the Murray, 1,550 miles long, with a drainage area of 270,000 square miles. Several considerable streams debouch into the Gulf of Carpentaria, while those flowing to the Pacific on the east and to the ndian Ocean on the west are also of some importance. Inland salt lakes are a characteristic feature of the continent, the chief being Lakes Eyre, Torrens, Gairdner, and Amadeus.

CLIMATE.—North Australia and the north part of Queensland lie in the torrid zone, and have a mean temperatures of 78 deg. F. In the temperate zone extreme temperatures prevail. Brisbane, maximum 102 deg.; minimum 40 deg. F. Sydney, average 61 deg. F. Melbourne, maximum 105 deg.; minimum 30 deg. F. Adelaide, maximum 110 deg.; minimum 35 deg. F. Perth, average 65 deg. F.

POPULATION.—1885, 2,631,553. (Victoria, 991,869; New South Wales, 957,985; Queensland, 333,090; South Australia, 313,423; West Australia, 35,186). 55,000 aborigines and 30,000 Chinese.

VICTORIA.

On the north and north-east Victoria is bounded by New South Wales, on the west by South Australia, on the south and south-east by the Indian Ocean, Bass Strait, and the South Pacific Ocean.

AREA.—87,884 square miles.

POPULATION.—1885, Protestants, 613,183; Roman Catholic, 203,480; Jews, 4,330.

RELIGION.—1881, Protestants, 613,183; Roman Catholics, 203,480; Jews, 4,330.

GOVERNMENT.—Executive, the Governor, appointed by the Crown, assisted by an Executive Ministry of 10 members. Legislative, the Parliament, composed of the Legislative Council of 42 members, and the Legislative Assembly of 86 members. The forces comprise a military establishment of 5,678 of all ranks, and a fleet of 14 ships (2 iron-clads) with 570 men, including reserves.

EDUCATION.—Free, secular, and compulsory. There were, 1885, 1 university at Melbourne, with 2 affiliated colleges attended by 444 students; 1,846 State-aided schools attended by, in 1886, 230,576 pupils, and 707 private schools with 44,059 scholars.

CHIEF EXPORTS.—Wool, £4,999,662; gold, £1,954,326; wheat, flour, and biscuit, £559,437.

RAILWAYS.—In 1887, 1880 miles were open, conveying 49,219,857 passengers.

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VICTORIA—(Continued).

POST-OFFICE.—Telegraph, 10,111 miles of wire, conveying 1,649,579 messages in 1886. Letters, newspapers, etc., delivered in 1886 62,801,429. Excess of immigration over emigration, 16,026 in 1886.

NEW SOUTH WALES.

This is the oldest of the Australasian colonies, is bounded on the north by Queensland, on the east by the south Pacific Ocean, on the south by Victoria, and on the west by South Australia.

AREA.—310,700 square miles.

POPULATION.—1885, 957,985 (1887, estimated, 1,022,767). Exclusive of 7,984 aborigines.

RELIGION.—1881, Protestants, 516,512; Roman Catholics, 207,606; Jews, 3,266.

GOVERNMENT.—Executive, the Governor, appointed by the Crown, assisted by a Cabinet of 10 ministers. Legislative, the Parliament, consisting of the Legislative Council of 52 members, and the Legislative Assembly of 122 members. The defense forces comprise a military establishment of 6,868 men of all ranks, and a volunteer and naval brigade of 667 men.

EDUCATION.—In 1886 there were 1 university (Sydney), attended by 340 students, 3 colleges and one grammar school with 480 scholars, 647 private schools with 38,766 pupils, and 2,250 schools under the Department of Public Instruction with 186,126 scholars.

CHIEF EXPORTS, 1886.—Wool, £7,201,976; gold, £1,613,674; coal, £947,002.

RAILWAYS.—1,890 miles, conveying 14,881,604 passengers in 1886.

POST-OFFICE.—Telegraph, 20,797 miles of wire carrying 2,661,126 messages in 1886. Letters, post cards, newspapers, etc., delivered in 1886, 77,579,810. Excess of immigration over emigration 28,492 in 1886.

QUEENSLAND.

On the north Queensland is bounded by the Gulf of Carpentaria and Torres Strait, on the east by the Pacific Ocean, on the south by New South Wales, and on the west by South Australia.

AREA.—668,224 square miles.

POPULATION.—1887 (estimated), 354,596 (aborigines about 20,000).

RELIGION.—1886, Protestants, 217,991; Roman Catholics, 77,077; Jews, 724.

GOVERNMENT.—Executive, the Governor, appointed by the Crown, assisted by an Executive Council of 7 ministers. Legislative, the Parliament consisting of the Legislative Council of 39 members, and the Legislative Assembly of 59 members. The defense forces comprise a volunteer corps of from 3,000 to 4,000 men, two gunboats and one torpedo boat.

EDUCATION.—Free and secular. In 1886 there were 7 grammar schools attended by 565 pupils; 108 private schools with

QUEENSLAND—(Continued).

8,177 pupils; and 479 public elementary schools with 58,939 scholars.

CHIEF EXPORTS, 1886.—Wool, £1,413,908; gold dust, £1,232,330; sugar, £855,564.

RAILWAYS.—In 1886, 1,555 miles were open for traffic, conveying 1,579,658 passengers.

POST-OFFICE.—Telegraph, 14,443 miles of wire, conveying 2,079,896 messages in 1886. Letters, newspapers, etc., delivered in 1886, 21,214,638. Excess of immigration over emigration, 13,190 in 1886.

SOUTH AUSTRALIA.

The name South Australia would appear to imply that this colony is confined to the south of the continent, but on the contrary it extends to the farthest north, under the name of Northern Territory. The boundary on the north is formed by the Gulf of Carpentaria and the Arafura Sea; on the east by Victoria, New South Wales, and Queensland; on the south by the South Pacific Ocean; and on the west by Western Australia.

AREA.—903,690 square miles.

POPULATION.—1887 (est.) 313,355 (exclusive of aborigines).

RELIGION.—1881, Church of England, 75,812; Roman Catholics, 42,628 and Wesleyan Methodists, 42,103.

GOVERNMENT.—Executive, the Governor, appointed by the Crown, and an Executive Council of 6 members. Legislative, the Parliament consisting of the Legislative Council with 24 members, and the House of Assembly with 52 members. The colony possesses an efficient volunteer military force, and one iron-clad for naval defense.

EDUCATION.—The system of education is liberal, compulsory, State-aided, and secular. There are, 1885, 1 university (Adelaide) with 150 students, 472 public schools, attended by 49,664 pupils, and 363 private schools with 13,524 scholars.

CHIEF EXPORTS, 1886.—Wool, £1,447,971; wheat and flour, £630,968; copper ore, £172,330.

RAILWAYS.—In 1887, 1,421 miles were open and 353 miles in progress. Number of passengers conveyed, 1885-86, 3,961,650.

POST-OFFICE.—Telegraph, 9,378 miles of wire, conveying 713,380 messages. Letters, packets, and newspapers delivered in 1885, 19,228,853.

IMMIGRATION.—1885, 14,500.

WESTERN AUSTRALIA.

This, the largest of the Australasian colonies, includes all that portion of Australia situated to the westward of 129 deg. E. long. On the north and west it is bounded by the Indian Ocean; on the south by the South Pacific Ocean; and on the east by South Australia.

AREA.—978,300 square miles.

POPULATION.—1886, 39,584.

RELIGION.—1881, Protestants 20,613; Roman Catholics, 8,413.

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WESTERN AUSTRALIA—(Continued).

GOVERNMENT.—Executive, the Governor, appointed by the Crown, assisted by an Executive Council of 6 members. Legislative, the Legislative Council composed of 9 nominated and 17 elected members. The colony possessed in 1886 a volunteer force of 588 officers and men, but no regular military.

EDUCATION.—State-aided, secular, and compulsory. There are 2 grammar schools, 77 elementary schools, attended by 3,192 pupils, and 17 assisted schools with 1,287 scholars.

CHIEF EXPORTS 1886.—Wool, £332,519; pearls and pearl shells, £119,964; timber, £50,092.

RAILWAYS.—202 miles open for traffic in 1886.

POST-OFFICE.—Telegraph, 2,405 miles of wire in 1886. Letters, newspapers, etc., delivered in 1886, 3,148,386.

Excess of immigration over emigration, 3,738 in 1885.

TASMANIA.

This Island in the South Pacific Ocean is situated between the parallels of 40 deg. 33 min. and 43 deg. 40 min. S. lat., and 144 deg. 40 min. and 148 deg. 23 min. meridians E. long., at the south-eastern extremity of the Australian mainland from which it is separated by Bass Strait, about 150 miles wide. Its greatest length is 210 miles, its greatest breadth 200 miles.

AREA.—26,215 square miles.

POPULATION.—1887, 137,211 (aborigines quite extinct).

RELIGION.—Protestants, 102,551; Roman Catholics, 30,516; Jews, 316.

GOVERNMENT.—Executive, the Governor, appointed by the Crown, assisted by an Executive Council of 4 members. Legislative, the Parliament, composed of the Legislative Council of 18 members, and the House of Assembly of 36 members. The volunteer defense corps of the colony comprises 715 men of all ranks.

EDUCATION.—Compulsory. There are 16 superior schools or colleges. Primary education is administered by a department under which are 209 public elementary schools, attended by 16,014 scholars.

CHIEF EXPORTS, 1886.—Tin, £363,364; wool, £310,934; fruit and jams, £148,596.

RAILWAYS.—In 1887, 303 miles were open, and 138 in progress.

POST-OFFICE.—Telegraph, 2,353 miles of wire, conveying 214,738 messages in 1886. Letters, postal cards, newspapers, etc., delivered in 1886, 8,191,882.

Excess of immigration over emigration, 1,769 in 1886.

NEW ZEALAND.

New Zealand, situated about 1,200 miles to the south-east of Australia, consists of a group of three principal islands, called respectively the North, South, and Stewart Islands, and several islets mostly uninhabited. The chief of the latter are the Chatham Islands, 360 miles to the eastward of New Zealand; the Auckland Islands, 180 miles, and the Antipodes

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NEW ZEALAND—(Continued).

Islands. 475 miles from Stewart Island. The entire group lies between the parallels of 34 deg. 30 min. and 47 deg. 30 min. S. lat., and the meridians of 166 deg. 36 min. and 178 deg. 36 min. E. long.

AREA.—104,403 square miles. North Island, 45,687 square miles; South Island, 57,313 square miles; Stewart Island, 1,300 square miles.

POPULATION.—1886, 578,482 (exclusive of 41,969 Maoris).

RELIGION.—Protestants, 461,340; Roman Catholics, 79,020; Jews 1,559.

GOVERNMENT.—Executive, the Governor, appointed by the Crown, assisted by the ministry of 7 members. Legislative, the Governor and the "General Assembly," composed of the Legislative Council of 54 members, and the House of Representatives with 95 members. The volunteer force has a strength of 11,204 men; while the principal ports are defended by batteries, supplemented by torpedo boats and submarine mines.

EDUCATION.—Compulsory, secular, and free. In 1885, there were 3 colleges affiliated with the University of New Zealand, attended by 1,075 students; 23 grammar schools with 2,358 pupils; 288 private schools with 12,473 pupils; and 1,054 State schools with 105,234 scholars.

CHIEF EXPORTS, 1886.—Wool, £3,072,971; gold, £939,648; preserved meats, £474,642.

RAILWAYS.—1,809 miles open, conveying 3 362,266 passengers in 1887.

POST-OFFICE.—Telegraph, 1887, 13,294 miles of wire, conveying 1,836,266 dispatches in 1886. Letters, newspapers, etc., delivered in 1886, about 56 000,000.

Excess of immigrants over emigrants, 1,064, in 1886.

NEW GUINEA.

New Guinea, the largest island in the world if we exclude Australia, lies some 80 miles to the north of Queensland, between 0 deg. 22 min. and 10 deg. 42 min. S. lat., and 130 deg. 50 min. and 150 deg. 5' min. E. long. On the north and east it is bounded by the North Pacific Ocean; on the south by the Coral Sea, Torres Strait, and the Arafura Sea; and on the west by the Arafura and Banda Seas. Its greatest length is 1,490 miles, and its maximum breadth 450 miles, while the area is estimated at 311,580 square miles. All the land to the west of 141 deg. E. long. is claimed by the Dutch. East of this, New Guinea has been divided between Britain and Germany, the boundary line running in a direction from north-west to south-east, the northern portion belonging to Germany and the southern part to Britain.

BRITISH NEW GUINEA.

AREA.—86,457 square miles.

POPULATION.—135,000 (total population of New Guinea, 2,500,000).

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NEW GUINEA—(Continued).

GOVERNMENT.—Special and Deputy Commissioners who reside at Port Moresby, the seat of administration and only port of entry for goods, etc.

GERMAN NEW GUINEA.

In 1885 Germany took possession of the northern part of New Guinea, lying to the east of the Dutch, and north of the British possessions. This territory was called Kaiser Wilhelm's Land. Afterward the New Britain Islands, and the islands of Bougainville, Choiseul, and Isabel, in the Solomon group, were annexed under the name of Bismarck Archipelago.

AREA.—95,653 square miles. Kaiser Wilhelm's Land, 69,126 square miles; New Britain Islands, 18,163 square miles; Solomon Islands, 8,364 square miles.

POPULATION.—318,000.

The seat of administration is at Finschhaven, where the Governor resides.

THE FIJI ISLANDS.

The Fiji or Viti Archipelago lies east of the New Hebrides, between 16 deg. and 21 deg. S. lat., and 176 deg. and 182 deg. E. long., and comprises about 225 islands and islets, nearly 80 of which are inhabited.

AREA.—8,048 square miles. Viti Levu, the largest island, 4,470 square miles; Vanua Levu, the next largest, 2,470 square miles.

POPULATION.—1884, 127,444 (Europeans, 3,513; Fijians, 114,891). 1887, 126,010.

RELIGION.—In 1885, the Wesleyan Mission consisted of 976 churches, and 279 other preaching places with an attendance of 104,866; the Roman Catholic Mission of 14 churches and 70 chapels with an attendance of 9,100.

GOVERNMENT.—Fiji is a Crown colony, the affairs of which are administered by a Governor (Sir C. B. H. Mitchell) and and Executive Council of 4 members. Laws are prepared by a Legislative Council, consisting of 6 official and 6 unofficial members, of which the Governor is president. Native administration is carried on through the chiefs under the Governor's supervision. The seat of the Government is at Suva in Viti Levu.

EDUCATION.—Two public schools, State supported, had an attendance, in 1885, of 267. 42,693 scholars are taught by the native teachers of the Wesleyan Mission. The Roman Catholic Missions conduct 84 native schools with 1,040 scholars.

Imports, 1886, £230,628.

Exports, 1886, £283,496; exports to Great Britain, 1886, £39,249. Chief exports, 1885, sugar, £211,729; copra, £64,390; cotton, £5,311.

POST-OFFICE.—Letters, newspapers, etc., delivered, in 1885, 40,520.

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AFRICA.

Africa forms the vast south-western peninsula of the Old World, being joined to Asia by the narrow Isthmus of Suez.

EXTREME POINTS.—Greatest length, Ras el Ablad (37 deg. 20 min. N.) to Cape Agulhas (34 deg. 47 min. S.), 5,000 miles. Greatest breadth, Cape Verd (17 deg. 33 min. W.) to Cape Guardaful (51 deg. 22 m. E.), 4,600 miles.

CONFIGURATION.—No other land division on the globe has such a rounded and compact outline; access to the interior is rendered difficult by the general absence of gulfs and large inlets. The coast line measures 16,000 miles, or 720 square miles of surface to each mile of coast.

AREA.—About 11,000,000 square miles, being three times that of Europe, or one-fifth of the land surface of the globe.

POPULATION.—No definite figures exist for the larger part of Africa, but the population is estimated at about 200,000,000 or over one-seventh of the inhabitants of the world.

DEVELOPMENT OF THE CONGO REGION.—The rapidity with which commercial enterprises are moving far up the Congo is not a little surprising. Dutch, French, and Belgian companies have established about twenty trading stations on the upper river, between Stanley Pool and Stanley Falls. These companies evidently do not share the opinion Stanley expressed four years ago, that the upper river would not be worth a penny for trading purposes until the railroad was built around the cataracts. A flourishing Dutch station is now at Stanley Falls, 1,300 miles up the river, where, two years ago last October, the Arabs burned the Congo State buildings and drove the whites down the river. These traders own five steamers that are plying on the Upper Congo. The caravan route along the cataracts is being improved by placing large ferries at the principal rivers and bridging the smaller streams. The fact is that the most sanguine friends of the Congo enterprise did not dream that the early stages of its development would so rapidly advance.

A RAILROAD IN CENTRAL AFRICA.—It sounds marvelous to most of us to hear of a railroad in Central Africa, but such an enterprise will soon be begun, and without doubt carried to completion. A Belgian company has for several years been arranging this project, and is now prepared to undertake the work of construction. Its cost is estimated at $5,000,000, and its total length will be 264 miles. It will extend from Matadi, at the head of navigation on the Lower Congo, to the village of Ndalo on the south shore of Stanley Pool. The route is chiefly over a level country along the left bank of the Congo, and therefore the company think they can build it for less than $20,000 a mile.

The Congo region has assumed considerable commercial importance within the last two or three years. The French and the Dutch are active rivals of the Belgians there, and each nation has numerous trading stations in that country. The Dutch alone have five steamers on the Upper Congo. The exchange with the natives must be worth more than that of

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AFRICA—(Continued).

most barbaric people, or there would not be such lively rivalry among Europeans to obtain it. Their competition speaks well for the natural resources of the Congo region.

If there is anything that will civilize Central Africa it surely is the railroad, for steam is the most potent agency yet discovered to dispel barbaric habits and ideas. But the whistle of a locomotive and the rumble of car-wheels will sound strange in the primeval forests of the Congo region, where the gorilla has his favorite home, and tribes of black dwarfs dwell.

CONFIGURATION.—In the rounded and compact nature of its coast line, destitute alike of peninsulas, bays, inlets or river estuaries, Africa presents a remarkable contrast to the indented and broken shores of the Eurasian continent.

OROGRAPHY.—This monotony of coast line also appears to be repeated in the uniform disposition of the land in the interior of the continent. At a general view the whole of Africa may be regarded as a vast table-land, lying at a general elevation of 3,000 feet above the sea, bordered by maritime ranges which slope toward the sea-shore. The hilly regions seem to extend toward the eastern shore, where an Alpine range, taking its apparent rise in the highlands of Abyssinia, and rising in several isolated places above the snow line, stretches southward to unite with the coast ranges of south-eastern Africa. The lowlands are almost exclusively confined to the narrow fringes of the coast, the alluvial deltas formed by one or two of its great rivers, and a few inland depressions, as Fayum and the region of the "Shotts" in Barbary. Culminating Points.—Kilima Njaro, 18,680 feet; Kenia, 18,040 feet; Ras Dashan (Abyssinia), 15,160 feet; Camaroons, 13,746 feet; Pico de Teide (Teneriffe), 12,182 feet; Jeb. Ayashin (Atlas), 12,000 feet; Jeb. Miltsin (Atlas), 11,480 feet; Catkin Peak (Natal), 10,357 feet; Mfumbiro, 10,000 feet; Ankaratra (Madagascar), 8,950 feet; Mt. Tarsa (Tibesti), 7,900 feet; Mauch Mt. (Transvaal), 7,178 feet; Jeb. Marra (Darfur), 6,000 feet. Mean elevation of continent, 1,975 feet.

HYDROGRAPHY.—The long continued seclusion of Africa is due not only to its deficiency of natural harbors, but also to its want of rivers, which, though great in volume, are in number by no means proportionate to its great extent, while even the most important of those which exist are all obstructed by rapids in their lower course, and do not therefore afford access to the interior. Length and Drainage Area of Chief Rivers—Nile, 4,020 miles, 1,761,658 square miles; Congo, 2,883 miles, 1,237,900 square miles; Niger, 2,446 miles, 1,023,280 square miles; Zambesi, 1,520 miles, 552,150 square miles; Orange, 1,253 miles, 348,670 square miles; Limpopo, 993 miles, 216,220 square miles; Senegal, 980 miles, 99,925 square miles; Rovuma, 683 miles, 128,960 square miles; Ogowe, 527 miles, 117,420 square miles; Kuanza, 390 miles, 116,990 square miles. Chief Lakes—Victoria Nyanza, 32,160 square miles; Nyassa, 5,620 square miles; Chad, 13,140 square miles; Tanganyika,

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AFRICA—(Continued).

12,140 square miles; Albert Nyanza, 1,780 square miles; Ngami, 297 square miles.

CLIMATE.—Only the northern shores and the southern extremity of the continent have a mean temperature of less than 68 deg. F. with winter rains. From 18 deg. N. lat. to 20 deg. S. lat. extends the region of tropical rains; maximum temperature in Khartoum, 115 deg. F. The rainless regions are the Sahara and the Kalahari.

SOUTH AFRICA.

The southern extremity of Africa, washed by the Atlantic Ocean on the west and by the Indian Ocean on the south and east, comprises the colonies and protectorates of Britain, the Dutch republics, and various less important divisions.

CAPE COLONY.

GOVERNMENT.—Executive, the Governor and Executive Council. Legislative, the Legislative Council of 22 members and House of Assembly of 74 members.

RAILWAYS.—1,775 miles in 1886.

POST-OFFICE.—Telegraph, 8,981 miles of wire, conveying 770,500 dispatches in 1886. Letters, newspapers, etc., delivered in 1886, 9,681,709.

NATAL.

GOVERNMENT.—Administered by a Governor, assisted by an Executive Council and a Legislative Council of 30 members.

SOUTH AFRICAN REPUBLIC.

GOVERNMENT.—Executive, vested in the President. Legislative in the Volksraad of 44 members. Suzerain, H. M. Queen Victoria.

ORANGE FREE STATE.

GOVERNMENT.—Executive, the President, assisted by an Executive Council. Legislative, the Volksraad of 56 members.

CENTRAL AFRICA.

With the rapid advance which exploration has made in Central Africa within recent years, there has followed a great rivalry among European nations for colonies and protectorates. Since the founding of the Congo Free State, international commissions have distributed native territory so freely, that in a short time but few of the original States will remain.

CONGO FREE STATE.

In 1885 the Congo Free State was constituted and defined by the International Conference held at Berlin. It was declared neutral and free to the trade of all nations, and has been successfully recognized by all the leading countries of the world. The State is placed under the sovereignty of Leopold II, King of the Belgians, and is governed by an Administrator-General, who resides at Boma, the capital. Area,

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CENTRAL AFRICA—(Continued).

800,000 square miles; population, 24,000,000. Annual grant from Leopold II. $200,000.

EASTERN EQUATORIAL AFRICA.

A commission was appointed in 1886, by Britain and Germany, to fix the boundaries of Zanzibar with reference to German territory. They agreed that Zanzibar is to possess a strip of coast from Cape Delgado to the Tana River, and extending ten miles inland, with several ports north of the latter: that Germany is to have, as a sphere of influence, the country stretching from the Rovuma River northward to and including Kilima Njaro, and that Britain's sphere embrace the country between Kilima Njaro and the Tana River.

ZANZIBAR.—Area, 9,190 square miles (Zanzibar Island, 614 square miles; Pemba, 372 square miles; Mafia, 210 square miles; Mainland, 8,000 square miles). Population, 250,000; imports, 1883, $6,000,000; exports, $400,000.

GERMANY.—Protectorates, Wito Land, 5,200 square miles; Usagara, etc., 20,700 square miles; territory in which protectorates may be established, 122,800 square miles. British territory in which protectorates may be established, 72,000 square miles.

THE PORTUGUESE COLONIES

south of the Equator are named respectively Angola and Mozambique. The former, on the west coast, extends from the Cunene River to the mouth of the Congo, and includes the small territories of Cabinda and Landana, north of the latter. Area, 115,000 square miles; population, 1,000,000. Mozambique extends from Cape Delgado to Delagoa Bay, and up the lower Zambesi, but only a few isolated points are actually occupied. Area, 80,000 square miles; population, 600,000.

FRENCH COLONIES.

Equatorial France comprises the Gaboon and Ogowe-Congo regions, which, as defined at the Berlin Conference, have an area of 174,000 square miles, with about 1,700,000 inhabitants.

GERMAN COLONIES.

On the south-west coast Luderitz Land comprises all the land between the Cunene and Orange Rivers (with the exception of Walvisch Bay), and the interior lands acquired by treaty. Area, 200,000 square miles, with about 236,000 inhabitants.

EGYPT.

Previous to 1884 the Khedive claimed authority over territories extending southward as far as the equator. But within the last few years the inhabitants of these equatorial provinces have rebelled against the authority of the Egyptian Government. As a result these districts have been abandoned, and Akashe, above Wady Halfa, about 800 miles up the Nile from Cairo, has been provisionally agreed upon as the boundary of Egypt on the south. On the north it is limited

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EGYPT—(Continued).

by the Mediterranean Sea; on the east by Arabia and the Red Sea; and on the west by Tripoli and the Libyan Desert.

AREA.—494,000 square miles.

POPULATION.—1882, 6,806, 381.

RELIGION.—500,000 Copts, descendants of the old Egyptians, who are Christians; 91,000 foreigners, also Christians; rest Mohammedan.

GOVERNMENT.—Egypt is nominally a vassal state of the Porte, to which it pays a yearly tribute of $3,500,000, but practically it is independent under the rule of an hereditary Khedive or Viceroy. The administration is now carried on by native ministers, subject to the ruling of the Khedive, and under the supervision of England. A Legislative Council consisting of 30 members has recently been formed, but its power is very limited.

ARMY.—9,500 men, besides about 7,000 police and gendarmerie, and British troops, 3,500.

EDUCATION.—Numerous elementary and secondary schools are found throughout the country, from which the pupils pass to special colleges.

RAILWAYS.—1,115 miles, conveying 3,577,520 passengers in 1885.

POST-OFFICE.—Telegraph, 5,423 miles of wire in 1887. Letters, newspapers, packets, etc. (inland and foreign), delivered in 1886, 12,818,311.

THE SUEZ CANAL.

From remote ages the Isthmus of Suez has been traversed by a canal following nearly the line of the present one; nothing, certain, however, seems to be known as to who was its first constructor, but the credit is generally given to Pharaoh Necho, who reigned about 600 B. C. It, in course of time, got silted up with sand, but was cleared out by Trajan in the second century, A. D., and again in 767. The Emperor Napoleon desired to reconstruct the canal, and had the isthmus surveyed, but nothing was done till M. Ferdinand de Lesseps, in 1854, obtained permission from the Viceroy of Egypt to construct a canal, uniting the Mediterranean and Red Seas. A company was formed to carry out his views, two-fifths of the capital being furnished by the Viceroy, and the remainder in Europe, chiefly in France. The work was commenced in 1860, and on September 28, 1869, M. Lesseps sailed in a small steamer through it. The canal runs north and south from Port Said to Suez; the length from sea to sea is 99 miles, with a width of 327 feet for 77 miles, and of 196 for the remaining 22 miles, the depth is 26 feet. In November, 1875, the British Government purchased from the Khedive the original shares held by him for $20,000,000. It is proposed to widen the canal to 66 metres. The canal has reduced the distance from London to India from 11,379 miles to 7,628, a saving of 36 days on the voyage by the Cape. The number of vessels that passed through the canal in 1886 was 3,100. The tonnage, 8,183,313; the receipts, $11,205,000.

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MAURITIUS.

An island lying in the Indian Ocean, 500 miles east of Madagascar, between 57 deg. 17 min. and 57 deg. 46 min. E. long., and 19 deg. 58 min. and 20 deg. 32 S. lat., includes within its government, as dependencies, the Seychelles Group, Rodriguez, and Diego Garcia Islands, and about seventy other islets.

AREA.—713 square miles (with dependencies, 1,025 square miles).

POPULATION.—1887, 368,415.

RELIGION.—1880, 108,000 Roman Catholics and 8,000 Protestants.

GOVERNMENT.—The Government is administered by the Governor, aided by an Executive Council of 5 members, and a Legislative Council of 27 members.

EDUCATION.—One college, with 145 students, and 140 primary schools, attended by 15,792 pupils in 1886. Government grant in 1886, $215,000.

RAILWAYS.—92 miles open for traffic.

ASCENSION.

An isolated island lying in the South Atlantic, lat. 7 deg. 57 min. S. long. 14 deg. 21 min. W., is utilized by the Board of Admiralty, who maintain a small station there, and appoint a naval officer as Governor. Area, 34 square miles. Population, 140.

ST. HELENA.

Another solitary island situated in the South Atlantic, 760 miles from the nearest land, Ascension, in lat. 15 deg. 55 min. S., and 5 deg. 42 min. W. long.

AREA.—47 square miles.

POPULATION.—1883, 5,685.

GOVERNMENT.—Administered by a Governor, aided by an Executive Council of 4 members.

EDUCATION.—11 school with 876 pupils in 1886.

POST-OFFICE.—Telegraph, 11 miles of wire. Letters, Newspapers, etc., delivered in 1886, 23,374.

NORTH AMERICA.

POSITION.—North America forms the northern and larger part of the New World; the greater portion of it is almost entirely confined to the north temperate zone.

EXTREME POINTS.—Greatest length, Murchison Promontory (72 deg. N.) to Cape Matapalo (8 deg. 17 min. N.), 4,400 miles. Greatest breadth, Cape Charles (55 deg. 40 min. W.) to Cape Prince of Wales (68 deg. W.), 3,800 miles.

CONFIGURATION.—The outline, more especially in the north, where it takes the form of an archipelago of islands, is very much intersected and broken by the numerous inlets of the sea.

AREA.—Excluding Arctic America and Greenland (1,338,500 square miles) the area is about 8,000,000 square miles.

POPULATION.—The number of inhabitants as shown by the

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NORTH AMERICA—(Continued).

annexed table amounts to 84,000,000 or one-twentieth of the entire population of the world.

State, Etc.	Capital.	Area Eng. Sq. Miles.	Population.	Pop. per Sq. Mile.	Year.
United States and Alsaka	Washington	3,585,790	64,000,000	18	1889
Dominion of Canada	Ottawa	3,470,257	5,000,000	1.4	1887
Newfoundland with Miquelon and St, Pierre	St. John's	40,290	198,689	4	1884
Bermudas	Hamilton	41	14,888	362	1884
Mexico Rep.	Mexico	751,177	10,460,700	14	1884
Nicaragua "	Managua	51,660	400,000	7	1883
Guatemala "	Guatemala	46,774	1,322,544	28	1886
Honduras "	Tegucigalpa	42,658	323,274	7	1885
Costa Rica "	San Jose	19,985	213,785	10	1885
San Salvador "	S. Salvador	7,228	634,120	87	1885
British Honduras	Belize	7,562	27,452	3	1881
San Domingo "	S. Domingo	20,596	350,000	16	Est
Hayti "	P't-au-Prince	9,242	550,000	59	1881
Olher W. India Islands		64,500	4,077,000		
	Total . .	8,117,760	84,572,452		

POSSESSIONS OF EUROPEAN STATES.

State.	Colony.	Area.	Population.	Pop. per Sq. mile.	Year.
British.....	Canada, etc.....	3,531,810	6,485,464	1.8	1884–85
Spanish.....	Cuba, etc.....	49,420	2,275,997	46	1880
French.....	Gaudeloupe, etc.	1,190	372,526	313	1884
Dutch.....	Curacao, etc	435	44,410	102	1884
Danish.....	Sta. Cruz, etc....	138	33,760	244	1880

CONFIGURATION.—The flat nature of the eastern shore-line presents a marked contrast to the western coast, which is, as a rule, bold and rocky, with very deep water immediately off shore.

OROGRAPHY.—The surface of North America presents three great physical features, the Western Cordilleras, the Eastern Highlands, and the Central Plain. The Western Cordilleras extend along the entire Pacific side of the continent. Running in two parallel ranges, they attain their greatest width near the 40th degree of latitude, being fully 1,000 miles apart. Here they inclose an immense plateau, the Great Basin, which, lying at an elevation of 5,000 feet, has an area of 208,000 square miles. The Eastern Highlands, much lower and

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NORTH AMERICA—(Continued).

united than those of the west, run in a south-west to a north east direction, with a general height of 1,000 to 2,000 feet. Between these two systems, and extending from the Arctic Ocean to the Gulf of Mexico, the central region of North America is a vast plain or valley rising gradually from the north to 1,500 feet at the source of the Mississippi, whence it slopes gently to the mouth of that river. Culminating Points—Mt. St. Elias (Alaska), 15,000 ft.; Citlaltepetl (Mexico), 17,880 ft.; Popocatepetl (Mexico), 17,783 ft.; Mt. Hooker (Rocky Mts.), 16,750 ft.; Mt. Whitney (Sierra Nevada), 14,898 ft.; Black Dome (Alleghanies), 6,707 feet. Mean elevation of continent, 1,952 ft.

HYDROGRAPHY.—North America is unsurpassed by any of the other continents in its hydrographical features. Large rivers afford an easy access to the interior from all sides, while the lake region of the St. Lawrence, the largest extent of fresh water on the globe, has an area equal to that of the Black Sea. Length and drainage area of chief rivers—Missouri-Mississippi, 4,194 miles, 1,236,170 square miles; Mackenzie, 2,868 miles, 421,720 square miles; Saskatchewan, 1,658 miles, 131,820 square miles; Rio del Norte, 1,460 miles, 128,770 square miles; Colorado, 1,382 miles, 264,440 square miles; Yukon, 1,198 miles, 250,000 square miles; St. Lawrence, 704 miles, 510,060 square miles. Chief Lake—Superior, 32,290 square miles; Michigan, 23,900 square miles; Huron, 23,684 sq. miles; Erie, 9,493 sq. miles; Ontario, 7,654 sq. miles.

CLIMATE.—In a continent extending over about 65 degrees of latitude and nearly twice as many of longitude, great varieties of climate are necessarily met with. While the Pacific shores have generally a milder climate than those of the Atlantic, the average temperature of the continent is lower than that of corresponding latitudes in the Old World. (For Map of North America see page 375.)

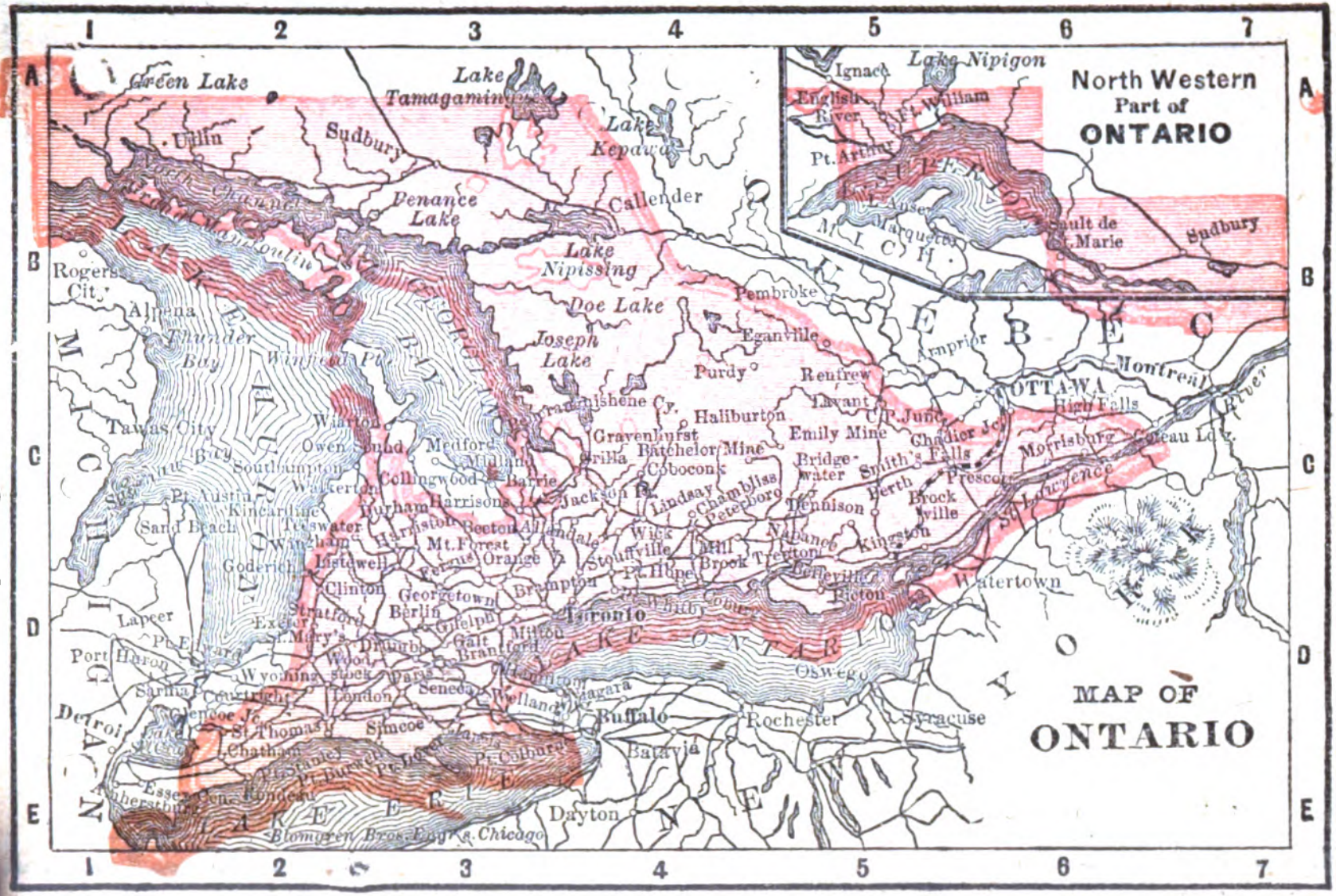
BRITISH NORTH AMERICA.

Within the Dominion of Canada is included all the land lying north of the United States, with the exception of Alaska, Newfoundland, and Labrador. On the north this immense territory is bounded by the Arctic Ocean, on the east by Baffin Bay, Davis Strait, Labrador, and the North Atlantic Ocean; on the south by the United States, and on the west by Alaska and the North Pacific Ocean.

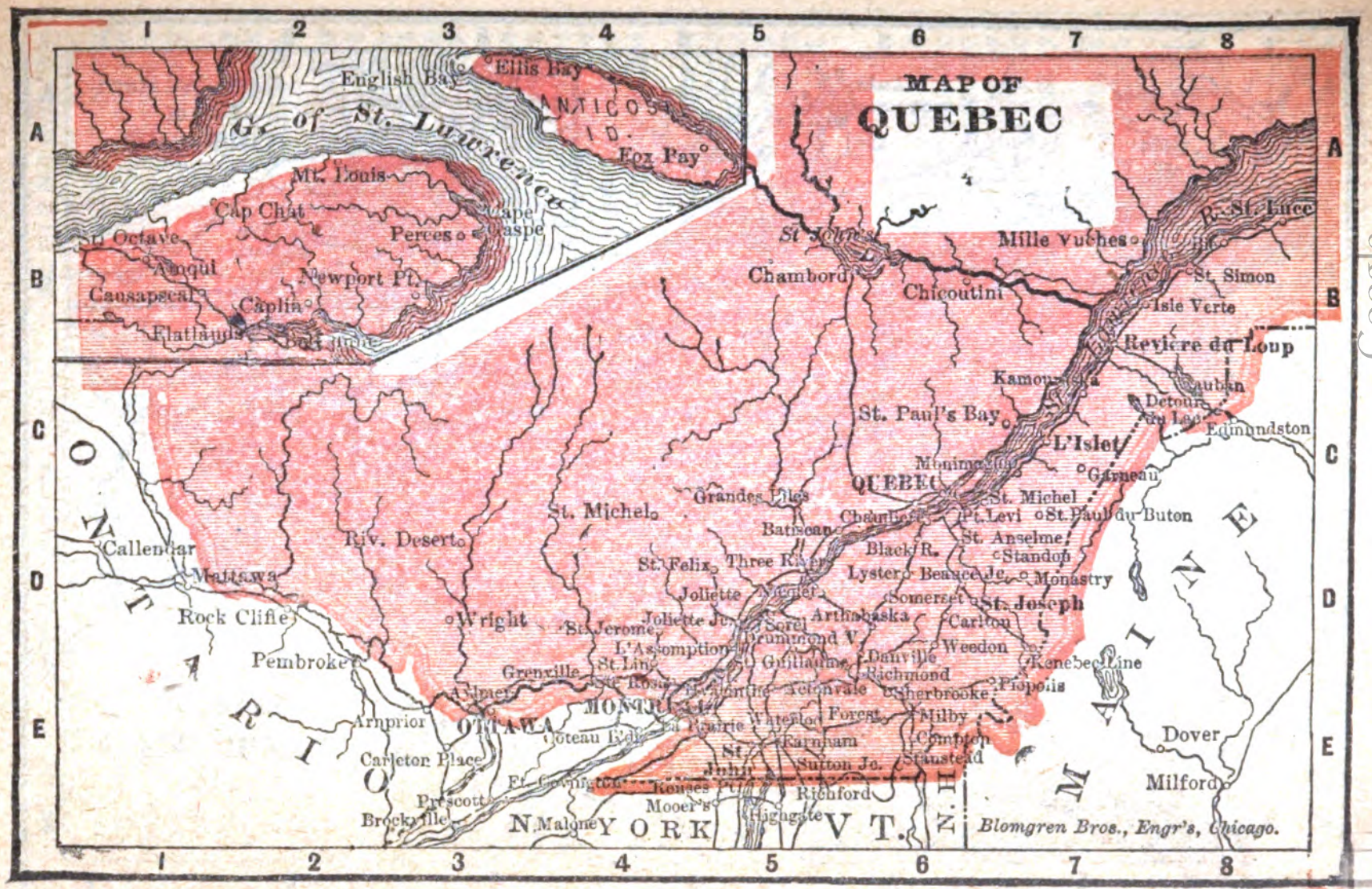
AREA.—Exclusive of the Arctic Islands, the total area is 3,420,777 square miles. (Ontario, 181,800 square miles; Quebec, 188,688 square miles; New Brunswick, 27,174 square miles; Nova Scotia, 20,907 square miles; Prince Edward Island, 2,133 square miles; Manitoba, 73,720 square miles; British Columbia, 341,305 square miles; North-West Territory, 2,585,650 square miles.)

POPULATION.—1881 (census), 4,324,810; 1887 (estimated), 5,000,000 nearly. French, 1,298,930; Irish, 957,403; English, 881,300; Scotch, 699,863; Germans, 254,320; Indians (1885), 129,525.

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MAP OF
QUEBEC
Gs of St. Lawrence
English Bay
Ellis Bay
ANTICOSTI
I.
Fox Bay
Mt. Louis
Cap Chat
Cape Gaspe
Perces
St Octave
Anqui
Causapscal
Newport Pt.
Caplin
Flatlands
Bay Shore
St Johns
Chambord
Mille Vaches
Chicoutini
R. St. Luce
St. Simon
Isle Verte
Riviere du Loup
Kamouraska
Aubin
Detour du Lac
Edmundston
St. Paul's Bay
L'Islet
Montmagny
Garneau
QUEBEC
St. Michel
Pt. Levi
St. Paul du Buton
St. Anselme
Standon
Monastry
Grandes Piles
St. Michel
Batiscan
Riv. Desert
Callendar
Maitawa
Rock Cliffe
Wright
St. Felix
Three Rivers
Black R.
Lyster
Beauce Je.
Joliette
Somerset
St. Joseph
Arthabaska
Carleton
St. Jerome
Joliette Je.
Sorel
Drummond V.
Weedon
L'Assomption
St. Guillaume
Danville
Richmond
Kenebec Line
Grenville
St. Lin
Ste Rose
Ste Thecle
Actonvale
Sherbrooke
Propolis
Pembroke
Almer
MONTREAL
Waterloo
Forest
Milby
Arnprior
OTTAWA
Prairie
Farnham
Compton
Dover
Carleton Place
St. Johns
Sutton Jc.
Stanstead
Milford
Prescott
Ft. Covington
Rouses Pt.
Richford
Brockville
Mooer's
Higgate
N. Malone
NEW YORK
VT.
N. H.
MAINE
ONTARIO
Blomgren Bros., Engr's, Chicago.

BRITISH NORTH AMERICA—(Continued).

RELIGION.—No State Church. In 1881 there were 1,791,982 Roman Catholics; 2,422,285 Protestants (Presbyterians, 676,165; Church of England, 574,818; Methodists, 1,042,980); Jews, 2,393.

GOVERNMENT.—Executive authority vested in the Queen, and exercised in her name by a Governor-General aided by a Privy Council. Legislative, vested in the Parliament, composed of the Senate with 78 members, and the House of Commons with 215 members.

ARMY.—Besides the Imperial garrison of 2,000 men at Halifax, there is an active militia of 38,000 men. Estimates for militia and enrolled forces, over £500,000.

EDUCATION.—24 colleges with 2,000 students. In 1884 there were 730 private and high schools with 88,593 pupils, and 15,000 public and elementary schools with 904,600 pupils.

RAILWAYS.—In 1886 11,523 miles were open (Canadian Pacific Railway, 2,906 miles), conveying 9,861,024 passengers.

POST-OFFICE.—Telegraph, 47,288 miles of wire, conveying 3,896,000 dispatches. Letters, post cards, newspapers, etc., delivered in 1885, 102,060,000.

IMMIGRATION.—Number of settlers in 1885, 79,170.

BRITISH COLUMBIA.

British Columbia, situated on the west coast of North America, and comprising the territory between the Rocky Mountains and the Pacific Coast, together with Vancouver Island and Queen Charlotte Island, is bounded on the north by the 60th parallel of latitude, on the east by the Territories Athabasca and Alberta, on the south by the United States, and on the west by the Pacific Ocean and Alaska.

AREA.—341,305 square miles (Vancouver Island, 12,780 square miles; Queen Charlotte Island, 5,100 square miles).

POPULATION.—Estimated, 1886, 60,000.

GOVERNMENT.—Lieutenant-Governor and Executive Council of 4 members, together with the Legislative Assembly of 25 members.

EDUCATION.—Twelve high and superior schools with 2,283 pupils, and 71 public schools with 2,188 pupils.

POST-OFFICE.—Letters, newspapers, etc., delivered in 1886-87, 2,014,000.

NEW BRUNSWICK.

On the north New Brunswick is bounded by Quebec and Chaleur Bay, on the west by Maine, on the south by the Bay of Fundy and Nova Scotia, and on the east by the Gulf of St. Lawrence and Northumberland Strait.

AREA.—27,174 square miles.

POPULATION.—1881, 321,233 (1,576 Indians).

GOVERNMENT.—Administered by a Lieutenant-Governor, assisted by an Executive Council, a Legislative Council of 18 members, and a Legislative Assembly of 41 members.

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NEW BRUNSWICK—(Continued).

EDUCATION.—Besides King's College at Fredericton, and numerous grammar schools, there were, in 1886, 1,515 public schools with 61,802 pupils.

POST-OFFICE.—Letters, newspapers, etc., delivered in 1886-87, 5,995,000.

MANITOBA.

Manitoba, formerly the Red River Settlement, was formed into a distinct province in 1870, and admitted into the Confederation in the same year. It is situated in the center of the continent, and is bounded on the south by the United States, on the south-east by Ontario, and on all other sides by the Territories of the North-West.

AREA.—60,520 square miles.

POPULATION.—1881, 65,954 (1886, 108,640).

GOVERNMENT.—Administered by a Lieutenant Governor, assisted by an Executive Council of 5 members and a Legislative Assembly of 35 members.

EDUCATION.—Nine high schools with 400 pupils, and 394 elementary schools with 12,694 pupils.

RAILWAYS.—The main line of the Canadian Pacific Railway traverses Manitoba, and there are other lines in operation, which are sure to give an important impetus to the rapid development of this province.

POST-OFFICE.—Letters, newspapers, etc., delivered in Manitoba and North-West Territory, in 1886-7, 5,754,000.

NORTH-WEST TERRITORY.

This province comprises nearly the whole of British North America from the boundary of the United States to the most northerly part of the continent, and from the western shores of Hudson Bay to the Rocky Mountains, with a total area of 2,553,337 square miles, and an estimated population of 79,293 of whom 25,000 are Indians.

Out of this vast territory, in 1882, the Dominion Government formed four provisional districts named severally as under:

	Sq. mls.	Pop.
Assiniboia	95,000	22,083
Saskatchewan	114,000	10,746
Alberta	100,000	15,533
Athabasca	122,000	

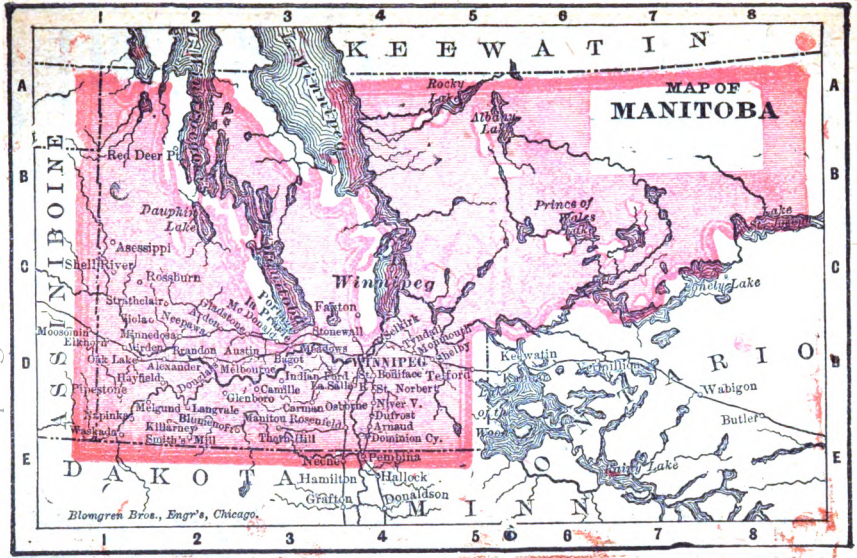
GOVERNMENT.—Vested in a Lieutenant-Governor and a Council of 20.

RAILWAYS.—Both Assiniboia and Alberta are traversed by the Canadian Pacific Railway, and settlement is rapidly taking place along its route.

NOVA SCOTIA.

Nova Scotia, a peninsula of North America on its east side, forms with the island of Cape Breton one of the provinces which constitute the Dominion of Canada. It is connected on the north-west with New Brunswick by an isthmus 14 miles across, separated on the north from Prince Edward Island by

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NOVA SCOTIA—(Continued).

Northumberland Strait, and by the narrow Gut of Canso from Cape Breton Island on the north-east.

AREA.—20,907 square miles (Cape Breton Island, 3,125 square miles).

POPULATION.—1881, 440,572 (Cape Breton Island, 34,262), 2,138 Indians.

GOVERNMENT.—Administered by a Lieutenant-Governor, aided by an Executive Council, a Legislative Council of 21 members, and a Legislative Assembly of 38 members.

EDUCATION.—There are 6 colleges, the best endowed being King's College at Windsor, several high schools, and 2,111 public schools attended by 86,858 pupils in 1886.

RAILWAYS.—See "British North America."

POST-OFFICE.—Letters, newspapers, etc., delivered in 1886-87, 7,998,000.

PRINCE EDWARD ISLAND.

Prince Edward Island lies in the southern part of the Gulf of St. Lawrence, between New Brunswick and Cape Breton, to the north of Nova Scotia, from which it is separated by Northumberland Strait.

AREA.—2,133 square miles.

POPULATION.—1881, 108,891 (323 Indians).

GOVERNMENT.—Vested in a Lieutenant-Governor and an Executive Council, a Legislative Council of 13 members, and a Legislative Assembly of 30 members.

EDUCATION.—20 high and superior schools with 831 pupils, and 437 public schools attended by 22,414 pupils in 1886.

RAILWAYS.—211 miles open for traffic.

POST-OFFICE.—Letters, newspapers, etc., delivered in 1886-87, 1,143,000.

NEWFOUNDLAND.

The island of Newfoundland forms a British province, distinct as yet from the Dominion of Canada. Its Government extends over the mainland strip of Labrador from which it is separated by the Strait of Belle Isle, 12 miles across. On the east and south it is bounded by the Atlantic Ocean, and on the west by the Gulf of St. Lawrence.

AREA.—42,000 square miles.

POPULATION, 1884.—193,121.

RELIGION.—Church of England, 69,000; Roman Catholics, 75,254; Wesleyans, 48,787.

GOVERNMENT.—The Government is administered by the Governor, appointed by the Crown, assisted by an Executive Council (not exceeding 7 members), a Legislative Council (not exceeding 15 members), and a House of Assembly consisting of 36 Representatives.

EDUCATION.—1885, 402 aided schools attended by 27,332 pupils.

Chief exports, 1886, codfish, seal and cod oil.

RAILWAYS.—About 100 miles of line open for traffic.

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LABRADOR.

A dependency of Newfoundland, forms the most easterly part of America. The coast is mainly frequented for the sake of the seal and cod, and when those fisheries are in progress, the population of the country (normally about 4,000), is raised to upward of 25,000.

MEXICO.

Mexico is bounded on the north by the United States; on the east by the Gulf of Mexico and the Caribbean Sea; on the south-east by British Honduras and Guatemala; and on the south and west by the Pacific Ocean.

AREA.—751,177 square miles.

POPULATION.—10,460,703, in 1884. 20 per cent. white race, 43 per cent. natives of mixed race, and 37 per cent. Indians.

RELIGION.—Prevailing religion Roman Catholic, though by law there is toler[illegible]ion of all other religions. 62 Protestant churches with over 20,000 adherents.

GOVERNMENT.—A Confederate Republic. Executive, the President (General Diaz, s[illegible] 1884). Legislative, the Congress, consisting of the House of Representatives with 227 members, and the Senate with 56 [illegible]bers.

ARMY.—20,635 men (peace footing); 164,600 men (war footing).

NAVY.—7 small vessels.

EDUCATION.—1884, 8,986 elementary schools with nearly 500,000 pupils, and 138 higher schools with 17,200 scholars. Government grant, $3,400,000.

Exports to Great Britain, 1886, £591,227. Chief articles exported, precious metals and textile fibers.

INDUSTRIES.—1[illegible]0 men employed in mining. Between 1821 and 1880 silver to the value of $9,000,000,000, and gold to the value of $4,900,000 were produced. 88 cotton factories with 12,846 employees.

RAILWAYS.—In 1885, 3,703 miles were open.

POST-OFFICE.—19,317 miles of telegraph in 1885. Letters, newspapers, etc., delivered, 1883, 19,788,657.

IMMIGRATION.—11,000 in 1882.

CENTRAL AMERICA.

The Central American States comprise that portion of the narrow belt of land joining North and South America, which extends from the southern borders of Mexico, south of the Yucatan peninsula, to the beginning of the Isthmus of Panama.

GUATEMALA.—Area, 46,715 square miles; population, 1,357,900.

SAN SALVADOR.—Area, 7,226 square miles; population, 651,130.

NICARAGUA.—Area, 51,600 square miles; population, 400,000.

HONDURAS.—Area, 46,460 square miles; population, 323,274.

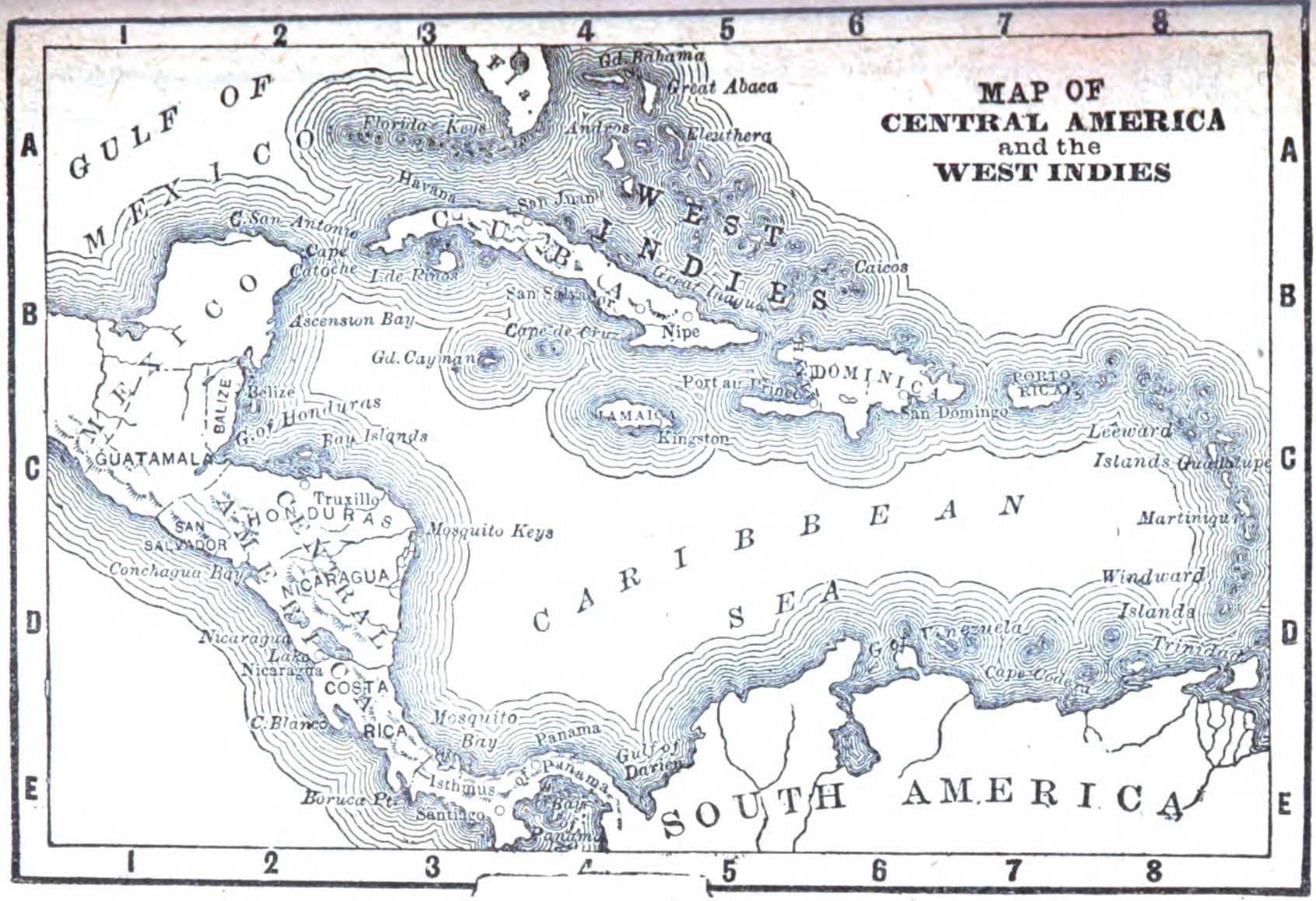
COSTA RICA.—Area, 19,960 square miles; population, 213,785.

BRITISH HONDURAS.—Area, 7,562 square miles; population, 27,452.

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WEST INDIES.

The West Indies are an immense number of islands and islets, some of them mere rocks, extending from 10 deg. to 27 deg. North latitude, and from 55 deg. 30 min. to 85 deg. West longitude. They are divided physically into three distinct groups, the Bahamas, the Greater Antilles, and the Lesser Antilles. But politically they are, with a few exceptions, divided between European powers.

SOUTH AMERICA.

POSITION.—South America forms the southern and lesser part of the great American Peninsula, and is joined to North America by the Isthmus of Panama, which, at its narrowest part, is only 30 miles broad.

EXTREME POINTS.—Greatest length, Pt. Gallinas (12 deg., 28 min. N.) to Cape Horn (55 deg. 55 min. S.), 4,700 miles. Greatest breadth, Cape Branco (34 deg. 55 min. W.) to Cape Burica (32 deg. 55 min. W.) 3,200 miles.

CONFIGURATION.—The outline is regular and forms a continuous, though curved line, not greatly serrated or broken into by the sea, except at the south, where a large number of islands occur. The coast line measures 16,500 miles or 420 miles of surface to each mile of coast.

AREA.—7,000,000 square miles, nearly twice that of Europe or one-eighth of the entire land surface of the globe.

POPULATION.—As shown in the annexed table, the number of inhabitants, according to the latest estimates, amounts to over 32,000,000 or considerably less than the population of the British Isles.

STATE, ETC.		CAPITAL.	AREA SQ. MILES	POPULATION.	POP. PER SQ. MILES.
Brazil	Emp.	Rio de Janeiro	3,219,000	13,000,000	4
Venezuela	Rep.	Caracas	566,159	2,121,988	4
Colombia	"	Bogota	331,420	4,000,000	12
Ecuador	"	Quito	248,380	1,100,000	4
Peru	"	Lima	405,040	2,970,000	7
Bolivia	"	Chuquisaca	472,000	2,300,000	4
Chili	"	Santiago	256,850	2,524,476	9
Argentine	"	Buenos Ayres	1,095,013	3,026,000	3
Uruguay	"	Monte Video	72,111	559,968	7
Paraguay	"	Asuncion	92,000	476,000	5
Guiana, British		Georgetown	76,000	274,311	3
" French		Cayenne	46,880	36,000	1
" Dutch		Paramaribo	46,072	71,000	1.r
Falkland Islands		Stanley	6,500	1,500	.2
South Georgia			1,570		
		Total, . .	6,934,995	32,462,043	

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SOUTH AMERICA—(Continued).

CONFIGURATION.—In physical structure this continent is roughly a duplicate of North America. Both possess the same rude triangular form, with base extended toward the north and apex contracted toward the south, and both have the same deep fiord indentation of the west coast.

OROGRAPHY.—As in the northern continent, so in the southern, the surface naturally falls into three divisions, the Western Cordilleras, the Central Plain, and the Eastern Highlands. On the west the Andes extends in an unbroken line from Cape Horn to Panama. As far as the Tropic of Capricorn they run as a single chain. North of this they divide into stupendous cordilleras inclosing the Puna region, a dreary elevated plateau lying about 12,000 feet above the sea. Farther on the cordilleras draw closer together in Ecuador, and finally break into three distinct ranges. To the east of the Andes lie the three immense plains the "Llanos," watered by the Orinoco; the "Selvas," by the Amazon; and the "Pampas," south of the La Plata. In the east the mountains and broken plateaux of Brazil form the counterpart of the Alleghanies in North America. Culminating Points.—Aconcagua (Chili), 22,422 feet; Chimborazo (Ecuador), 21,424 feet; Sorata (Bolivia), 22,000 feet; Tolima (Colombia), 18,020 feet; Silla de Caracas (Venezuela), 9,270 feet; Itatiaya (Brazil), 8,898 feet; Roraima (Guiana), 8,600 feet. Mean elevation of continent, 1,762 feet. Area of Highlands in North and South America, 7,973,300 square miles. Area of Plains, 6,872,800 square miles.

HYDROGRAPHY.—In consequence of the wall-like extension of the Andes along the entire western side of the continent, it follows that, though some of the largest rivers in the world rise on the slopes of that range, no single river of importance finds its way to the Pacific. Length and drainage area of chief rivers.—Amazon, 3,063 miles, 2,832,980 square miles; Parana, 2,211 miles, 1,111,930 square miles; San Francisco, 1,797 miles, 256,830 square miles; Tocantins, 1,644 miles, 373,020 square miles; Orinoco, 1,478 miles, 368,450 square miles; Rio Negro, 1,446 miles, 278,520 square miles; Paraguay, 1,382 miles, 443,710 square miles. Chief lake.—Titicaca, 3,216 square miles.

CLIMATE.—With two-thirds of its area within the torrid zone the temperature is necessarily higher than that of North America. The moisture is also very great, attains its maximum in the extreme north, and is everywhere greater on the eastern side of the Andes than on the western.

COLOMBIA.

The Republic of Colombia, as the former Republic of New Granada is now styled, is a Federal Republic of 9 Departments, in the north-west part of South America. The most western of these Departments is the isthmus connecting the two continents. On the north Colombia is bounded by the

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COLOMBIA—(Continued).

Caribbean Sea, on the west by the Pacific Ocean, on the south by Ecuador, and on the east by Brazil and Venezuela.

AREA.—331,420 square miles.

POPULATION.—1881, 4,000,000.

RELIGION.—There is no State religion, native and foreign alike being guaranteed the most complete freedom of worship; in Bogota and other towns Protestant churches have been opened.

GOVERNMENT.—Republican. Executive, the President (Rafael Nunez, *e.* 1886), assisted by 7 Ministers. Legislative, the Congress, consisting of the Senate and the House of Representatives, the former composed of 27 members, the latter of 66. Each Department administers its own finances, etc. The forces comprise a standing army of 3,000 men.

EDUCATION.—Considerable attention is paid to education, there being as many as 1,800 schools giving instruction to 75,000 pupils, while an "Escuela Normal," or college for the instruction of teachers is provided for in the capital of each Department.

RAILWAYS.—201 miles open in 1887.

POST-OFFICE.—Telegraph, 2,360 miles in 1884, conveying 300,813 dispatches. Letters delivered, in 1884, about 1,200,000.

PANAMA CANAL.—The canal was in course of construction across the Isthmus, between Panama and Colon. Total length 47 miles; average depth, 28 feet; minimum width, 72 feet. More than 20,000 lives have been sacrificed and nearly $200,000,000 spent already in the building of one of the most gigantic engineering enterprises ever before undertaken in the world during the past eight years by M. de Lesseps, and yet not more than one-third of the canal has been completed. That there has been shameless deception and robbery of the patriotic people of France, who have contributed most, if not all, of the money for the canal, cannot now be doubted. At least two-thirds of the money subscribed has been stolen, and thousands of poor men and women robbed of all they possessed. An enterprise which was noble in its purposes, and which would be a blessing to the whole world, has been perverted into a means whereby rogues could rob their fellowmen. The canal project has shamefully collapsed, and will forever be a blot upon the projectors thereof, and thousands of the hard-working people of France will curse the day they ever heard of M. de Lesseps and his Panama canal enterprise. One of the curious results of the work on the Panama Canal is the change in the climate of Panama and Acapulco. The tall trees on the heights of Calebra formerly shut off all wind from the Panama side of the Isthmus. Now these trees are all cut down, and 60 feet of the mountain top has been sliced off. Hence the north-east trade winds of the Atlantic sweep across through this cut, and do much to mitigate the heat of Panama. With the canal cut down to the original plan, Panama might become a fairly healthy place.

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VENEZUELA.

Venezuela is bounded on the north by the Caribbean Sea, on the east by British Guiana, on the south by Brazil, and on the west by Colombia.

AREA.—565,159 square miles.

POPULATION.—1884, 2,121,988 (only one per cent. whites).

RELIGION.—The Roman Catholic is the State religion, but there is toleration of all others, though they are not permitted any external manifestations.

GOVERNMENT.—Republican. Executive, the President, assisted by 6 Ministers and the Federal Council of 16 members. Legislative, the Congress, composed of the Senate and the House of Representatives, the former with 24 Senators, the latter with 52 Representatives. The provinces or States of the Republic have each their own Executive and Legislature.

ARMY.—2,545 regulars and a national militia of 60,000 men.

EDUCATION.—There were (1884), 2 universities, 19 federal colleges, with 2,538 students, 19 private colleges and normal schools, with 907 students, and 1,794 schools, attended by 95,000 pupils.

RAILWAYS.—1884, 102 miles in operation, and 270 under construction.

POST-OFFICE.—Telegraph, 2,800 miles in 1886, conveying 169,570 dispatches. Letters, newspapers, etc., delivered in 1885-86, 2,734,576.

GUIANA.

Guina, in its widest sense, certainly embraces the whole of the Sierra Parime, thus including districts at present belonging to Venezuela and Brazil; but the name is now generally restricted to the colonial possessions of Britain, Holland, and France, in this part of the world.

BRITISH GUIANA,

by far the most flourishing, agriculturally and commercially, of the three colonies, is bounded on the north by the Atlantic Ocean, on the west by Venezuela and Brazil, on the south by the latter country, and on the east by Dutch Guiana.

AREA.—109,000.

POPULATION.—1886, 274,311 (including 7,538 aborigines).

GOVERNMENT.—The Governor, appointed by the Crown, assisted by the Court of Policy of 9 members, and a Combined Court containing in addition to those nine, 6 financial representatives.

RAILWAYS.—23 miles open.

POST-OFFICE.—Telegraph, 280 miles, conveying 58,490 messages in 1886. Letters, newspapers, etc., delivered in 1886, 1,237,038.

DUTCH GUIANA

is bounded on the north by the Atlantic Ocean, on the west

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GUIANA—(Continued).

by British Guiana, on the south by Brazil, and on the east by the French colony.

AREA.—46,072 square miles.

POPULATION.—1886, 56,869.

GOVERNMENT.—Vested in a Governor-General and High Council.

FRENCH GUIANA

is bounded on the north-east by the Atlantic Ocean, on the west by Dutch Guiana, and on the south and east by Brazil.

AREA.—46,879 square miles.

POPULATION.—About 36,000.

GOVERNMENT.—Vested in Governor, Privy and Colonial Councils.

ECUADOR.

Ecuador is bounded on the north by Columbia, on the east by Brazil, on the south by Peru, and on the west by the Pacific Ocean and Peru. Included within the Republic are the Galapagos Islands, situated in the Pacific about 730 miles due west of the coast.

AREA.—248,380 square miles. Galapagos Islands, 2,950 square miles.

POPULATION, 1885.—1,004,650.

RELIGION.—According to the constitution the religion of the Republic is Roman Catholic to the exclusion of every other.

GOVERNMENT.—Republican. Executive, the President. Legislative, the Congress of two Houses, the first consisting of two Senators for each province, and the second of deputies elected by the people.

ARMY.—About 1,600 men.

EDUCATION.—Only about 75,000 of the population can read or write.

RAILWAYS.—76 miles in operation and 50 in construction.

There is not a stove or a chimney in all Quito, the capital of Ecuador. The weather is seldom cold enough to require a fire for heating purposes, and all the cooking is done with charcoal on a sort of shelf like a blacksmith's forge. There must be a different fire for every pot or kettle, and generally two persons to attend to them—one with a pair of bellows, and the other to keep the pots from turning over, for they are made with rounded bottoms like a ginger-beer bottle. No laundry work is ever done in the house, but all the soiled clothes are taken to the nearest brook, washed in the cold running water, and spread upon the stones to dry in the sun.

PERU.

Peru is bounded on the north by Ecuador, on the east by Brazil and Bolivia, on the west by the Pacific Ocean.

AREA.—405,040 square miles.

POPULATION.—2,970,000 (including about 350,000 uncivilized Indians).

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PERU—(Continued).

RELIGION—By the terms of the constitution the Roman Catholic is declared the religion of the State, and the public exercise of any other is prohibited. At the census of 1876 there were 5,087 Protestants and 498 Jews.

GOVERNMENT.—Republican. Executive, the President, assisted by a Cabinet of 5 ministers. Legislative, the Senate and House of Representatives, the former composed of deputies (1 for every 30,000 inhabitants), and the latter of Representatives nominated by the provincial electoral colleges of each department.

ARMY AND NAVY.—During the war with Chili the army was raised to about 19,000 men; it now numbers about 5,900. The fleet consists of 2 cruisers and 2 small troop ships.

EDUCATION.—By a return of 1880 the facilities provided for education consist of 1 university at Lima, 5 lesser universities, 45 higher class schools, and 650 public and private schools with 32,555 pupils.

RAILWAYS.—In 1886, 1,625 miles were open.

POST-OFFICE—Telegraph, 1878, 1,378, miles, conveying 110,670 dispatches. Letters, newspapers, etc., delivered in 1885, 1,252,964.

BOLIVIA:

Bolivia is the most centrally situated State of South America, and, with the exception of Paraguay, is the only one without a sea-board. On the north and east it is bounded by Brazil, on the south by Paraguay, the Argentine Republic, and Chili, and the west by Chili and Peru.

AREA.—472,000 square miles.

POPULATION.—2,300,000.

RELIGION.—The mixed races forming the population are regarded as at least nominally Christian.

GOVERNMENT.—Republican. Executive, the President, assisted by a Vice-President and a Cabinet of 5 ministers. Legislative, the Congress, consisting of the Senate and the House of Representatives, both elected by universal suffrage.

ARMY.—The standing army consists 1,013 officers and 2,000 men, and costs upward of two-thirds of the public revenue.

EDUCATION.—According to a report issued in 1884, the schools and universities were attended by only 12,000 pupils and students, or about 5 per cent. of the population of school age. There are 4 universities.

EXPORTS.—Silver forms two-thirds in value of the total exports.

POST-OFFICE.—Telegraph, 180 miles.

BRAZIL.

Brazil, the most extensive and most prosperous of the South American States, is bounded on the north by the Atlantic Ocean, Guiana, and Venezuela; on the west by Colombia, Ecuador, Peru, Bolivia, Paraguay, and Argentine; on the south by Uruguay, and on the east by the Atlantic Ocean.

AREA.—3,219,133 square miles.

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BRAZIL—(Continued).

POPULATION, 1885.—12,922,375.

RELIGION.—The Roman Catholic is the established religion of the State, although all other sects are tolerated.

GOVERNMENT.—Constitutional and hereditary monarchy. Executive, the Emperor (Dom Pedro II., *s.* 1831), assisted by a responsible Ministry. Legislative, the General Legislative Assembly, consisting of the Senate with 60 members, and the Chamber of Deputies with 125 members.

ARMY.—Peace footing, 15,048 men and 6,847 gendarmerie. War footing, 32,000 men.

NAVY.—65 ships (9 iron-clads) manned by 5,788 men.

EDUCATION.—In 1885 there were 5,520 public, 957 private schools, and 286 "colleges," attended by 435,997 pupils in all.

RAILWAYS, 1887.—4,955 miles were open, and 1,000 under construction.

POST-OFFICE.—Telegraph, 1886, 11,174 miles of wire, conveying 367,790 messages in 1884-85. Letters, newspapers, etc., delivered in 1884-85, about 74,000,000.

IMMIGRATION.—25,741 in 1886.

PARAGUAY.

Paraguay, one of the smallest, and with the exception of Bolivia, the only landlocked State of South America, is bounded on the north by Brazil and Bolivia, on the west and south by the Argentine Republic, and on the east by the Argentine and Brazil.

AREA.—92,000 square miles.

POPULATION.—1887, 239,774.

RELIGION.—The Roman Catholic is the established religion of the State, but the free exercise of other religions is permitted.

GOVERNMENT.—Republican. Executive, the President, assisted by a Cabinet of 5 ministers. Legislative, the Congress composed of the Senate and the House of Deputies. The armed defense forces consist of 500 men and a fleet of 3 river steamers.

EDUCATION.—In 1885 there were 99 State public schools, with 3,676 pupils; 50 private schools, with 1,424 pupils; and a national college with 150 students.

RAILWAYS.—45 miles, conveying 95,764 passengers in 1884.

POST-OFFICE.—Telegraph, over 45 miles of wire. Letters, newspapers, etc., delivered in 1886, 304,617.

URUGUAY.

Uruguay, the smallest of the South American States, is bounded on the north by Brazil, on the west by the Argentine Republic, on the south by the Rio de la Plata, and on the east by the Atlantic Ocean and Brazil.

AREA.—72,172 square miles.

POPULATION.—1886 (estimated), 596,643.

RELIGION.—The Roman Catholic is the State religion, but there is complete toleration of all sects.

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URUGUAY—(Continued).

GOVERNMENT.—Republican. Executive, the President, assisted by a Council of 5 ministers. Legislative, the Parliament composed of the Senate and the Chamber of Representatives, the former consisting of 19 members, and the latter of 53. The defense forces consist of 3,540 regulars, a national guard of 20,000 men, 5 river steamers, and 3 gunboats.

EDUCATION.—One university at Monte Video, attended in 1886 by 1452 students; 341 public schools, with 28,380 pupils; and in 1885, 429 private schools, with 20,899 scholars.

RAILWAYS.—338 miles open for traffic in 1887.

POST-OFFICE.—Telegraph, 1,162 miles in 1887, carrying 114,095 dispatches in 1886. Letters, newspapers, etc., delivered in 1886, 11,407,597. Excess of immigration over emigration 10,183 in 1885.

THE ARGENTINE REPUBLIC.

The Argentine Republic is bounded on the north by Bolivia and Paraguay; on the east by Brazil, Uruguay, and the Atlantic; and on the west by Chili.

AREA.—1,096,013 square miles.

POPULATION.—1887 (estimated), 3,435,286.

RELIGION.—Roman Catholic, but all creeds are tolerated.

GOVERNMENT.—Republican. Executive, the President. Legislative, the National Congress, composed of the Senate with 30 members, and the House of Deputies with 86.

ARMY.—7,324 men, exclusive of the National Guard of about 350,000 men.

NAVY.—39 ships (3 iron-clads) manned by 2,150 men.

EDUCATION.—In 1855 there were two universities attended by 880 students, various superior schools, 15 lyceums with 3,189 pupils, and, in 1886, 3,415 elementary schools, with 180,768 scholars.

RAILWAYS.—4,216 miles open for traffic in 1887.

POST-OFFICE.—Telegraph, 13,645 miles of wire, conveying 658,460 dispatches in 1885. Letters, newspapers, etc., delivered in 1885, 35,475,000. Excess of immigration over emigration 79,209 in 1886.

CHILI.

Chili is bounded on the north by Peru, on the east by Bolivia and the Argentine, and on the west by the Pacific Ocean.

AREA.—289,648 square miles.

POPULATION.—2,526,969 (1885).

RELIGION.—Roman Catholic, but all other religions are protected.

GOVERNMENT.—Republican. Executive, the President. Legislative, the Senate of 43 members, and the Chamber of Deputies of 126.

ARMY.—6,510 regulars, and the National Guard of 53,741 men.

NAVY.—32 ships (3 iron-clads) with 2,385 men.

EDUCATION.—One university and numerous lyceums, at-

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CHILI—(Continued).

tended in 1886 by 5,900 students; 532 private schools, with 28,242 pupils, and 862 public primary schools, with 78,810 scholars.

RAILWAYS.—1,592 miles open for traffic in 1887.

POST-OFFICE.—Telegraph, 9,000 miles, conveying 533,596 dispatches in 1886. Letters, newspapers, etc., delivered in 1886 35,308,210.

THE UNITED STATES.

The Public Domain.

The United States is great in her industrial and moral and political forces, and great in her territorial area, the public domain amounting to about 4,000,000 square miles, the land surface of which is estimated at 3,586,006 square miles. In 1803 the public domain consisted of 404,955 square miles or 259,171,787 acres. Subsequent acquisitions were the following: The first was the purchase of Louisiana from France, which took place in 1802. This purchase included portions of the States of Alabama and Mississippi south of the thirty-first parallel—the entire surface of Louisiana, Arkansas, Missouri, Iowa, Nebraska, and Oregon. All of Minnesota west of the Missouri River, all of Kansas except a small portion west of the 100th meridian and south of the Arkansas River, all of Dakota, Montana, Idaho, Washington, and Indian Territories, with a part of Wyoming and Colorado.

The cost, according to the original treaty stipulations, was 60,000,000 francs or $15,000,000 in money and stocks. The interest on the stocks to the time of redemption was $8,529,353. The United States assumed the payment of certain claims of citizens of the United States against France, $3,738,208, making a total expenditure of $27,267,621. For this sum the Government obtained a title to 1,182,752 square miles of territory, or 756,961,280 acres of land, at three and three-fifths cents per acre.

The next acquisition to the public domain (1819) was the purchase of Florida from Spain for the sum of $5,000,000. For this amount stocks were issued, and principal and interest amounted to $4,489,768. This purchase added to the public domain 59,267 square miles, or 37,981,520 acres, which cost seventeen and one-sixteenth cents per acre.

The next acquisition to the public domain was from Mexico in 1848. By this cession the United States obtained the States of California, Nevada, and part of Colorado, also the lands in the Territories of Utah, Arizona, and New Mexico, which added 522,568 square miles, or 334,443,520 acres to the public domain, at a cost of $15,000,000, or four and one-half cents per acre.

In 1854 the United States purchased of the State of Texas 96,707 square miles, or 61,892,480 acres, for the sum of $16,000,000, or 25 17-20 cents per acre. This territory is now included in Kansas, Colorado, and New Mexico, and embraces the "public land strip," or "No-Man's Land."

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Dates of the Admission of States into the Union.

The thirteen original States ratified the Constitution on the dates herewith given:

New Hampshire—June 21, 1788.
Massachusetts—February 6, 1788.
Rhode Island—May 29, 1790.
Connecticut—January 9, 1788.
New York—July 26, 1788.
New Jersey—December 18, 1787.
Pennsylvania—December 12, 1787.
Delaware—December 7, 1787.
Maryland—April 28, 1788.
Virginia—June 25, 1788.
North Carolina—November 21, 1789.
South Carolina—May 23, 1788.
Georgia—January 2, 1788.

In the subjoined table are given the names of the States, the date of the passage of the act admitting them, and the time when the admission took effect:

States admitted.	Act admitting.	Admission took effect.
Kentucky	Feb. 4, 1791	June 1, 1792.
Vermont	Feb. 18, 1791	March 4, 1791.
Tennessee	June 1, 1796	June 1, 1796.
Ohio	April 30, 1802	Nov. 29, 1802.
Louisiana	April 8, 1812	April 30, 1812.
Indiana	Dec. 11, 1816	Dec. 11, 1816.
Mississippi	Dec. 10, 1817	Dec. 10, 1817.
Illinois	Dec. 3, 1818	Dec. 3, 1818.
Alabama	Dec. 14, 1819	Dec. 14. 1819.
Maine	March 3, 1820	March 15, 1820.
Missouri	March 2, 1821	Aug. 10, 1821.
Arkansas	June 15, 1836	June 15, 1836.
Michigan	Jan. 26, 1837	Jan. 26, 1837.
Florida	March 3, 1845	March 3, 1845.
Iowa	March 3, 1845	Dec. 28, 1846.
Texas	March 1, 1845	Dec. 29, 1845.
Wisconsin	March 3, 1847	May 29, 1848.
California	Sept. 9, 1850	Sept. 9, 1850.
Minnesota	May 4, 1858	May 11, 1858.
Oregon	Feb. 14, 1859	Feb. 14, 1859.
Kansas	Jan. 29, 1861	Jan. 29, 1861.
West Virginia	Dec. 31, 1862	June 19, 1863.
Nevada	March 21, 1864	Oct. 31, 1864.
Nebraska	Feb. 9, 1867	March 1, 1867.
Colorado	March 3, 1875	Aug. 1 1876.
Montana	Feb. 22, 1889	Nov. 1, 1889.
North Dakota	Feb. 22, 1889	Nov. 2, 1889.
South Dakota	Feb. 22, 1889	Nov. 2, 1889.
Washington	Feb. 22, 1889	Nov. 11, 1889.

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Date of the Organization of the Territories.

New Mexico	Sept. 9, 1850.
Utah	Sept. 9, 1850.
Arizona	Feb. 24, 1863.
Idaho	March 3, 1863.
Wyoming	July 25, 1868.
Indian	June 30, 1834.
District of Columbia	July 16, 1790. March 3, 1791.
Alaska	July 27, 1868.

Indian Territory and the District of Columbia have no territorial government.

ALABAMA.

Name Indian, meaning, "We rest here." Mobile founded by French 1702. Admitted to Union Dec. 14, 1819. Seceded Jan. 11, 1861. Montgomery made capital of Confederacy Feb. 4, 1861. Subsequently removed to Richmond, Va. State re-entered Union July 14, 1868.

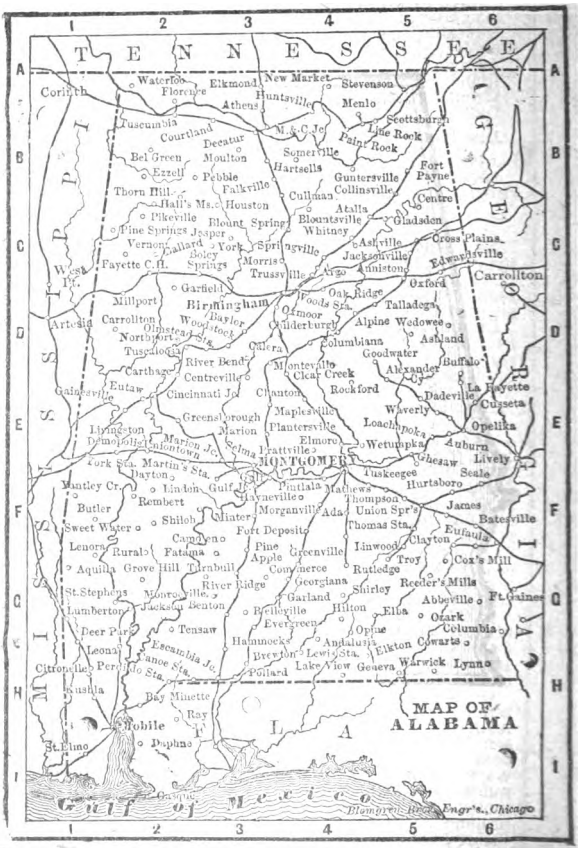
CLIMATE.—Temperature mild, cold at north, warm at south; average winter 47 deg., summer 81 deg.; July hottest month; range of thermometer 20 to 95 deg., sometimes for a day reaching 102 deg. Rainfall 50 inches. Snow or ice very rare. Trees bloom in Feb.

PRESIDENTIAL ELECTION RESULTS.—1824, Dem. maj. 5,280; 1828, Dem. maj. 15,200; 1836, Dem. maj. 3,431; 1840, Dem. maj. 5,520; 1844, Dem. maj. 11,656; 1848, Dem. maj. 881; 1852, Dem. maj. 11,843; 1856, Dem. maj. 18,187; 1860, Dem. maj. 7,355; 1868, Rep. maj. 4,278; 1872, Rep. maj. 10,828; 1876, Dem. maj. 33,772; 1880, Dem. maj. 29,867; 1884, Dem. plur. 33,529; 1888, Dem. plur. 60,113. State elections biennial first Monday in Aug.; number of Senators 33, Representatives 100; sessions of Legislature biennial in even-numbered years, meeting Tuesday after second Monday in Nov., and holding 50 days; term of Senators 4 years, of Representatives 2 years; number of electoral votes 10, Congressmen 8. Indians, idiots, convicts of crime excluded from voting.

SALARIES OF STATE OFFICERS.—Governor, $3,000; Secretary of State, $1,800; Treasurer, $2,150; Auditor, $1,800; Attorney-General, $1,500; Superintendent of Public Instruction, $2,250; Librarian, $1,500; three Railroad Commissioners, $2,000 to $3,500; Chief-Justice, $3,000; two Associate-Justices, $3,000.

GEOGRAPHICAL, ETC.—Surface at north-east rugged, extending into Alleghany mountains, gradually descends, forming rolling prairies at center of State and flat low stretches at the south. Sea-coast 68 miles. Mobile bay best harbor on the gulf, 1,600 miles of navigable waterways. Length north and south 332 miles, width average 155 miles, area 51,540 square miles, acres 32,985,600. Cotton, mules, iron, coal, sugar, rice, tobacco, hay, oats, corn, staple products. Fruits are a good crop. Much forest remains. Cleared land averages $7, and woodland $4 per acre. Sta-

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ALABAMA—(Continued).

ranks fourth in cotton, fifth in mules and molasses, sixth in iron ore and sugar, seventh in rice. Has fair soil, and is enormously rich in coal, iron, lime and sandstone, timber and various minerals. Middle section soil fertile and varied. Coast region sandy, but by proper cultivation prolific. Vegetable farming near Mobile very successful. Number counties 66, miles of railroad 2,191. Number of colleges 4, school age 7-21; schools good. Legal interest 8 per cent., usury forfeits entire interest.

LEADING INDUSTRIES.—Agriculture and kindred pursuits, mining, iron making, lumbering, etc.

COLLECTION AND EXEMPTION LAWS.—Exemptions—Personal property, $1,000; homestead, not exceeding 160 acres, nor $2,000 in value, or house and lo same value. Limitation of Actions—Open ac nliquidated accounts, 3 years; trespass to property real or personal; liquidated accounts or promises in writing not under seal, years instruments under seal, 10 years; for recovery f real pro erty, or on judgments of courts of record, 0 years. P vivor—Partial payme an uncon itional promise in writing. Redemption—O s- tate sold under execution, decree in chancery, mor or for taxes, within 2 years. Justice's Jurisdiction—$1 t- ness—Party interest may be. Stay of Execution—In Justices' courts, under $20, 30 days; over $20, 60 days. Married Women—Real or personal property acquired at any time by the wife remains her separate estate and ot liable for her husband's debts. Interest—8 per cent. Usury forfeits interest.

CHIEF CITIES.—Montgomery (capital), pop. 21,790; Huntsville, pop. 4,635; Selma, pop. 7,626; Mobile, pop. 31,822.

POPULATION.—Official census of 1890—1,513,017. In 1860 there were 435,080 slaves in the state of Alabama.

ALASKA.

Discovered by Vitus Behring 1741, and became Russian territory by right of discovery. Purchased by United States for $7,200,000, 1867, as a deed of gratitude to Russia for her course in civil war, and promises to become the source of enormous mineral, fur, agricultural, and timber wealth. Governor appointed by the President of the United States. The purchase of Russian America (Alaska) is the event by which Mr. Johnson's administration is most favorably remembered.

CLIMATE.—Pacific coast modified by Pacific Gulf Stream and long summer days. Temperature at Sitka averages, winter, about that of Washington, D. C. Rainfall copious, and foggy weather common on coasts and islands. Sitka one of the rainiest places in the world outside the tropics; annual precipitation 65 to 90 inches; rainy days 200 to 285 in year.

SALARIES OF TERRITORIAL OFFICERS.—Governor, $3,000; District Judge, $3,000; Clerk of District Court and ex-officio Sec-

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ALASKA—(Continued).

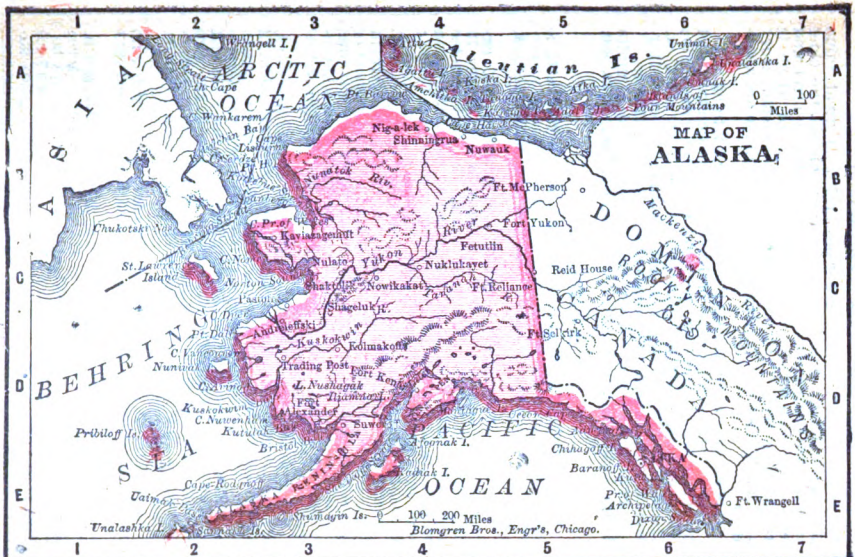
retary and Treasurer, $2,500; District Attorney, $2,500; Marshal and Surveyor General, $2,500; Collector of Customs, $2,500 and fees; three Deputy Collectors, $1,500; one Deputy Collector, $1,200; two Inspectors, per day, $3.

GEOGRAPHICAL, ETC.—Yukon, chief river, 80 miles wide at mouth, navigable 840 miles, length about 1,300 miles; coast line 5,000 miles. Extreme length north and south 1,200 miles, width 800 miles, area (estimated) 531,409 square miles. Berries plentiful. Fine quality of white marble is on Lynn Channel. Coal, amber, and lignite on Aleutian Islands, the best coal being on Cook's Inlet. Gold, silver, copper, cinnabar, and iron are found; sulphur abundant.

THE FORESTS OF ALASKA.—It is a mistake to suppose that the whole territory is heavily timbered, a good deal of it being as destitute of timber as the desert of Sahara. There are nowhere any trees or vegetation, except moss, above an altitude of 3,000 feet, the tree growth above 2,500 feet being of not much account. When it is considered how much of the country consists of lofty mountains, the area of timbered land becomes, under these conditions, somewhat restricted. This applies only to that portion of the territory that has been explored, a comparatively small part of the whole. What of the timber or other resources there may be in sections remote from the coast, no one knows. In the far North, where the country is believed to be less mountainous, there may be, and very likely are, extensive forests, as in the case on the Eastern continent. The most common tree in Alaska is the Sitka spruce; the most valuable the yellow cedar. Both these trees grow to a large size, some of them reaching a height of 250 feet, with a diameter of six feet near the ground. Generally they are about 150 feet high and measure four feet through at the butt. The Sitka spruce makes a good coarse lumber, much like the spruce and fir of California. The yellow cedar is, however, a much more valuable tree, having a close, fine grain, and being remarkable for its strength and durability. It is also very fragrant, and taking readily a fine polish, becomes a most desirable cabinet wood. Hemlock is also quite a common tree in Alaska, with willows and elders along the water courses. The bark of the hemlock will some day become valuable for tanning purposes. In intimating that the forests of Alaska are in some sense restricted, compared with the extent of that territory, is not to say that they will ever suffer extinction. Centuries hence, when the forests farther South have all disappeared, the coming generations will be able to draw their supplies from this vast timber preserve, which, with its power of reproduction and its immunity from the ravages of fire, will prove practically inexhaustible. Owing to the moisture of the climate and the thick coat of moss that everywhere covers the ground, it is impossible for a conflagration to occur in the forests of Alaska.

Fertile land. Good oats, barley and root crops are raised without difficulty. Rich grass land in the valley of Yukon

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ALASKA—(Continued).

Timber abundant. Yellow cedar best, being of great value for boat-building. Noted for fur-bearing animals, the chief of which are beaver, ermine, fox, marten, otter, squirrel, and wolf. The main revenue is the fur seal, taking of which is regulated by law. The walrus is of value in furnishing ivory and oil. Whales, cod, herring, halibut, and salmon are abundant.

INDUSTRIES.—Fishing, canning, trapping, and mining.

CHIEF CITIES.—Sitka, seat of Bishop of Greek church, and headquarters of Governor, pop. 995, white 163, creole 219; Thlinket, 613. Fort St. Nicholas, Cook's Inlet, Fort St. Michael and Norton's Sound are other main settlements. Harbors at Port Clarence, Michaelooski and Captain's Harbor.

POPULATION.—Whites, 8,000, Indians (estimated), Innuits 18,000, Aleutian 2,200, Ninneh 4,000, Thlinket 7,000, Hyda 800.

ARIZONA.

Explored 1526. Mineral wealth found, no important settlements effected because of hostile natives. Organized as territory Feb. 24, 1863. Number counties, 11. Miles railroad, 906.

CLIMATE.—Exceptionally healthful, and generally mild, except in mountains, temperature averages 38 deg. winter, 73 deg. summer, much warmer at south, the thermometer reaching occasionally 115, and rarely falling below 35 deg. in winter. In central portion heat seldom exceeds 88 to 90 deg.; snow in mountains, but melts soon. Rainfall on Gila 6 inches, in foot-hills 28 inches. Heaviest in July and August.

ELECTIONS.—All elections Tuesday after first Monday in Nov. Number Senators, 12; Representatives, 24; sessions of Legislature biennial in even-numbered years, meeting first Monday in Jan.; holds 60 days; terms of Senators and Representatives, 2 years each. Voters, 20,398; native white, 9,790; foreign white, 8,256; colored, 2,352.

SALARIES OF STATE OFFICERS.—Governor, $2,600; Secretary, $1,800; Treasurer, $1,000; Auditor, $1 000 · Superintendent of Public Instruction, $2,000; Librarian, $600; Chief-Justice, $3,000; two Associate-Justices, $3,000; Senators and Representatives, $4 per day and 20 cents mileage; three District Judges $3,000; Collector of Internal Revenue $2,250; two Deputy Collectors $1,600 to $1,700, Clerk $1,100, Surveyor General $2,500, Chief Clerk $2,400, Land Clerk $1,600, Land Copyist $1,200, Spanish Translator $2,500.

Legal interest rate, 10 per cent., by contract, any rate; no penalty for usury. School endowment in lands reserved very large. School age 6-21.

GEOGRAPHICAL, ETC.—Extreme length north and south, 378 miles, width 339 miles, area 113,929 square miles, acres 72,914,560. Colorado river navigable 620 miles. Flows between perpendicular walls cut in solid rock in places 7,000 feet high. Nearly all mountain ranges contain gold, sil-

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MAP OF
ARIZONA
Rhomgren Bros., Engr's. Chicago
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ARIZONA—(Continued).

ver, copper, and lead. Superior quality of lime found near Prescott and Tucson, beds of gypsum in San Pedro valley, remarkable deposits of pure transparent salt near Calliville. Territory ranks second in production of silver. Volcanic peaks reach an altitude of 10,500 feet. Southern portion a plain, dipping occasionally below sea level, and rising only to a very moderate elevation (200 to 600 feet usually), mountains numerous, highest point San Francisco, 11,056 feet. Agriculture possible only in the valleys or where irrigation is practicable. Soil in valleys and bottoms very rich and prolific. Wheat, barley, potatoes, hay, corn, onions are staple field crops; corn follows wheat or barley, giving two crops yearly. Oranges and all semi-tropical fruits do well where water is obtainable. Cattle raising extremely profitable. Desert tracts of considerable area are found. Timber grows on the mountains, foot-hills, and along the streams. The varieties include pine and cedar on mountains, cotton-wood, walnut and cherry on streams. Size of trees fair, and quantity large. Abundant mineral wealth exists, which can be developed with profit, owing to completion of railways.

LEADING INDUSTRIES.—Mining, grazing, agriculture, lumbering, smelting, etc.

COLLECTION AND EXEMPTION LAWS.—Exemptions—Homestead, $5,000. Limitation of Actions—Open account or contract not in writing, 2 years; contract in writing, 4 years; real actions, adverse possession on judgment or decree of any court, 5 years. Redemption of land sold on execution or foreclosure, 6 months. Justices' Jurisdiction—$300. Married Women—Real and personal property acquired at any time, wife's separate estate, and not subject to husband's debts. Witness—Party in interest may be. Interest—When no agreement, 10 per cent. Usury—No law.

CHIEF CITIES.—Tucson, population, 5,095; Prescott, the capital, population, 3,000.

POPULATION.—Census of 1890,—59,620.

ARKANSAS.

"Bear State." Settled 1685. Arkansas Territory organized 1819. Admitted as a State June 15, 1836. Number of counties, 75. Slavery acknowledged. Seceded May 6, 1861. Considerable fighting during the war, but no great battles. Re-entered Union 1868.

CLIMATE.—Genial. Temperature ranges 15 deg. to 95 deg., on rare occasions going to 100 deg. Average winter, 45 deg.; summer 80 deg. Rainfall 44 inches, heaviest in S. E., lightest in N. W. Health unsurpassed, especially in N. W.

PRESIDENTIAL ELECTION RESULTS.—1836, Dem. maj., 1,162; 1840, Dem. maj., 889; 1844, Dem. maj., 4,042; 1848, Dem. maj. 1,712; 1852, Dem. maj. 4,769; 1856, Dem. maj. 11,123;

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ARKANSAS—(Continued).

1860, Dem. maj. 3,411; 1868, Rep. maj. 3,034; 1872, Rep. maj. 8,446; 1876, Dem. maj. 19,113; 1880, Dem. maj. 14,749; 1884, Dem. plur. 22,208; 1888, Dem. plur. 27,210.

State elections biennial, in even-numbered years first Monday in Sept.; number of Senators 31, Representatives 94, sessions of Legislature biennial, in odd-numbered years, meeting second Monday in January, holding 60 days, term of Senators 4 years, of Representatives 2 years. Number of electoral votes 7, Congressmen 5, voters 182,987, native white, 129,675, foreign white, 6,475, colored 46,827. Idiots, Indians, convicts not voting.

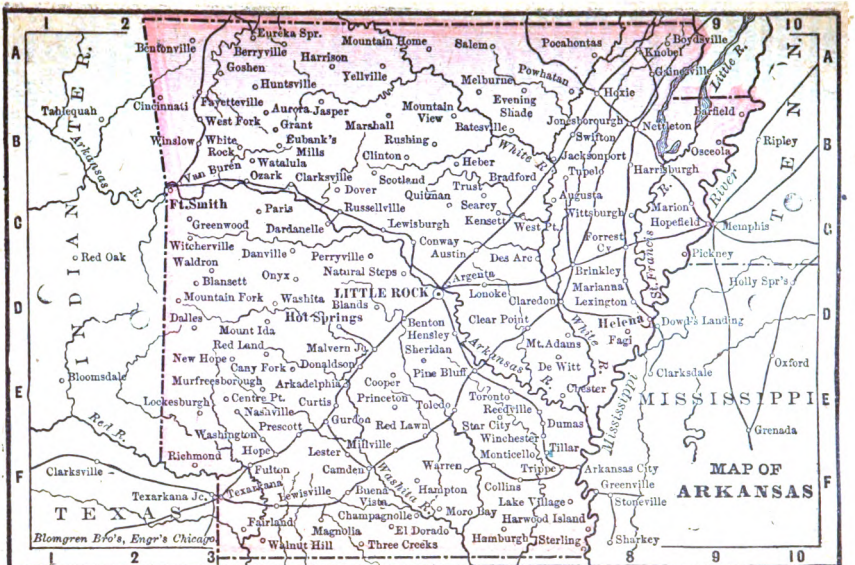
SALARIES OF STATE OFFICERS.—Governor, $3,500; Secretary of State, $1,800; Treasurer, $2,250; Auditor, $2,250; Attorney General, $1,500; Superintendent of Public Institutions, $1,600; Land Commissioner, $1,800; Chief-Justice, $3,000; Two Associate-Justices, $3,000; Senators and Representatives, $6 a day; Two District Judges, $3,500; District Attorney, $200 and fees; Two District Attorneys, $1,200 and $1,000.

GEOGRAPHICAL, ETC.—The scenery varied and charming. Hot Springs (temperature 140 deg.) great natural wonder, and famous for medicinal properties. Number colleges 5, school system progressive; school age 6–21. Legal interest rate 6 per cent., by contract 10 per cent., usury forfeits principal and interest. Length N. and S. 240 miles, average breath 212 miles, area 53,845 square miles; acres, 44,460,800. Coal exists on the Ash River, iron in the Ozarks, salt near Ouachita. Oilstone near Hot Springs, kaolin in Pulaski County. Staple products, corn, wheat, cotton, tobacco, oats, sweet potatoes, mules, tar, turpentine, lumber, etc. Corn crop, 32,465,000 bushels; wheat, 1,885,000 bushels; cotton, 513,000 bales. Latest reported tobacco crop 1,952,872 pounds; oats, 3,542,300 bushels, sweet potatoes, 881,260 bushels. Ranks sixth in cotton and ninth in mules. Exceptionally rich and suited to all crops, especially fruits, berries and gardening. State especially favorable to agriculture. Magnificently timbered. Pine, oak, cypress, cedar, hickory, walnut, linn, locust, chief growths. Cleared land averages $10 and woodland $3 per acre.

LEADING INDUSTRIES.—Two thousand one hundred in number. Chiefly agricultural.

COLLECTION AND EXEMPTION LAWS.—Exemptions—Of resident, married or head of family, personal property $500, in addition to wearing apparel; homestead in country, 160 acres, not exceeding $2,500 in value, or 80 acres of any value; in city, 1 acre, not exceeding $2,500 in value, or ¼ acre of any value. Limitations of Actions—Open accounts, 3 years, promissory notes and written instruments not under seal, 5 years; writings under seal, bonds, judgments, and decrees, 10 years; for recovery of real estate, 7 years. Revivor—Part payment or new promise in writing. Redemption of lands sold under execution, 1 year; for taxes, 2 years. Justices' Jurisdiction —$300. Witness—Party in interest may be. Stay of execu-

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ARKANSAS—(Continued).

tion—May be for 3 months. Married Women—Property, real and personal, of a *femme converte*, acquired at any time, remains her separate estate, and not subject to husband's debts. Interest—Legal, 6 per cent.; 10 per cent. allowed by contract. Usury voids contract, both as to principal and interest.

CHIEF CITIES.—Little Rock (cap.), pop. 26,500. Hot Springs.

POPULATION.—Census of 1890, 1,128,179.

CALIFORNIA.

Golden State. First settled at San Diego, 1768. Gold discovered 1848. Rush of immigration set in 1849. State constitution, without the preliminary of a Territorial organization, framed September 1849. Admitted as a state September 9, 1850. Number counties 52. Miles railroad 2,911. Extreme length N. and S., 725 miles, width 330 miles, area 155,980 square miles, 99,827,200 acres.

CLIMATE—Varies with elevation and latitude. Mild and pleasant on coast. Average temperature at San Francisco in summer 62 deg., winter 50 deg. Warmer in interior, reaching at times 100 deg. Rainfall variable, from 7 to 50 inches at San Francisco. Average at S. 10 inches. Melting snow from mountains replaces rainfall. Frosts rare.

PRESIDENTIAL ELECTION RESULTS.—1852, Dem. maj. 5,119; 1856, Dem. plur. 17,200; 1860, Rep. plur. 657; 1864, Rep. maj. 18,293; 1868, Rep. maj. 506; 1872, Rep. maj. 12,234; 1876, Rep. maj. 2,738; 1880, Dem. plur. 78; 1884, Rep. plur. 13,128; 1888, Rep. plur, 7,080.

Governor and State officers elected quadrennially, and Legislature every two years, number Senators 40, Representatives 80, sessions of Legislature biennial, in odd-numbered years, meeting first Monday after January 1, holds 60 days, term of Senators 4 years, of Representatives 2 years. Number electoral votes 8, Congressmen 6, white voters 262,583. Idiots, Indians, convicts, and Chinese excluded from voting.

SALARIES OF STATE OFFICERS.—Governor, $6,000; Secretary of State, $3,000; Treasurer, $3,000; Comptroller, $3,000; Superintendent of Public Instruction, $3,000; Attorney General, $3,000; Surveyor General, $3,000; State Librarian, $3,000; District Judge, $5,000; Senators and Representatives, $8 per day, mileage 10c. and $25; Two Collectors Internal Revenue, $3,125 to $4,500; Collector of Customs, San Francisco, $7,000; Pension Agent, $4,000; Superintendent of Mint, $4,500; Assayer, $3,000; Melter and Refiner, $3,000.

GEOGRAPHICAL, ETC.—Mineral deposits include gold, silver, iron, copper, mercury, coal, stones, salt, soda, etc. Ranks high as a fruit growing State, fruits of temperate climates, sub-tropical fruits and nuts, grapes, north to 41 deg., olives, etc., grow to great perfection. Fine sheep raising country. Ranks first in barley, grape culture, sheep, gold, and quicksilver, third in hops, fifth in wheat and salt.

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CALIFORNIA—(Continued).

Very rich agriculturally and in minerals. Soil warm, genial, and rich. Two crops may be raised in season. Irrigation necessary in parts and almost always desirable. Wheat most valuable crop, all cereals, root crops and grasses do well, cora, barley, grapes, fruit, nuts, silk, hops and oats staples. The total production of wheat in America in 1888 was 415,868,000 bushels. Of this California raised 28,415,000 bushels. Coast line over 800 miles wide. San Francisco Bay (40 miles long, 9 wide) magnificent harbor. Yosemite in the Sierras, one of the greatest natural wonders of the world, and the greatest marvel of the State, where scenery is always grand. Mt. Whitney 15,000, highest peak. Noble forests of redwood and other valuable growths. Land runs from $1.25 to several hundred dollars per acre. Improved land averages $30, unimproved $7.50 per acre. It is the paradise of the small farmer. School system very fair, school age 5-17.

LEADING INDUSTRIES.—Agriculture, stock raising, fruit culture, mining, lumbering, etc.

COLLECTION EXEMPTION LAWS.—Exemption—Office furniture, $200; necessary household furniture, implements, teams, and livestock of farmer or head of family; cabin of miner, mining tools, teams and machinery used in mining, $2,000. Limitation of Actions—For a demand or obligation, in writing or not, created out of the State, 2 years; open account or verbal contract, 2 years; written contract or obligation executed in the State, 4 years; real actions, or on judgments or decrees of any court, 5 years. Revivor—New promise in writing only. Redemption of lands sold on execution or foreclosure, 6 months; for taxes, 1 year. Justices' Jurisdiction—Any amount less than $300. Witness—Governed by rules of common law. Stay of Execution—Discretion of court. Married Women—All property acquired in any manner before marriage, or afterward, by gift, bequest, devise, or descent, is wife's separate property, and controlled as if *femme sole*. All property acquired after marriage by husband or wife, except as above, shall be common property. Interest—Legal rate, 7 per cent.; by contract, any rate, simple or compound. Usury, no law of.

CHIEF CITIES.—San Francisco port of entry, regular line of steamers to Australia, Panama, Mexico, China and Japan, pop. 297,990; Sacramento (capital), pop. 26,272; pop, Oakland, 48,590; San Jose, 18,027; Stockton, 14,376; Los Angeles, 50,394; U. S. Navy Yard near San Francisco.

POPULATION.—According to the official census of 1890, 1,208,130.

PETRIFIED FORESTS.—East of Sacramento, on the American River, and northward, cretaceous rocks come to the surface, and these are filled with fossil remains of marine animals. Higher up the Sierras pliocene fossils appear, and here the deposits are of fresh water origin, and are associated with volcanic detritus. That these remains have been carried far

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CALIFORNIA—(Continued).

from their original place by the action of running water is shown by the fact that they are in rolled masses interstratified with gravels and fine clay. These clays contain impressions of leaves and other forms of vegetable life, and even whole trunks of trees have become silicified or petrified, together with the bones of animals. These fossil remains extend for several miles, and form a literal underground forest. Just what the area covered is we do not know, and what number of years has intervened since these fossils were formed is largely a matter of conjecture.

San Francisco Bay was discovered November 2, 1769, by an expedition headed by Captain Portola and Friar Juan Crespi. In August of the year 1775 a vessel called the San Carlos, commanded by Lieutenant Ayala, passed through what is now called the Golden Gate. This is supposed to be the first white man's vessel that cast anchor in the bay of San Francisco. This harbor and bay, one of the finest in the world, is a beautiful sheet of water, about forty-five miles in length and eight miles in average width, affording safe anchorage at all times. Its entrance, the famous Golden Gate, is a strait about four miles in length and two miles in average width. The depth of water is sufficient for the largest vessel or craft to enter with ease and safety. The first permanent settlement of white men on the shores of this bay was made in June, 1776, by an expedition from Monterey under Friars Francisco Palou and Benito Cambon, accompanied by several settlers with their families and a detachment of soldiers under the command of Don Jose Moraga. About this time a few adobe buildings were erected near the shores of the bay, and the settlement named Yerba Buena. On the 30th of January, 1847, an ordinance was issued by the Alcade directing that the name of the town be changed from Yerba Buena to San Francisco, and in 1848 the first discovery of gold was made in the vicinity, at which time there were about 500 residents. From that period San Francisco began to attract the attention of the civilized world. This was the beginning of an era of prosperity for the State, which resulted in the building up of the important city of San Francisco.

THE DEATH VALLEY.—The sink of the Amargosa River has received the name of the Death Valley because of the unhealthy quality of the air. The Amargosa River rises in the hills of the Sierre Nevada range in Nevada about latitude 37 degrees, and only a few miles from the California boundary. It flows southward nearly parallel with that boundary for about ninety miles, then crosses the border into California, and soon disappears in a sink or the bed of a dry lake at the foot of the Resting Spring Mountains; from this it emerges and flows through the valley still southward about sixty miles, when the bed of another dry lake swallows it up. Emerging from this, the river flows around the hills which contain the famous Amargosa mines. About latitude 35 deg.,

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CALIFORNIA—(Continued).

38 min., it turns and flows toward the northwest 100 miles, when it sinks wholly out of sight and knowledge in the famous Death Valley. This valley is in the county of Inyo, between the Paramint Mountains and the Amargosa range. It is forty miles long by about eight miles broad; in its deepest part its bed lies 159 feet below the level of the sea, and its rocky sides rise 1,300 to 2,000 feet above its bed. Every part of the valley is desert; the air in it is excessively dry and intensely hot. Its topography and climate have never been accurately observed, for no man can live long enough in the valley to ascertain the needed facts. The poisonous quality of the air is perhaps only its intense heat, for in the coolest and highest part of the valley the thermometer often stands at 125 degrees. It is surmised, however, that deadly gasses may be emitted from cracks in the rocks, as the valley is, undoubtedly, of volcanic formation, but the idea has never been tested.

COLORADO.

Part of Louisiana purchase of 1803. First explored by Vasquez Coronado under the Spanish, 1540. First expedition sent out by United States Government, under Major Pike, 1803; a second under command of Col. S. H. Long, 1820, and in 1843-44, Gen. John C. Fremont made his celebrated trip across the Rocky Mountains. First settlement made by miners, 1858-9, near Denver. Organized as Territory February, 1861. Indian troubles 1863-4. Union soldiers furnished 4,903. Admitted as a State August 1, 1876. Number counties 39. No railroad in 1870. Mileage, 1886, 2,857, which has since been largely increased. Thirteen railroads now run into Denver.

CLIMATE.—Dry and range of temperature comparatively small. Winters mild, summers cool. Average temperature winter 31 deg., summer 73 deg. Rainfall mainly in May, June, and July, average 18 inches. On mountains winters severe, accompanied by heavy snow-fall; violent winds common; fogs unknown. Health unsurpassed.

PRESIDENTIAL ELECTION RESULTS.—1880, Rep. maj. 1,368; 1884, Rep. maj. 8,567; 1888, Rep. plur. 13,224.

All elections Tuesday after first Monday in November, number Senators 26, Representatives 49, sessions biennial in odd-numbered years, meeting first Monday in January, limit of session 40 days, term of Senators 4 years, of Representatives 2 years. Number electoral votes 3, Congressmen 1, voters 93,608, native white 65,214, foreign white 26,873, colored 1,520. Convicts excluded from voting.

SALARIES OF STATE OFFICERS.—Governor, $5,000; Lieutenant Governor, $1,000; Secretary of State, $3,000; Treasurer, $3,000; Auditor, $2,500; Attorney General, $2,000; Chief-Justice, $5,000.

GEOGRAPHICAL, ETC.—Richest State in the Union in mineral productions, ranking first in silver, and fourth in gold. Number colleges 3, school system excellent, school age 6-21 years,

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COLORADO—(Continued).

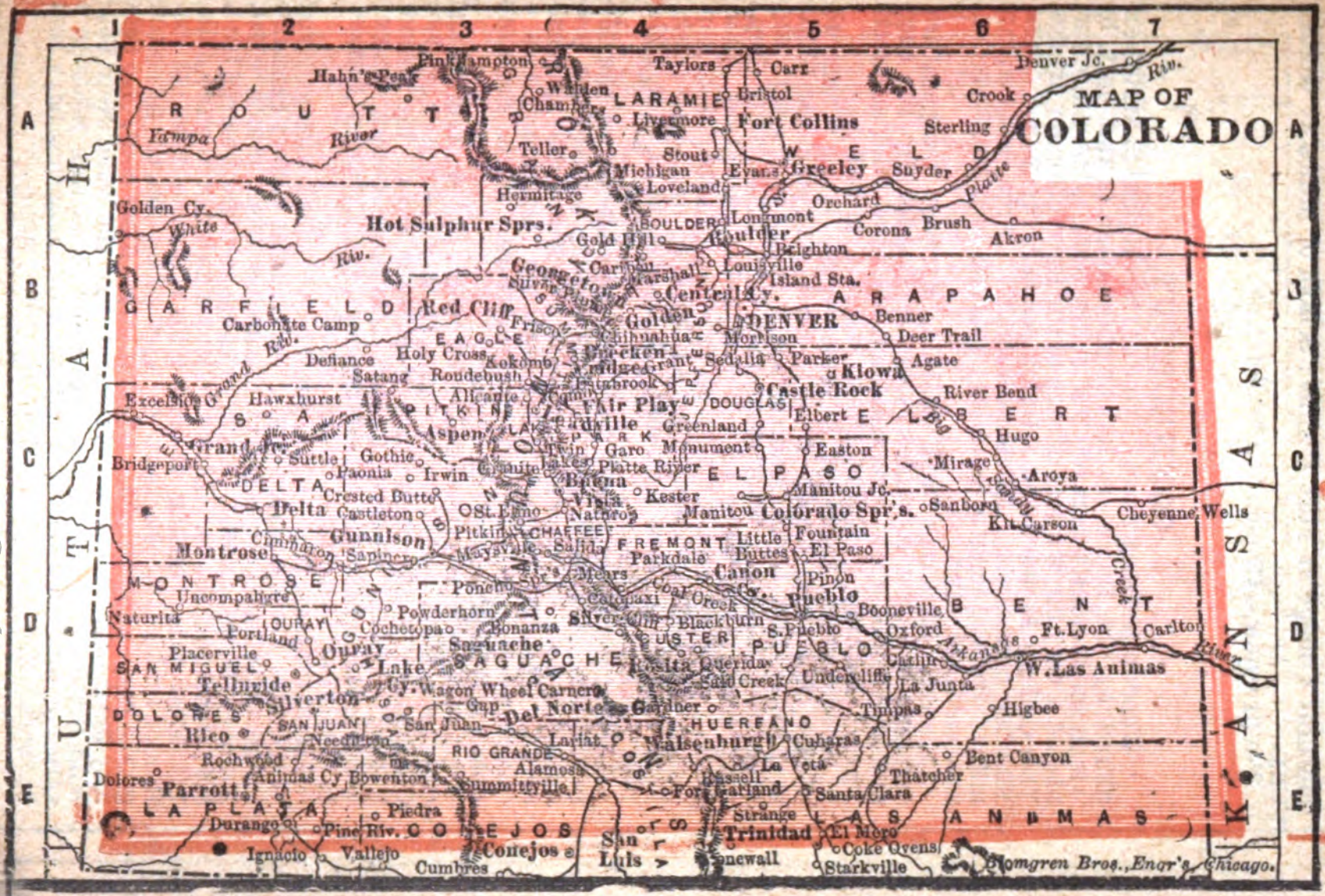
Legal interest 10 per cent., by contract any rate. Large reserves of school land which are very valuable. Length E. and W. 380 miles, width 280 miles. area 103,845 square miles, acres 66,460,800, three-fifths unsurveyed. Rocky mountains traverse State north and south with 3 ranges, having many peaks more than 13,000 feet high. Scenery grand beyond words. Mountains fairly clothed with pine and other trees. Mineral wealth inexhaustible. State ranks first in silver, fourth in gold. Iron, soda, coal, copper, lead, stone, mica, etc., exist in large deposits. Fine grazing grounds. Much rich soil along streams and wherever irrigation is possible. Cereals do very well. Corn, wheat, oats, hay staple crops. Cattle, sheep, and hog raising safe and profitable. Dairying pays, as does gardening. Timber resources moderate. The Garden of the Gods is the fanciful title of a little mountain valley lying four miles north-west of Colorado Springs. The road enters it through the "Beautiful Gate," which is a narrow passage-way between two lofty but narrow ledges of cliffs, which is still further narrowed by a rock pillar thirty feet high, standing nearly in the center. The garden consists of a tract of land somewhat less than 500 acres in extent, hemmed in by mountains on the west and north, bordered by ravines on the south, and on the east by a line of old red sandstone cliffs, which shut it in entirely from the plains. Its remarkable features are a number of isolated rocks, upheaved into perpendicular positions some of them 350 feet high. These rocks are mainly of a very soft, brilliantly red sandstone, though several ridges are of a white sandstone. The foothills in the vicinity are many of them capped by similar upheavals, while all about the main cliffs in the valley are numerous separate spire-like columns.

LEADING INDUSTRIES.—Mining, smelting ores, agriculture, grazing, etc.

COLLECTION AND EXEMPTION LAWS.—Exemptions—Unmarried persons—tools and animals used in trade; head of family—household effects, $100; tools, etc., $200; library and implements of professional men, $300; homestead, $2,000. Limitations of Actions—On contracts, express or implied, if accruing within the State, 6 years; if accruing without the State, 2 years; sealed instruments, judgments, and decrees accruing out of the State, 3 years. Revivor—Part payment or promise by all the obligators, part payment or promise by one not sufficient. Redemption of land sold on execution or foreclosure, 6 months by heir, and 9 months by judgment creditor; for taxes, 3 years. Justices' Jurisdiction—$300. Witness—Governed by rules of common law. Married Women—Real or personal property acquired at any time wife's separate estate, and controlled as if *femme sole*. Interest—10 per cent. Usury—no law.

CHIEF CITIES.—Denver, capital and metropolis, and contains assay office, pop. 106,670; Leadville, 11,159; Silver Cliffs, 5,040; Colorado Springs, 11,200. State University at Boulder; Agri-

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COLORADO—(Continued).

cultural College at Fort Collins; School of Mines at Golden City.

POPULATION.—Census of 1890.—412,198.

CONNECTICUT.

"Wooden Nutmeg State." One of the original 13 States explored by the Dutch settlers of Manhattan Island, 1615, by whom settlement was made 1632 at Hartford. The State furnished a very large quota of men to the Revolutionary armies. Yale College founded 1701. Union soldiers furnished, 55,864. Number counties 8. Miles railroad 994. Area, 4,845 square miles; average length, 86 miles; average breadth, 55 miles; sea-coast, 110 miles.

CLIMATE.—Moderate and healthy, average temperature, summer 72 deg. and winter 28 deg. Occasionally the thermometer sinks below zero, considerable snow falls, summers warm. Rainfall, including snow, about 47 inches.

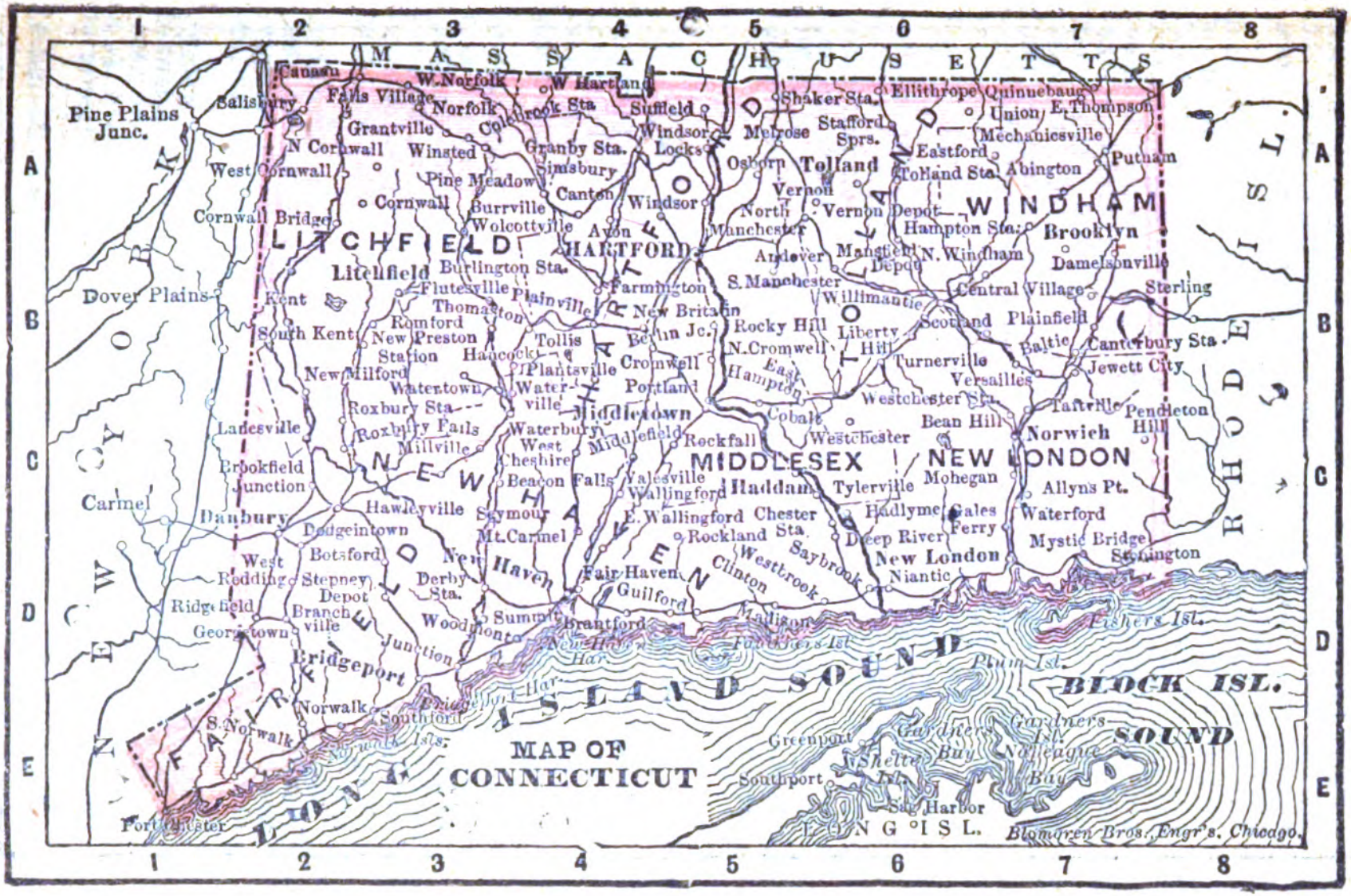
PRESIDENTIAL ELECTION RESULTS.—1824, Loose Constructionist (Rep.) maj. 5,609; 1828, Loose Constructionist (Rep.) maj. 9,381; 1832, Loose Constructionist (Rep.) maj. 6,486; 1836, Dem. maj. 768; 1840, Whig (Rep) maj. 6,131; 1844, Whig (Rep.) maj. 1,048; 1848, Whig (Rep.) plur. 3,268; 1852, Dem. plur. 2,892; 1856, Rep. maj. 5,105; 1860, Rep. maj. 10,238; 1864, Rep. maj. 2,406; 1868, Rep. maj. 3,043; 1872, Rep. maj. 4,348; 1876, Dem. maj. 1,712; 1880, Rep. maj. 1,788; 1884, Dem. plur. 1,274; 1888, Dem. plur. 336.

Legislature meets yearly on Wednesday after first Monday in January. Convicts and persons unable to read not permitted to vote. State elections yearly on same date as Presidential election. Elects 24 Senators, 249 Representatives, 4 Congressmen, and 6 Presidential electors. State Senators hold 2 and Representatives 1 year.

SALARIES OF STATE OFFICERS.—Governor, $2,000; Lieutenant Governor, $500; Secretary of State, $1,500; Treasurer, $1,500; Comptroller, $1,500; Secretary of State Board of Education, $3,000; Adjutant General, $1,200; Insurance Commissioner, $3,500; Three Railroad Commissioners, $3,000; Chief-Justice, $4,500; Four Associate-Justices, $4,000.

GEOGRAPHICAL, ETC.—Corn, oats, hay, wheat, tobacco, and vegetables are the staple crops. No valuable timber remains. Stone extensively quarried. Valuable iron mines exist. Number farms, 30,598. Average value per acre, cleared land, $29; woodland, $24.50. Latest reported dairy products—milk, 12,289,893 gals.; butter, $8,292,360 lbs.; cheese, 1,023,015 lbs. Ranks first in clocks, third in silk goods, fourth in cotton goods, eighth in tobacco. Legal interest 6 per cent. No penalty for usury. Surface less rugged than the other New England States. Mountain range terminates in this State in a series of hills. The coast is indented by numerous bays and harbors. Soil, except in valley, light and stony.

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CONNECTICUT—(Continued).

CHIEF INDUSTRIES.—Manufacture of hardware, clocks, silks, cotton, rubber, carpets, woolens, arms, sewing machines, and attachments, dairying, quarrying, agriculture, etc. Total number of different industries, 4,488.

COLLECTION AND EXEMPTION LAWS.—Exemptions—Personal property, selected, $200; no homestead exemption; library of any person, $500. Limitation of Actions—Open accounts and contracts not under seal, 6 years; instruments under seal and promissory notes not negotiable, 17 years; negotiable demand notes, overdue and dishonored, after 4 months. Redemption—Under foreclosure, at the discretion of court; tax sale, 12 months. Justices' Jurisdiction—$100. Witness—Party in interest and person convicted of crime may be. Stay of Execution—At discretion of court. Married Women—Property of wife, if married since April 20, 1877, separate estate, and controlled as if *femme sole*. Interest—Legal rate, 6 per cent.; by contract, any rate. Usury—No law.

CITIES.—Hartford, capital, and noted for banking and insurance business—pop., 1890, 53,182. New Haven, "City of Elms," seat of Yale College, pop. 85,981. Bridgeport, noted for manufacture of fire-arms and sewing machines, pop. 48,856. Waterbury, important manufacturing city, pop. 28,591. Fairfield, Middletown, New Haven, New London and Stonington are ports of entry.

POPULATION.—Census of 1890.—746,258.

NORTH AND SOUTH DAKOTA.

So called for a tribe of Indians of the same name. First permanent white settlement made by Lord Selkirk at Pembina, 1812; organized as a Territory, 1861; first Legislature at Yankton, March, 1862. Admitted as two States, North and South Dakota, on February 22, 1889.

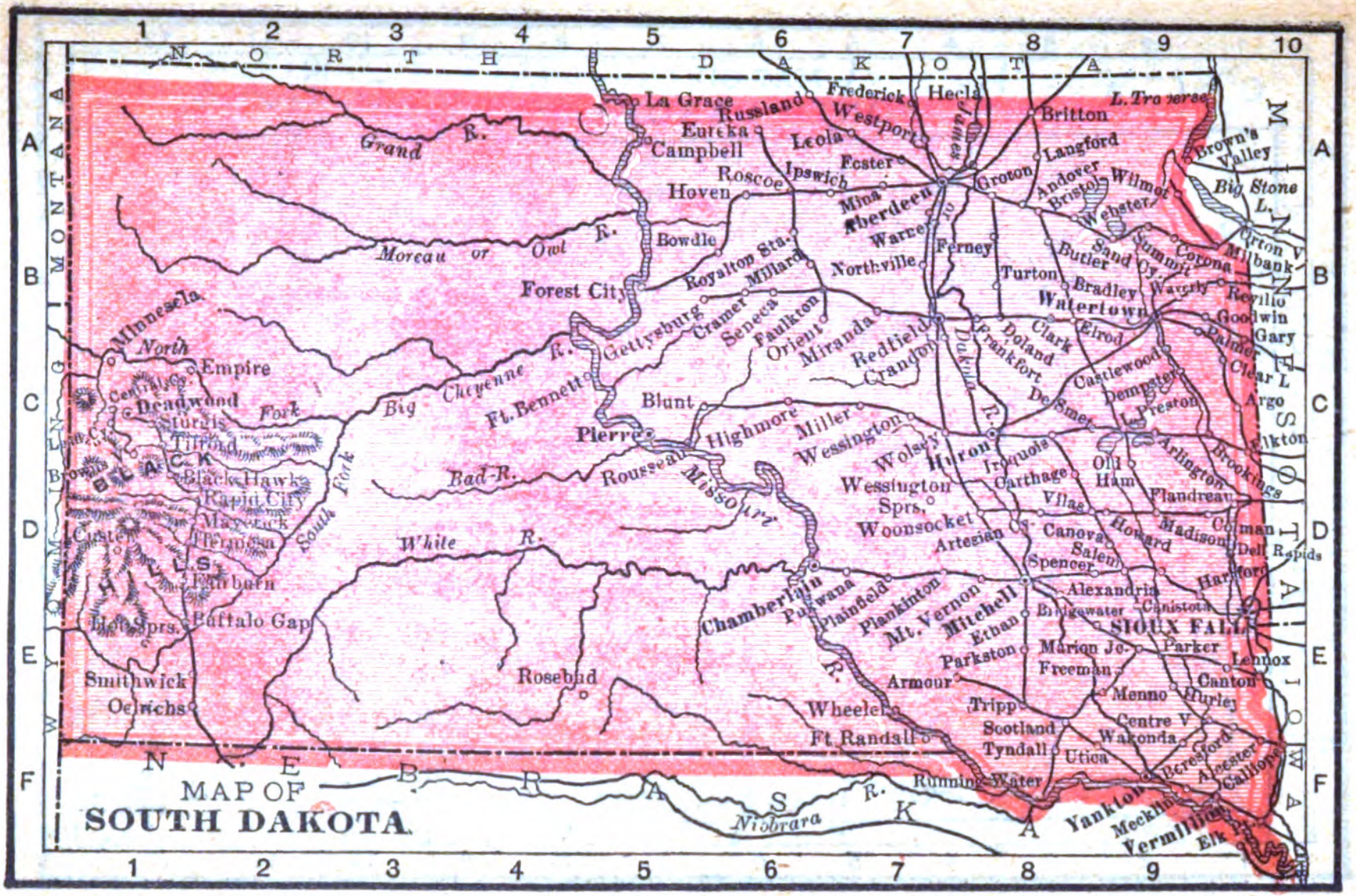
CLIMATE.—Temperature ranges from 32 deg. below zero to 100 deg. above. Averages, winter 4 to 20 deg., summer 65 to 75 deg. Winters at north severe, with heavy snow. Moderate at the south. Air clear, dry, and free from malaria. Cold not so penetrating as in moister climates. Springs late and summers of medium length. Rainfall 10 inches, chiefly in spring and summer.

All elections Tuesday after first Monday in November. Number Senators 12, Representatives 24, sessions biennial, in odd-numbered years, meeting second Tuesday in January, and holding 60 days. Terms of Senators and Representatives 2 years each. School endowments magnificent.

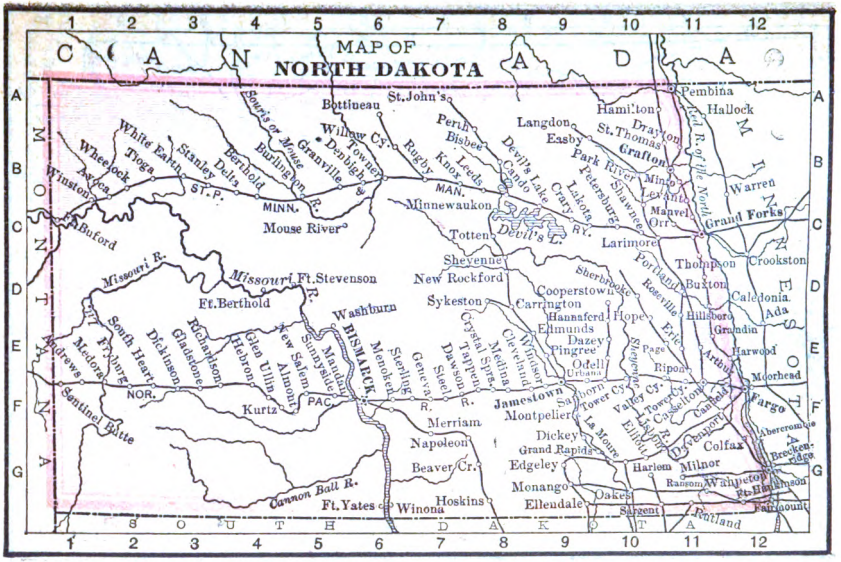
SALARIES OF STATE OFFICERS.—Governor, $2,600; Secretary, $1,800; Treasurer, $2,000; Auditor, $1,000; Superintendent of Public Institutions, $1,500; Chief-Justice, $3,000; Five Associate-Justices, $3,000; Senators and Representatives, $4 a day, mileage 20 cents; Surveyor General, $2,500; Collector of Internal Revenue, $2,750.

GEOGRAPHICAL, ETC.—Average length N. and S. 451 miles,

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MAP OF
NORTH DAKOTA
CANADA
MINNESOTA
SOUTH DAKOTA
Pembina
Hallock
Hamilton
Langdon
Drayton
St. Thomas
Grafton
Easby
Park River
Minto
Leeds
Warren
Manvel
Grand Forks
Larimore
Thompson
Crookston
Buxton
Caledonia
Ada
Hillsboro
Grandin
Harwood
Moorhead
Fargo
Abercrombie
Breckenridge
Colfax
Wahpeton
Ft. Ransom
Ft. Abercrombie
Bottineau
St. John's
Perth
Bisbee
Willow Cr.
Townner
Dunbigh
Rugby
Knox
Leeds
Devil's Lake
Cando
Crary
Lakota
Petersburg
Shaw
Minnewaukon
Devil's L.
Totten
Sheyenne
New Rockford
Sykeston
Carrington
Cooperstown
Sherbrooke
Portland
Roseville
Erie
Hope
Hannaford
Edmunds
Dazey
Pingree
Odell
Urbana
Page
Ripon
Arthur
Harwood
Stanley
Berthold
Burlington
Granville
Douglas
Wheelock
Tioga
White Earth
Ft. Buford
Winston
Ft. Berthold
Mouse River
Missouri R.
Ft. Stevenson
Washburn
BISMARCK
Menoken
Sterling
Genevra
Steele
Dawson
Crystal Spring
Tappen
Medina
Cleveland
Wilmont
Jamestown
Montpelier
Merriam
Napoleon
Dickey
Grand Rapids
Edgeley
Monango
Oakes
Ellendale
Sargent
Harlem
Milnor
Valley City
Tower City
Cayuga
Sanborn
La Moure
Ellendale
Dr. Chapman
Cardwell
Casselton
Portland
Hickson
Kathryn
Buffalo
Arrowwood
Ft. Hankinson
Wahpeton
Ransom
Sheridan
Wells
Foster
Eddy
Griggs
Nelson
Steele
Kidder
Stutsman
Barnes
Cass
Ransom
Richland
Sargent
Dickey
La Moure
Logan
McIntosh
Emmons
Burleigh
Morton
Grant
Sioux
Oliver
Mercer
Dunn
McKenzie
Billings
Golden Valley
Slope
Bowman
Adams
Hettinger
Stark
Williams
Mountrail
Ward
McHenry
Renville
Bottineau
Pierce
Rolette
Towner
Cavalier
Ramsey
Benson
Eddy
Foster
Wells
Sheridan
McLean
Sioux
Oliver
Mercer
Dunn
McKenzie
Billings
Golden Valley
Slope
Bowman
Adams
Hettinger
Stark
Williams
Mountrail
Ward
McHenry
Renville
Bottineau
Pierce
Rolette
Towner
Cavalier
Ramsey
Benson
Ft. Yates
Winona
Hoskins
Cannon Ball R.
Missouri R.
Sentinel Butte
Andrews
Medora
Ft. Lincoln
South Heart
Dickinson
Richardson
Gladstone
Glen Ullin
Hebron
New Salem
Almont
Sunnyside
Manning
Kurtz
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PAC.
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DAKOTA—(Continued.)

width 348 miles, area 149,112 square miles, 95,431,680 acres. The Missouri River traverses the Territory diagonally from N. W. to S. E., and is navigable. Indian reservations principally west of Missouri River, 42,000,000 acres, one-seventh good farming land. Surface high, level plain, 950 to 2,600 feet above the level of the sea, traversed by ranges of lofty hills, which at the S.W. reach an elevation of 7,000 feet in the Black Hills. Gold and silver extensively mined. Black Hills very rich in precious minerals. Ranks fourth in gold output. Good coal west of the Missouri. Not much developed as yet. Deposits of tin to be of great value exist. Lakes are numerous, especially in the north and east. Devil's Lake is semi-salt. Other large lakes. Soil is very rich and peculiarly suited to wheat, which is the staple crop. Corn, oats, grasses, and potatoes do well. Fruit not a good crop. Price of land $1.25 to $20 per acre (latter improved). Cattle, and especially sheep raising, favored and growing industries. Timber scarce, except along the streams and in some of the hills.

INDUSTRIES.—Almost entire laboring population engaged in agriculture and mining.

COLLECTION AND EXEMPTION LAWS.—Personal property, $1,500; homestead, 160 acres in country, or lot of 1 acre in city. Limitations of Actions—On contract or obligation, 6 years; on sealed instruments, judgment or decree of any court, and real actions, 20 years. Revivor—Part payment or acknowledgment in writing. Redemption—Land sold on execution or foreclosure, 1 year; for taxes, 2 years. Justices' Jurisdiction—$100. Witness—Party in interest may be. Stay of Execution—No law. Married Women—Real and personal property acquired at any time, wife's separate estate, and controlled as if unmarried; neither husband nor wife has any interest in the property of the other. Interest—Legal rate, 7 per cent.; by contract, 12 per cent. Usury—If taken or contracted for above 12 per cent., interest forfeited.

CHIEF CITIES.—Fargo, 5,613, the metropolis of Northern Dakota, an enterprising city, does a large business; has gas, electric lights, and street railways; Bismarck, capital, rapidly developing into an important business center, 2,260; Yankton, chief town of South Dakota, 4,700. Railway mileage rapidly increasing. The Northern Pacific has a mileage of 375, crossing the northern central portion from Fargo through Bismarck in an almost direct westerly line through the Territory.

POPULATION, 1890.—North Dakota, 182,719; South Dakota, 328,808.

DELAWARE.

One of the thirteen original States, named in honor of Lord Delaware, Governor of Virginia, who entered the bay 1610. First permanent settlement made by Swedes, who bought from Indians, near present city of Wilmington, 1638. First to ratify Federal constitution, 1787. Took vigorous part in the Revolution. Was a slave State. Slaves 1860, 2,000. Union

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DELAWARE—(Continued).

soldiers furnished 12,284, the biggest percentage of any State. Contains three counties. Miles of railroad 306.

CLIMATE.—Mild, tempered by sea breezes. Average temperature, winter 32 deg. to 148 deg.; summer, 72 to 78 deg. Rainfall 48 to 50 inches. At north health excellent. Some malaria on the lowlands bordering the swamps at the south.

PRESIDENTIAL ELECTION RESULTS.—1828, Loose Constructionist (Rep.) maj. 420; 1832, Loose Constructionist (Rep.) maj. 166; 1836, Whig (Rep.) maj. 583; 1840, Whig (Rep.) maj. 1,083; 1844, Whig (Rep.) maj. 282; 1848, Whig (Rep.) maj. 443; 1852, Dem. plur. 25; 1856, Dem. maj, 1,521; 1860, Dem. plur. 3,433; 1864, Dem. maj. 612; 1868, Dem. maj, 3,357; 1872, Rep. maj. 422; 1876, Dem. maj. 2,629; 1880, Dem. maj.1,023; 1884, Dem. plur. 423; 1888, Dem. plur. 3,441.

All elections Tuesday after first Monday in November. Number Senators 9, Representatives 21, Legislature meets in odd-numbered years first Tuesday in January, holds 21 days, term of Senators 4 years, of Rep esentatives 2 years, number electoral votes 3, number Congressmen 1. Idiots, insane, paupers, and criminals excluded from voting.

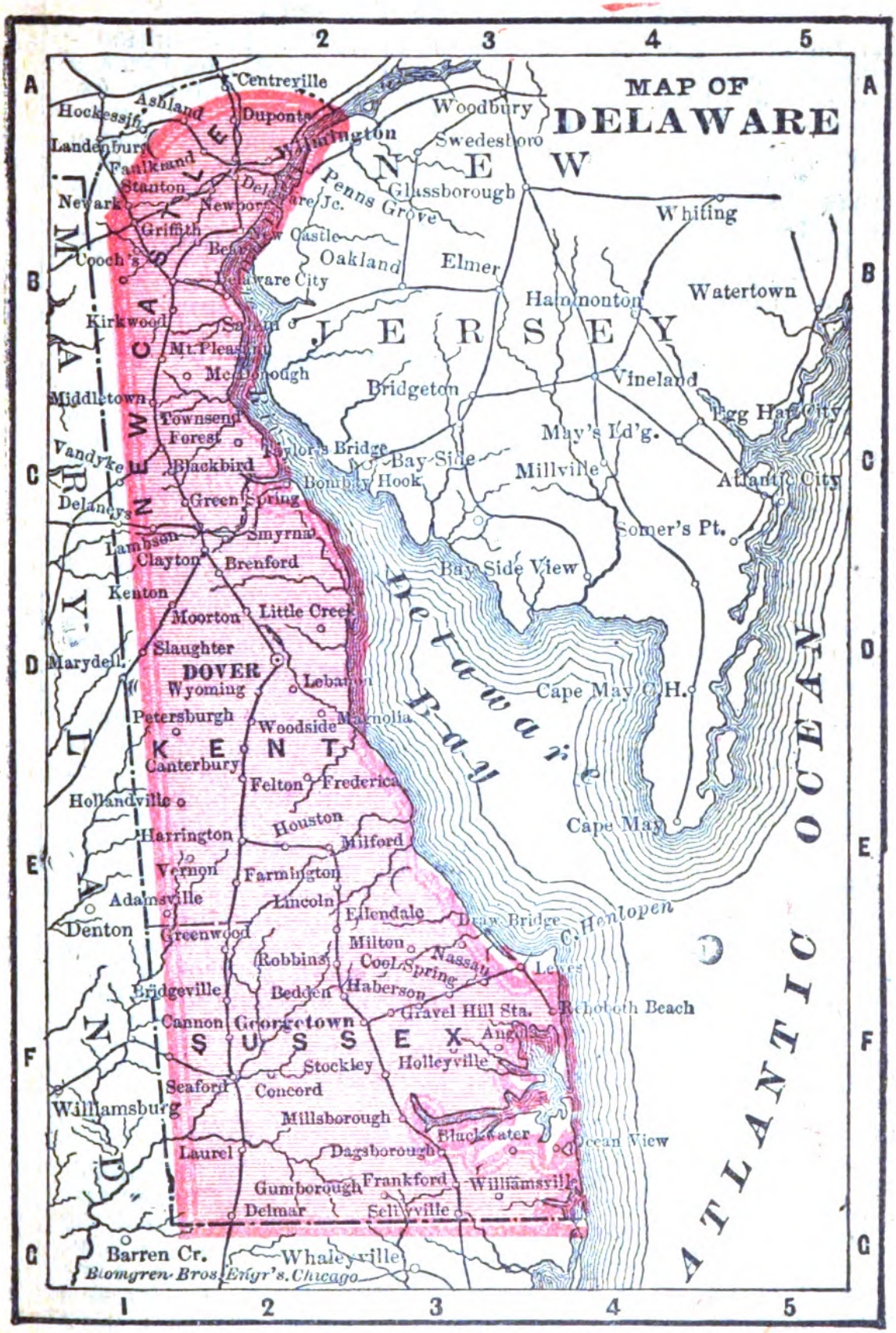
SALARIES OF STATE OFFICERS.—Gove nor, $2,000; Secretary of State, $1,000; Treasurer, $1,450; Auditor, $700; Adjutant General, $200; Attorney General, $2,000; Superintendent of Public Instruction, $1,500; State Librarian, $450; Chief-Justice, $2,500; Chancellor, $2,500; Three Associate-Justices, $2,200; Senators and Representatives, $3 per day and mileage.

GEOGRAPHICAL, ETC.—Length north and south nearly 100 miles, width 10 miles at north, 36 at south. Area 1,950 square miles, or 1,248,000 acres. Available area large. Northern portion rolling, but free from large hills. Iron is found, but is no longer worked. Scenery beautiful. Southern portion level and sandy, with frequent cypress marshes. Coast low and swampy, with lagoons separated from sea by sand-beaches. Colleges at Newark and Wilmington, school age 6-21, schools fair. Breakwater protecting Delaware Bay at Cape Henlopen, greatest work of its kind in America. cost the United States $2,127,400, and was over 40 years in course of construction. Streams flow into Chesapeake and Delaware bays and are small. Tide reaches to Wilmington. The soil is good and the state of cultivation superior. Cleared land averages $45 per acre, and woodland $40. Staple crops, corn, wheat, peaches, berries, garden vegetables, sweet potatoes.

INDUSTRIES.—Agriculture and kindred pursuits, manufacture of flour, lumber, cotton, iron, steel, leather, etc., shipbuilding, fishing, canning and preserving. Total number different industries, 750.

COLLECTION AND EXEMPTION LAWS.—Exemptions—Tools and implements for trade or business, $75; in addition thereto, to head of family $200; no homestead. Limitation of Actions Open accounts and contracts not in writing, 3 years; contracts in writing, 6 years, sealed instruments, judgments, decrees and real actions, 20 years. Revivor—Direct acknowl-

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DELAWARE—(Continued).

edgment or distinct admission of the debt. Redemption—None on property sold on execution or mortgage; for taxes, 2 years. Justices' Jurisdiction—$100. Witness—Interest excludes. Stay of Execution—In justice's court, on filing security 9 months; in court of record, 6 months. Married Women—Real and personal property acquired from any person other than husband, separate estate. Interest—6 per cent. Usury—Forfeits sum equal to money loaned.

CHIEF CITIES.—Wilmington, population, 61,437. Dover, capital. Newcastle, 6,000.

POPULATION.—Census of 1890, 168,493.

DISTRICT OF COLUMBIA.

Named for Columbus. Fixed as seat of U. S. Government 1790 by an act of Congress. Formed out of Washington County, Md. (64 square miles). Government removed to District 1800. Captured by British 1814, and capitol, executive mansion, and congressional mansion burned. Governed by Congress till 1871, when a legislative body of 33 was (11 appointed by the President and 22 elected) was created. Executive officers still appointed by President. Officers appointed are paid by the United States, those elected by the district. Citizens of District have no vote for national officers. Schools superior. Population, 1880, 177,638. Miles railroad 18. Surface made up of flats and hills. Similar in all features and products to Southern Maryland.

COLLECTION AND EXEMPTION LAWS.—Exemptions—For head of family; household furniture, $300; mechanics' tools and implements, $200; library and implements of professional men, $300; for farmer, necessary stock and implements, family pictures and library, $400; no homestead. Limitation of Actions—Open accounts and simple contracts, 3 years; bills, bonds, judgments or other specialties, 12 years. Revivor—No statute. Redemption—Land sold under execution, foreclosure, or for taxes, no provision for. Justices' Jurisdiction $100. Witness—Party in interest may be. Stay of Execution—On filing bond, time at discretion of court. Married Women—Real or personal property acquired at any time other than from husband, with separate estate. Interest—6 per cent.; by contract; in writing 10 per cent. Usury forfeits interest if above 6 per cent. on verbal, or above 10 per cent. on written contracts.

CITIES.—Washington (capital U. S.), population, 1890, 230,392; 1880, 147,293; 1870, 109,199; 1860, 75,080.

In the year 1846 a desire was expressed both by the inhabitants of the portion of the District west of the Potomac and the State of Virginia that that portion which included the city of Alexandria should be retroceded to Virginia. A resolution was passed in Congress July 9, 1846, consenting to the retrocession, upon condition of the approval of the citizens residing in that part of the District. On September 1 and 2

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DISTRICT OF COLUMBIA—(Continued).

of the same year a vote was taken, and the retrocession was desired by a vote of 763 in its favor and 222 against it. The President issued his proclamation ratifying the transfer Sept. 7, 1846. The present District, therefore, includes only the territory originally ceded by Maryland.

The District of Columbia is governed by a commission or board of regents consisting of three persons, who are appointed by the President and confirmed by the Senate. This board constitute the chief executive authority of the District and appoint and direct subordinate boards to attend to the general affairs of the District. These are the Boards of Health, Education, Police, Excise, Public Works, Fires, and Buildings, with the exception of the superior officer of the Board of Public Works, who is detailed by the President from the engineer corps of the army. Part of the members of the Board of Education are elected by the people of the District, and this is the only election held there. The District has no national election.

THE WASHINGTON MONUMENT.—The plan of a monument to General Washington was approved by Congress in a resolution passed less than a fortnight after his death, which occurred December 14, 1799. The monument was to be built by the United States, and it was at first proposed to bury the deceased hero in a vault at its base. Nothing was done, however, until, in 1833, the project was revived by an association of prominent persons, who raised a fund by subscription, and laid the corner-stone July 4, 1848. During the following eight years the shaft was carried to a height of 156 feet. Then work was suspended; at first from lack of funds, then because of the war, and finally because the foundations were believed to be insecure. For twenty years the unfinished work stood just as it had been left by the workmen, surmounted by a derrick, and surrounded by the unused blocks of marble and heaps of debris, a most unsightly pile, and the source of sincere mortification to patriotic Americans visiting the Capitol. Finally, in 1876, Congress was induced to undertake the completion of the monument. The first thing to be done was to rebuild and strengthen the base. This was successfully performed, and in August, 1880, the work of building the shaft was resumed. Congress appropriated $800,000 for the work, which covers the cost of the shaft. The shaft was finished August 9, 1884; the superstructure of the pyramid completed in December, 1884. The monument is built of crystal marble, from Maryland, and rests upon a foundation of Potomac gneiss 81 feet square at the base. The base of the shaft is 55 feet square on the outside and 15 feet thick. It is 500 feet high, and the pyramid which caps it is 55 feet in height, rendering the whole one of the highest structures in the world.

In 1855 Pope Pius IX sent a beautiful block of white marble to be used in the construction of the Washington Monument. This was the time when the Know-Nothing agitation was in progress, and great excitement prevailed against foreigners

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DISTRICT OF COLUMBIA—(Continued).

in general, and Roman Catholics in particular. One night a band of men carried away the Pope's gift, broke it into pieces, and threw it into the Potomac. The names of the perpetrators of this act were never known.

THE WHITE HOUSE AT WASHINGTON, D. C.—The White House at Washington, D. C., is 170 feet long by 86 feet wide. The largest apartment, known as the east-room, is 80 by 40 feet in dimension and 12 feet high. The adjoining blue-room, finished in blue and gold, is devoted to receptions, diplomatic and social. The green and red rooms, so called from their finishing, are each 30 by 20 feet. The rooms on the second floor are occupied by the executive office and the apartments of the President's family.

THE NATIONAL CAPITOL.—The south-east corner-stone of the Capitol was laid September 18, 1793, "by Brother George Washington, assisted by the Worshipful Masters and Free Masons of the surrounding cities, the military, and a large number of people." The north wing was ready for occupancy in 1880, the south wing in 1808; but both were partially destroyed by the British in 1814. The foundation of the main building was laid in 1818 (March 24), the restoration of the wings having been commenced three years earlier; and the whole was completed in 1827. July 4, 1851, the corner-stone of the south extension was laid by President Fillmore, and this was finished in 1857. The north extension was occupied by the Senate in 1859. The present dome, commenced in 1855, was completed eight years later, and December 12, 1863, the American flag floated from its summit. Thus far the cost of the entire building has been $13,000,000—main building, $3,000,000; dome, $1,000,000; extensions, $8,000,000; miscellaneous items, $1,000,000. The length of the entire building is 751 feet 4 inches; its greatest breadth, 324 feet; and it covers a little over 3½ acres. The distance from the ground to the top of the dome is 307½ feet; the diameter of the dome, 135½ feet.

THE WASHINGTON AQUEDUCT.—The Washington Aqueduct was founded in 1856, and has cost about $3,500,000. It collects the Potomac water by a line of stone dams at the Great Falls, and conducts it to Washington by an aqueduct sixteen miles in length, or eleven miles from the Great Falls of the Potomac to the distributing reservoir, and five miles from the latter to the capital. Its capacity is about 70,000,000 gallons per day. On the line of this work are eleven tunnels and six bridges, the chief of which is over Cabin John Creek, a stone structure 100 feet in height, and having a single span of 220 feet.

FLORIDA.

Discoverer landed on Easter Sunday, or "Flowery Easter;" hence the name. Settled by Spaniards at St. Augustine, 1565. Pensacola taken from England by General Jackson during war of 1812. Entire province ceded to United States 1819. Organized as a Territory, 1822; admitted as a State, 1845; se-

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FLORIDA—(Continued).

ceded 1861; re-admitted, 1868. Number counties, 39; miles of railroad, 1,324. Schools fair; school age 4-21.

CLIMATE.—Superb. No snow. Frosts rare at north, unknown at south. Temperature range 30 deg. to 100 deg., rarely above 90. Winter averages 59 deg., summer 81 deg. Breezes blow across from Gulf to Atlantic, and vice versa; temper the heat and keep air dry and clear. Average rainfall 55 inches, chiefly in summer.

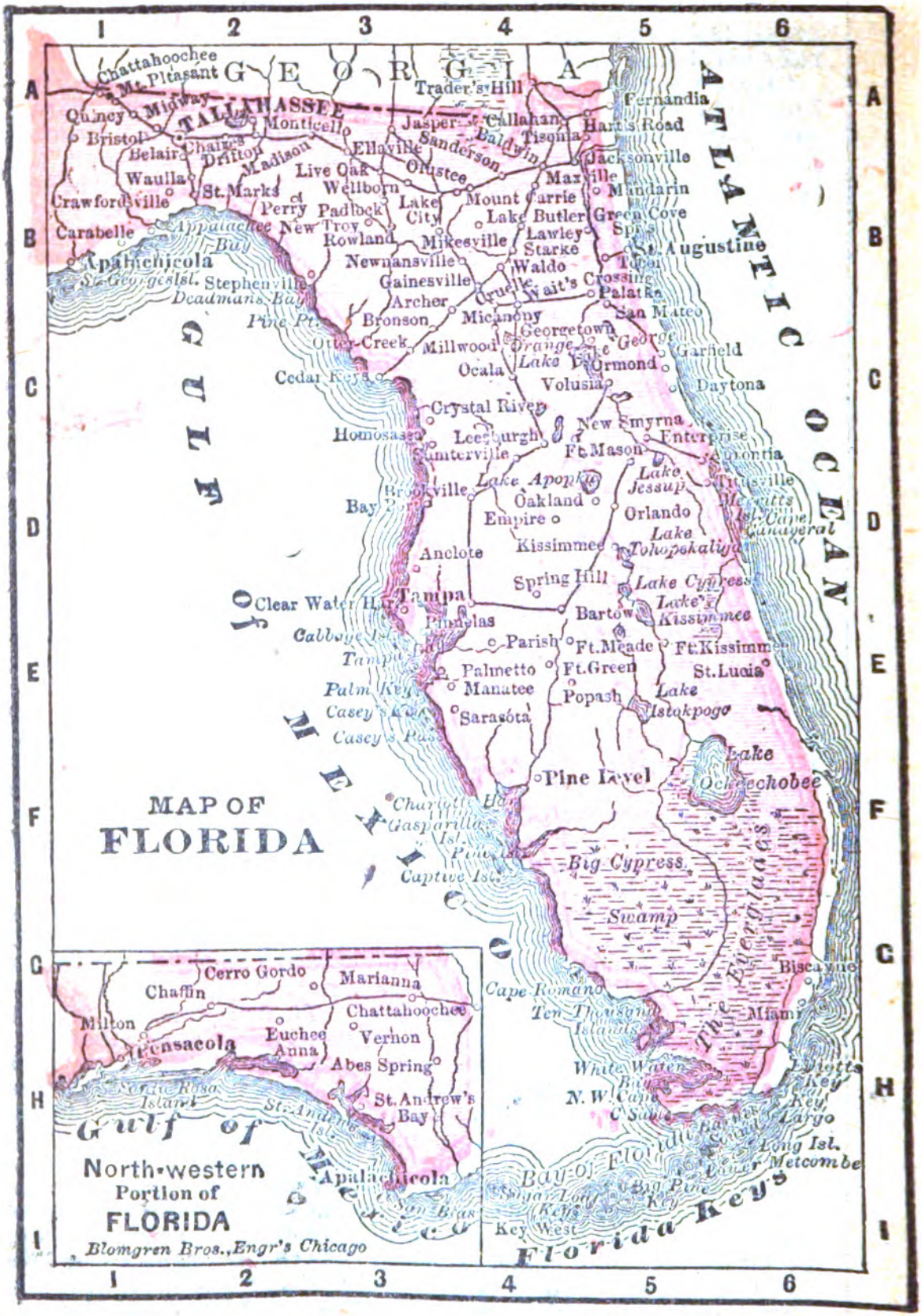
PRESIDENTIAL ELECTION RESULTS.—1848, Whig (Rep.) maj. 1,269; 1852, Dem. maj. 1 443; 1856, Dem. maj. 1,525; 1860, Dem. maj. 2,739; 1872, Rep. maj. 2,336; 1876, Rep. maj. 926; 1880, Dem. maj. 4,310; 1884, Dem. plur. 3,738; 1888, Dem. plur. 12,902.

State, Congressinal and Pressidential elections Tuesday after first Monday in November. Number Senators, 32; Representatives, 76; sessions of Legislature biennial, in odd-numbered years, meeting Tuesday after first Monday in January; limit of session, 60 days; term of Senators, 4 years; of Representatives, 2 years. Number electoral votes, 4; number voters, 61,699; colored, 27 489; native white, 30,351; foreign white, 3,859. Idiots, insane, criminals, betters on election, and duellists excluded from voting.

SALARIES OF STATE OFFICERS.—Governor, $3,500; Lieutenant-Governor, $500; Secretary of State, $2,000; Treasurer, $2,000; Comptroller, $2,000; Attorney General, $2,000; Superintendent of Public Instruction, $2 000; Adjutant General, $2,000; Land Commissioner, $1.200; Chief-Justice. $2,500.

GEOGRAPHICAL, ETC.—Area 59,268 square miles, 37,931,520 acres. Twenty-first State in size. State surrounded by sea except on north. Coast line over 1,200 miles. Good harbors rare, mostly on Gulf. Shores very low, frequently not two feet above tide water. Coral growth at south continues. Surface dotted with lakes. In the middle section are found tracts of great richness. At the south the soil, when dry or reclaimed, is inexhaustible. The northern section is a limestone formation, affording a fair soil. Four-fifths of Florida is in the Peninsula, which is about 350 miles north and south, and 105 miles east and west. Remainder is the narrow strip along the Gulf, 342 miles east and west, and 10 to 50 miles north and south. Much forest remains. Timber chiefly pine, of moderate size, s free from undergrowth. Game abounds. Poultry and stock raising are successful. Cleared land averages $12, woodland $3, swamp $1, and school land $1 25 per acre. The staple products are corn (most valuable crop), sugar, molasses, rice, cotton, oats, tobacco, vegetables of all kinds, peaches, oranges, and all tropical and semi-tropical fruits, cocoanuts, lumber, fish, oysters, etc. Florida annually produces $30,000 worth of honey, $40,000 worth of strawberries, $50,000 worth of hogs, $30,000 worth of sheep, $350,000 worth of beef, $750,000 worth of sponges, $350,000 worth of fish and oysters, $3,500,000 worth of oranges, lemons, limes and pineapples; $65,000 worth of sugar and molasses,

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FLORIDA—(Continued).

$200,000 worth of rice, $500,000 worth of cedar, $20,000,000 of other lumber, and $400,000 worth of cotton—a total of nearly $30,000,000.

PRINCIPAL INDUSTRIES.—Almost the entire laboring population engaged in agriculture and fruit growing. Fishing for fish and oysters and lumbering largely followed.

COLLECTION AND EXEMPTION LAWS.—Exemptions—For head of family, personal property, $1,000, additional $1,000 for debts incurred prior to May, 1865; 160 acres of land in county, or ½ acre in city. Limitation of Actions—Open accounts and verbal contracts, 3 years; contracts in writing not under seal, 5 years; judgments or decrees of any court, and instruments under seal, 20 years. Revivor—Only by new promise in writing. Redemption—Under execution or foreclosure, no statute for taxes, 1 year. Justices' Jurisdiction—$100. Witness—Party in interest may be. Stay of Execution—No statute. Married Women—All property of wife, acquired at any time, separate estate. In absence of contract, 8 per cent.; under contract, no limit. Usury—No statute.

CHIEF CITIES.—Key West, good harbor and naval station, pop. 18,058; Jacksonville, pop. 17,139; St. Augustine, oldest town in United States. Tallahassee, pop. 2,933, capital Pensacola, pop. 11,751.

POPULATION.—Census of 1890.—391,422. In 1860 there were 61,745 slaves in the state of Florida.

GEORGIA.

Farthest South and latest settled of the thirteen original States. Named in honor of George II; settled by English at Savannah, 1733. Number counties 137, miles of railroad 2,687. Originally a part of South Carolina and claimed by Spain. Severe wars with Creeks and Cherokees settled by treaties 1790 and 1791. Seceded January, 1861; re-admitted December, 1870. Active in the Revolution, suffering badly from devastation by English. Many hard fought battles during civil war, including Atlanta, etc.

CLIMATE.—At the north mild and extremely healthy, hot in the lowlands. Range of temperature 30 deg. to 105 deg. Average, winter 49 deg., summer 82 deg. Rainfall averages 55 inches.

PRESIDENTIAL ELECTION RESULTS.—1836, Whig (Rep.) maj. 2,804; 1840, Whig (Rep.) maj. 8,328; 1844, Dem. maj. 2,071; 1848, Whig (Rep.) maj. 2,742; 1852, Dem. maj. 18,045; 1856, Dem. maj. 14,350; 1860, Dem. plur. 9,003; 1868, Dem. maj. 45,588; 1872, Dem. maj. 9,806; 1876, Dem. maj. 79,642; 1880, Dem. maj. 4,199; 1884, Dem. plur. 46,961; 1888, Dem. plur. 60,029.

State elections first Wednesday in October. Number Senators 44, Representatives 175, sessions biennial in even-numbered years, meeting first Wednesday in November; hold

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GEORGIA—(Continued).

forty days. Terms of Senators and Representatives 2 years each. Number electoral votes 12, number Congressmen 10. Idiots, insane, criminals, and non-taxpayers excluded from voting.

SALARIES OF STATE OFFICERS.—Governor, $3,000; Secretary of State, $2,000; Treasurer, $2,000; Comptroller General, $2,000; Attorney General, $2,000; Commissioner Agriculture, $2,500; Chief-Justice, $2,500; Associate-Justices, $2,500; Senators and Representatives, $4 per day and mileage; three District Judges, $3,500; Deputy Superintendent Railway Service, $2,500; Collectors Internal Revenue, $2,500 to $3,125; twenty-four Deputy Collectors, $300 to $1,700; Customs Surveyor, $1,000 and fees.

Number colleges 7. State University at Athens organized 1801. Public schools excellent; school age 6–18. No State license law governing commercial travelers, but Atlanta, Athens, Augusta, and Savannah exact a tax.

GEOGRAPHICAL, ETC.—Greatest length north and south 321 miles, greatest width 255 miles, area 58,980 square miles, or 37,747,200 acres, exclusive of water area. Surface diversified. In the south-east is the Okefinokee swamp, 150 miles in circumference. At thenorth are the Blue Ridge, Etowah and other mountains. Coast irregular and indented, shore line about 500 miles, three seaports. Mountain streams are rapid, with picturesque cataracts and immense basins. The chief falls are the Tallulah, in Habersham County; Toccoa, in the Tugalo, 180 feet high; Towaliga, in Monroe County, and the Amicolah, which descend 406 feet in a quarter mile. Coal, iron, marble exist. Cleared land averages $8 and woodland $5.50 per acre. One-fourth area heavily timbered with yellow pine of great value for lumber, turpentine, etc. Corn, wheat, oats, cotton, rice, sweet potatoes, tobacco, sugar, and melons, chief agricultural staples. Fruit, both temperate and semi-tropical, thrives. Stock flourishes. Wool-growing important. Gold is extensively mined. Some statistics carefully compiled in 1880 bearing on the progress and prosperity of Georgia are of the most gratifying character. It has shown that the value of property has increased from $225,093,419 in 1879 to $327,863,331 in 1889, being an increase of $102,769,912 in ten years. This is independent of the railroad property, which has increased in the same time from $9,836,129 to $29,364,127, an increase of $19,437,998, or 212 per cent., making an aggregate increase of all taxable property in the State in ten years of $122,207,910, or 53 per cent. The percentage of increase in the chief items is also an interesting study. In ten years the value of improved land has increased 29 per cent., city and town property 73, live stock 22, farming implements 69, cotton manufactories 393, mining investments 102, banking stock 61, and iron works 91 per cent.

PRINCIPAL INDUSTRIES.—Three-fourths population engaged in agriculture. Remainder in various pursuits. Manufactur-

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GEORGIA—(Continued.)

ing important. Raw materials becoming more abundant and cheap.

COLLECTION AND EXEMPTION LAWS.—Exemptions—To head of family or guardian of minor children, personalty, $1,000; homestead, $2,000. Limitation of Actions—Open accounts and contracts not in writing, 4 years; contracts in writing not under seal, 6 years; bonds and instruments under seal, 20 years; foreign judgments, 5 years. Revivor—New promise in writing, or payment on note indorsed by debtor. Redemption—Only when sold for taxes, then 1 year. Justices' Jurisdiction—$100. Witness—Party in interest may be. Stay of Execution—In Justice's court, less than $30, 40 days; over $30, 60 days; superior court, 60 days. Married women—All property of wife acquired before or after marriage, her separate estate. Interest—7 per cent.; under written contract, 12 per cent. Usury—Above 12 per cent. forfeits the interest and the excess charged.

CHIEF CITIES.—Savannah, pop. 41,762; Brunswick, pop. 8,403, and St. Mary's, pop. 600, ports of entry. Columbus contains the largest cotton mill in the South, pop. 18,650. Atlanta, capital, pop. 65,515.

POPULATION.—Census of 1890.—1,837,353.

IDAHO.

White population previous to 1850, mainly trappers, prospectors, and missionaries. Permanent settlement began with discovery of gold in Oro Fino Creek 1860. Organized as Territory 1863. Number counties 14, school age 5–21 years.

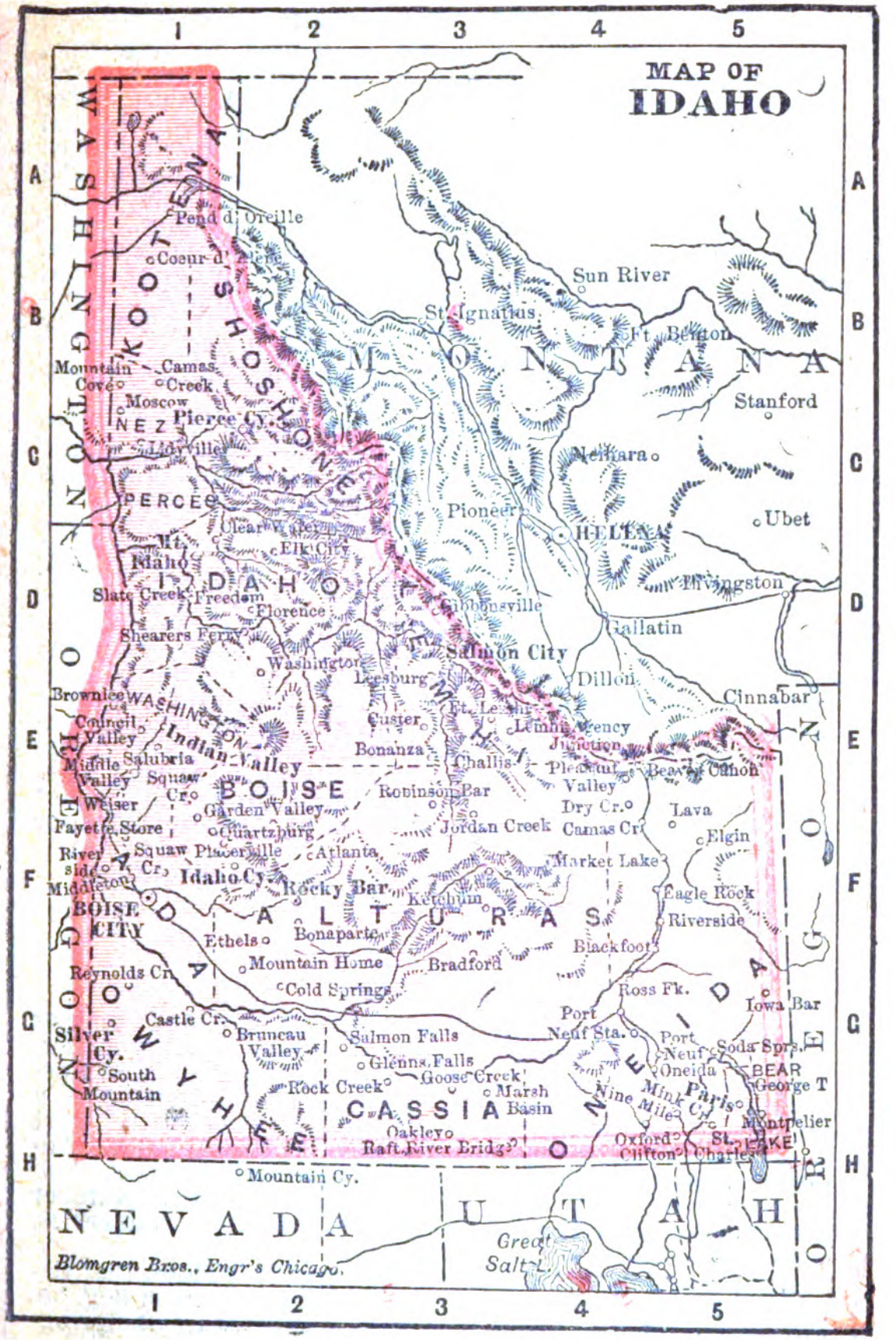
CLIMATE.—Severe, with heavy snows in mountains, on plains less severe, but cold and bracing. In the valleys it is milder, with moderate snow-fall. Summers cool and pleasant. Temperature averages 20 deg. in winter, 70 deg. in summer. Rainfall small in the Rocky and Bitter Root mountains, and very light at the north and west.

All elections Tuesday after first Monday in November. Number Senators 12, Representatives 24, sessions of Legislature biennial, in even-numbered years, meeting second Monday in December, holds 60 days; terms of Senators and Representatives, 2 years each. Voters 14,795, native white 7,332, foreign white 4,338, colored 3,126.

SALARIES OF STATE OFFICERS.—Governor, $2,600; Secretary, $1,800; Treasurer, $1,000; Auditor, $1,800; Librarian, $250; Chief-Justice, $3,000; two Associate-Justices, $3,000; Senators and Representatives, $4 a day and 20 cents mileage; two District Attorneys, $250 and fees; Collector of Internal Revenue, $2,250; three Deputy Collectors, $1,400 to $1,600; Assayer, $2,000.

GEOGRAPHICAL, ETC. — Length 140 to 490 miles, width 45 to 286 miles. Area 84,290 square miles, 53,944,600 acres. Surface table land and mountains. About one-twelfth is arable and one-tenth more grazing land

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IDAHO—(Continued).

One-third barren, but may be reclaimed by irrigation. Many lakes are found, as well as numerous water powers. Forests estimated at 9,000,000 acres. The soil, where water can be had, is fertile. Wheat, oats, rye, barley, potatoes, and hay are good crops, and dairying and stock-raising profitable. Manufactures, chiefly producton of flour and lumber, and smelting of ores. Gold is found in quartz veins in Idaho, Boise, and Alturas counties, silver in Owyhee County. Some of the mines very rich. Wood River district on southern slope of Salmon River mountains, at headwaters of Wood or Malad River, gives promise of valuable mining operations, chiefly placers. Coal in vicinity of Boise City. Territory ranks sixth in gold and silver; miles railroad, 811.

LEADING INDUSTRIES.—Mining, grazing, agriculture, smelting and lumbering.

COLLECTION AND EXEMPTION LAWS.—Exemptions—Office furniture and library, $100; necessary household furniture, professional library, homestead, $5,000. Limitation of Actions—Contracts not in writing, 4 years; instruments in writing, 5 years; judgment and decrees, 6 years. Revivor—Only by instrument in writing, part payment does not. Redemption—Land sold on execution or foreclosure, 6 months; 60 days additional for each subsequent redemption. Justices' Jurisdiction—$100. Stay of Execution—Only on appeal, with surety. Married Women—All property, real or personal, acquired before marriage, and acquired after marriage by gift, bequest, devise, or descent, wife's separate property; all other property acquired after marriage, common property; wife must record inventory of separate property. Interest—10 per cent.; by contract in writing, 2 per cent. per month. Usury—Forfeits three times the amount paid, and penalty, $300 fine or 7 months' imprisonment, or both.

CHIEF CITIES.—Boise City (capital), Florence, Silver City.

POPULATION.—Census of 1890.—84,385.

ILLINOIS.

Name derived from Illini tribe of Indians, meaning Superior Men. First coal mined in America at Ottawa; quality moderately fair. First permanent settlement by French at Kaskaskia 1682; organized as a Territory 1809; admitted as a State 1818. Called "Prairie State" and "Sucker State." Fort Dearborn (Chicago) massacre, 1812, by Pottawatomies. Admitted as State 1818. Capital moved to Springfield 1836. Soldiers in Mexican war 5,000. Union soldiers 259,092. Number counties 102. School system excellent; number colleges 28, school age 6-21.

CLIMATE.—Healthful as a rule; subject to sudden and violent changes at north. Temperature ranges from 30 deg. below zero to 101 deg. above. Average temperature at Spring-

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ILLINOIS—(Continued).

field 30 deg. winter: 78 deg. summer. At Chicago 25 deg. winter; 72 deg. summer. At Cairo 38 deg. winter; 80 deg. summer. Frost comes last of September. Vegetation begins in April Rainfall 37 inches.

PRESIDENTIAL ELECTION RESULTS.—1824, Dem. plur. 359; 1828, Dem. maj. 5,182; 1832, Dem. maj. 8,718; 1836, Dem. maj. 3,114; 1840, Dem. maj. 1,790; 1844, Dem. maj. 8,822; 1848, Dem. plur. 3,253; 1852, Dem. maj. 5,697; 1856, Dem. plur. 9,159; 1860, Rep. maj. 5,629; 1864, Rep. maj. 30,766; 1868, Rep. maj. 51,160; 1872, Rep. maj. 53,948; 1876, Rep. maj. 1,971; 1880, Rep. maj. 14,358; 1884, Rep. plur. 25,122; 1888, Rep. plur. 22,042.

All elections Tuesday after first Monday in November. Number Senators 51, Representatives 153; sessions biennial, in odd-numbered years, meeting first Monday in January. Term of Senators 4 years, Representatives 2 years. Number electoral votes 22, Congressmen 20, number voters 796,847; convicts excluded from voting.

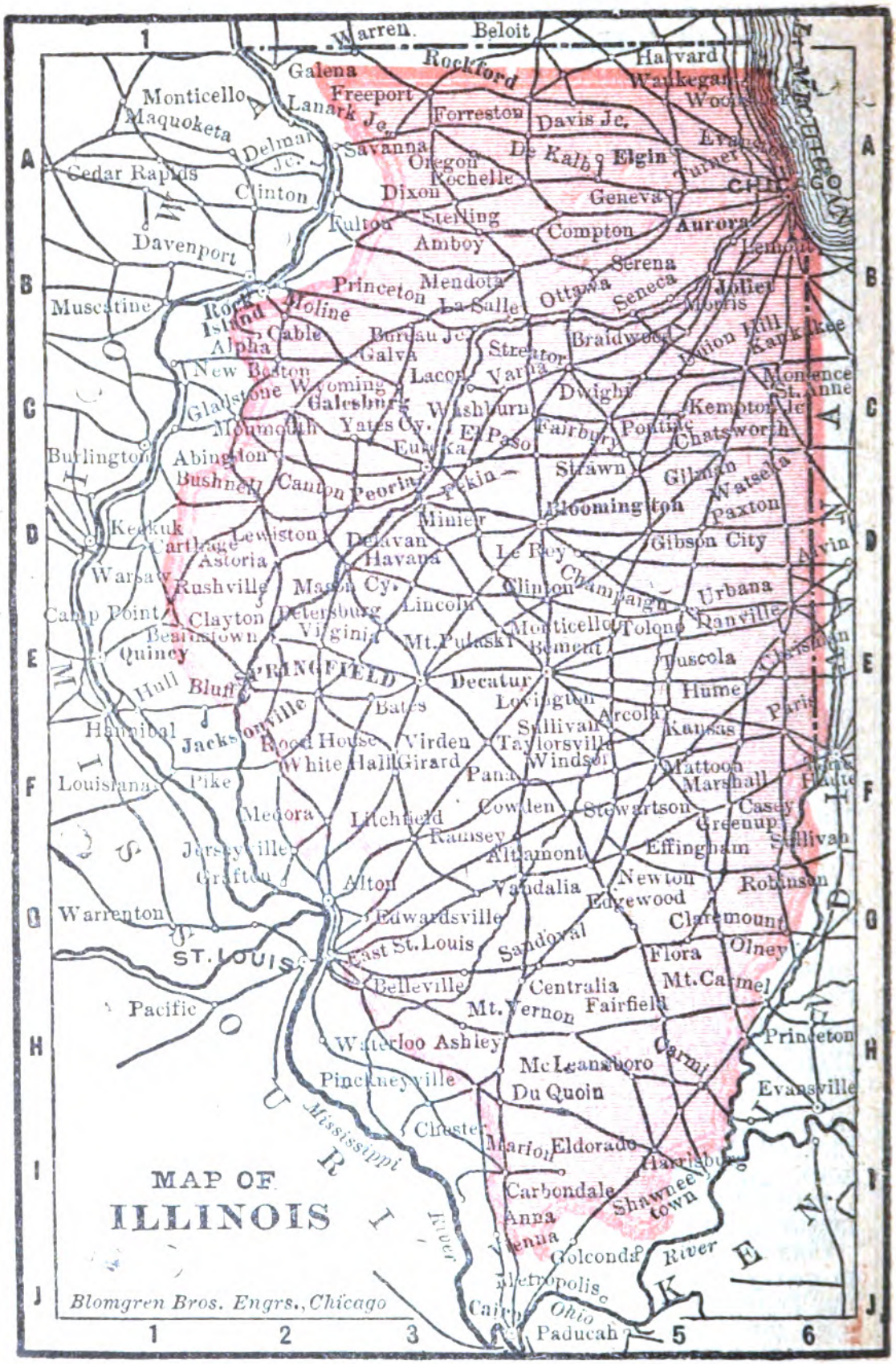
SALARIES OF STATE OFFICERS.—Governor, $6,000; Secretary of State, $3,500; Treasurer, $3,500; Auditor, $3,500; Attorney General, $3,500; Chief-Justice, $5,000; Senators and Representatives, $5 per day, mileage 10c. and $50; two District Judges, $4,000 and 3,500; Pension Agent, $4,000; eight Collectors of Internal Revenue, $2,125 to $4,500; Collector of Customs, $7,000; Auditor, $2,200; Appraiser, $3,000; Examiner, $2,000.

GEOGRAPHICAL, ETC.—Extreme length north and south 386 miles, extreme width 218 miles. Average elevation 482 feet, elevation at Cairo 340 feet; highest point 1,140 feet in north-west portion. Area 56,000 square miles, 35,840,000 acres, miles of navigable waterways 4,100. Frontage on Lake Michigan 110 miles. Fruits and grapes do well at south. Yield of all crops cultivated large. Coal area two-thirds of State. Among first agricultural States of Union. Staple crops, corn, wheat, oats, rye, barley, broomcorn, vegetables, hay, potatoes, etc. Considerable forest of hardwood at south on hills and in bottoms. Superior quality limestone on Fox and Desplaines Rivers: lead most important mineral. Galena in center of richest diggings in north-west. Rich salt wells in Saline and Gallatin Counties, 75 gallons brine making 50 lbs. salt. State ranks first in corn, wheat, oats, meat-packing, lumber traffic, malt and distilled liquors, and miles railway; second in rye, coal, agricultural implements, soap, and hogs: fourth in hay, potatoes, iron and steel, mules, milch cows, and other cattle. Cleared land averages $28, and woodland or raw prairie $18 per acre. Area 55,410 square miles.

INDUSTRIES.—Agriculture, mining, stock-raising, and manufacturing of all kinds.

COLLECTION AND EXEMPTION LAWS.—Exemptions—Personal property of every person, $100, and in addition for head of family residing with the same, $300; but property so exempt does not include money or wages due the debtor; no exemption allowed when the debt is for the wages of laborer or servant; homestead farm or lot and buildings thereon, $1,000.

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ILLINOIS—(Continued).

Limitation of Actions—On unwritten contracts, 5 years; bonds, notes, and judgments recovered in foreign states, 10 years; real actions and judgments recovered in this State, 20 years. Revivor—Part payment or new promise. Redemption—Lands sold on execution or foreclosure, 1 year, for defendant; and by judgment creditor after 12 and within 15 months; no redemption under foreclosure by advertisement, under power of sale in mortgage or trust deed; for taxes, 1 year. Justices' Jurisdiction—$200. Witness—Party in interest may be. Stay of Execution—No law. Married Women—Hold and control personal and real property, obtained by descent, gift, or purchase, as if unmarried interest—Legal rate, 6 per cent.; by contract in writing 8. Usury forfeits entire interest; corporations cannot interpose this defense.

CHIEF CITIES.—Chicago, pop. 1,098,576; Peoria, pop. 40,758; Quincy, pop. 31,478; Springfield (capital), pop. 24,872.

POPULATION.—Census of 1890.—3,826,351.

INDIANA.

First settled by Canadian voyagers at Vincennes, 1702; organized as a Territory, 1800; admitted 1816. Sixth State admitted. Soldiers furnished in Mexican war 5,600. Union soldiers 196,363. Number counties 92. Number colleges 15, State University at Bloomington, medical school at Indianapolis, university at Notre Dame, flourishing common-school system; school age 6-21. Miles railroad 5,534.

CLIMATE.—Changeable in winter, but seldom severe; winds from north and west; summers moderately long, and sometimes hot; temperature averges winter 34 deg., summer 78 deg. Trees blossom in March. Rainfall 40 inches. Health excellent. Malaria rapidly disappearing from bottoms before proper drainage.

PRESIDENTIAL ELECTION RESULTS.—1824, Dem. plur. 2,028; 1828, Dem. maj. 5,185; 1832, Dem. maj. 16,000; 1836, Whig (Rep.) maj. 8,801; 1840, Whig (Rep.) maj. 13,607; 1844, Dem. maj. 208; 1848, Dem. plur. 4,838; 1852. Dem. maj. 7,510; 1856, Dem. maj. 1,909; 1860, Rep. maj. 5,923; 1864, Rep. maj. 20,189; 1868, Rep. maj. 9,568; 1872, Rep. maj. 21,098; 1876, Dem. plur. 5,515; 1880, Rep. plur. 6,641; 1884, Dem. plur. 6,527; 1888, Rep. plur. 2,348.

All elections Tuesday after first Monday in November. Number Senators 50, Representatives 100, sessions of Legislature biennial, in odd-numbered years, meet Thursday after first Monday, holds 60 days. Term of Senators 4 years, of Representatives 2 years. Number electoral votes 15; number Congressmen 13; number voters 498,437. Fraudulent voters and bribers excluded from voting.

SALARIES OF STATE OFFICERS.—Governor, $5,000; Lieutenant Governor, $8 a day; Secretary of State, $2,000; Treasurer,

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INDIANA—(Continued).

$3,000; Auditor, $1,500; Attorney General, $2,500; Superintendent Public Instruction, $2,500; Secretary Board Agriculture, $1,200; Librarian, $1,200; five Judges, $4,000; Senators and Representatives, $6 a day and 20c. per mile; District Judge, $3,500; Pension Agent, $4,000; six Collectors Internal Revenue, $2,375 to $4,500; Surveyor Customs, $1,000 and fees.

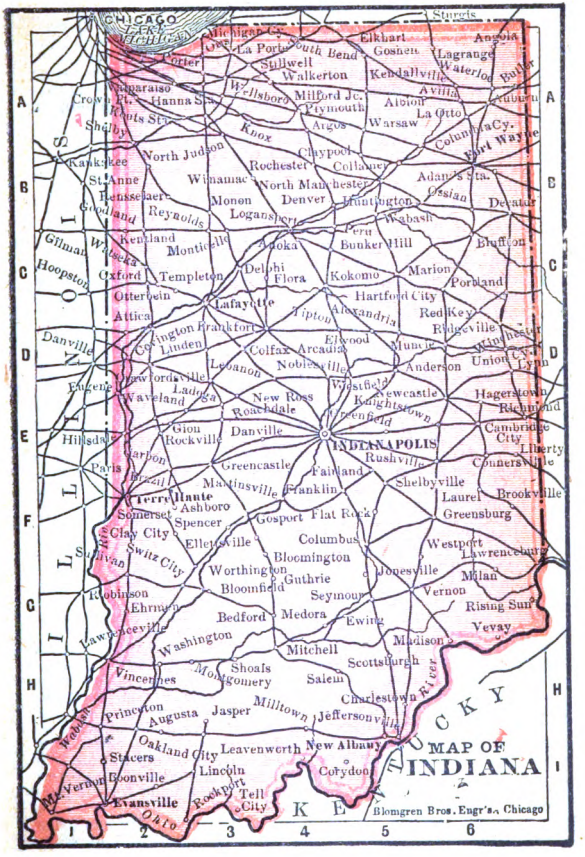
GEOGRAPHICAL, ETC.—Extreme length north and south 275 miles, width averages 150 miles, area 35,910 square miles, 22,982,400 acres. Surface sometimes hilly. No mountains. Hills 200 to 400 feet above the surrounding country. Frontage on Lake Michigan 43 miles. State highly favored for agriculture and manufacturing. Ranks second in wheat, fourth in corn, hogs, and agricultural implements; fifth in coal. Cattle, hogs, sheep, horses, etc., are most successfully raised. Corn, wheat, oats, staple crops. River bottoms wide and unsurpassed in fertility, highlands when level, rich, black, or sandy soil. All crops and fruits of the temperate zone do well both in yield and quality. Timber still abundant at south, but in scattered tracts. Coal fields in south-western portion of State over 7,000 square miles, on much of which are three workable veins. Kinds of coal, block, cannel, and ordinary bituminous, cokes well, superior for gas. Chances for making homes, comfort and advantages considered, not excelled elsewhere. Iron ore is found. Building stones varied and of unsurpassed quality, including the famous Bedford stone. Supply unlimited. Land is cheap, cleared averaging $18, and woodland $14 per acre. In rich section to south-west cleared land $15, woodland $10 to $12. The discovery of natural gas in Indiana has largely increased its importance as a manufacturing center, also its population. Just how well the field is being cultivated appears from the following table:

Co.	Mines.	Miners.	Co.	Mines.	Miners.
Clay	34	2,466	Perry	16	332
Daviess	17	540	Parke	17	628
Dubois	11	55	Pike	17	367
Fountain	17	394	Sullivan	13	29
Greene	8	144	Spencer	8	29
Gibson	3	5	Vigo	15	570
Knox	3	86	Vermillion	5	152
Martin	3	15	Vanderburg	5	245
Owen	7	115	Warrick	16	213
Total				215	6,502

INDUSTRIES.—Agriculture, mining, and manufacturing.

COLLECTION AND EXEMPTION LAWS.—Exemptions—To resident householder, real or personal property, $600; no homestead. Limitation of Actions—Open accounts and contracts not in writing, 6 years; actions not limited by statute, 15 years; written contracts, judgments of courts of record and real actions, 20 years. Revivor—Part payment or new promise in writing. Redemption—Of lands sold on execution, 1 year;

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INDIANA—(Continued).

for taxes, 2 years. Justices' Jurisdiction—$200. Witness—Party in interest may be, and each party may compel the other to testify. Stay of Execution—On $6 to over $100, 30 to 180 days, on filing freehold securities. Married Women—Hold their real and personal property absolutely as their separate estate. Interest—Legal rate, 6 per cent.; by agreement in writing 8. Usury forfeits the excess above 8 per cent.

CHIEF CITIES.—Indianapolis (capital), contains deaf and dumb, blind, and insane asylums, pop. 107,445, Terre Haute, 31,000; Evansville, 50,647; Fort Wayne, 35,349; Michigan City, lake port.

POPULATION.—Census of 1890.—2,192,404.

INDIAN TERRITORY.

Portion of great Louisiana purchase. Set apart for peaceful tribes. Organized 1834, no territorial government. Government in hands of tribes. Also contains Oklahoma and public land strip. Each tribe manages its own internal affairs. Most of the tribes governed by chiefs. Whites can hold land only by marrying an Indian. Miles of railroad, 353. All land held in common, and any Indian may cultivate as much as he wants, but one-quarter mile must intervene between farms. Each tribe elects officers, legislatures, and courts, and criminals are punished as in the States. No laws for collections of debt. Oklahoma is the name of a tract of land in the northern part of Indian Territory. It contains between 5,000,000 and 6,000,000 acres of Government land, and is bounded as follows: on the west by the Cheyenne and Arapahoe reservations, on the south by the Chickasaw reservations, on the east by those of the Fox and Pottawatomie Indians, and on the north by what is known as Cherokee strip, fifty-seven miles in width, which separates the Oklahoma district from the southern border of Kansas. This Oklahoma tract was ceded to the United States by the Creeks and Seminoles in 1866, and by the terms of the cession it was distinctly stated that the land was given "in compliance with the desire of the United States to locate other Indians and freedmen thereon," and it was stipulated that it was to be "used as homes for such other civilized Indians as the United States may choose to settle thereon." The name is of Indian derivation. The opening of Oklahoma (1889) was signalized by a rush of settlers unparalleled in the history of the country. Thousands were camped along the line of the Territory for weeks, awaiting the day when whites were to be allowed to acquire homesteads, and the railroads running to the border had passengers hanging on to the cars in every imaginable way. School system excellent, pupils educated and supported by the tribes, half entire revenue being set aside for the purpose. Three colleges, 200 schools.

CLIMATE.—Mild in winter, warm in summer. Temperature averages 41 deg. winter, 80 deg. summer. Rainfall, at east,

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MAP OF
INDIAN TERRITORY
PUBLIC LANDS
North Fork
CHEROKEE OUTLET
Camp Supply
Osage Spring
Cottonwood
Sheridan's Roost
Buffalo Spring
Canadian River
Cimarron River
Washita
North Fork Red River
Elm Fork Red River
South Fork Red River
Red River
Hopkins
Kaw Agency
Osage Agency
Ponca
Coody's Bluff
Arkansas
Coffeyville
Russel Creek
CHEROKEE
Blue Jacket
Vinita
Prairie City
Chelsea
Adair
White Water
NATION
Pryor Creek
Hildebrands
Claremore Mills
Chouteau
Catoosa
Tulsa
Fairview
Concharty
Ft. Gibson
OSAGES
KANSAS
NEZ PERCES
PONCAS
OTTOES
MISSOURIES
OKLAHOMA COUNTRY
SAC & FOX
CREEK NATION
TAHLEQUAH
Webber's Falls
Muscogee
Okmulgee
Oak-la-ha
Briartown
Cache
Oklahoma
Arapahoe Agency
Council Grove
Kickapoo Town
Fort Reno
Oklahoma City
Silver City
Shawnee Town
Negro Settlements
Seminole Agency
Hillabee
Ft. Holmes
S. Canadian
Red Oak
Mc Allister
Ft. Cobb
Wichita Agency
KIOWAS
Caddo Settlement
Delaware Id.
WICHITAS
WAICOMIES
Wagoza
SEMINOLES
PEORIAS
White Bead Hill
CHOCTAW
Cherokee Town
Kiowa Spring Station
Limestone Gap
Stonewall
Kiowa
Comanche
Agency
Fort Sill
Pauls Valley
CHICKASAW
Ft Arbuckle
Lehigh
Atoka
Wadeville
Tushkahoma
COMANCHES
AND
APACHES
Healdton
Tishomingo
NATION
Caney
Caddo
Ft Washita
Goodland
Lukfata
Baldwin
Watkins
Lebanon
Armstrong
Academy
Kuli Inla
Red River
TEXAS
Gainesville
Sherman
Clarksville
Blomgren Bros., Engr's, Chicago.

INDIAN TERRITORY—(Continued).

50 inches, center 36, far west 22. Health as good as anywhere in Union.

INDIAN AGENCIES.—Arapahoe—Agent, $900. Cheyenne—Agent, $2,200; Physician, $1,200. Kaw—Superintendent, $1,600; Physician, $1,200. Kiowa and Comanche—Agent, $1,000; Physician, $1,000. Oakland—Superintendent, $1,000; three Teachers, $600. Osage—Agent, $1,600; Physician, $1,200. Otoe—Agent, $1,500; Physician, $1,000. Pawnee—Clerk, $1,200; Physician, $1,000. Ponca—Superintendent, $1,200; Clerk, $720. Quapaw—Agent, $1,500; Physician, $1,200. Sac and Fox—Agent, $1,200; two Physicians, $1,000.

GEOGRAPHICAL, ETC.—Extreme length east and west 470 miles, average length 320 miles, width 210 miles, area 69,991 miles, 44,154,240 acres. Surface vast rolling plain, sloping eastward. Valleys timbered heavily with hard woods. Corn, cotton, rice, wheat, rye, potatoes, are staples. Grazing interests large. Coal is found, but extent unknown. Fur-bearing animals numerous. South of Canadian River prairies very fertile. Valleys rich and productive throughout Territory, grass rich and heavy almost everywhere. Cut down to form States and Territories, leaving but 64,690 square miles, or 41,401,600 acres; nearly 26,000,000 acres being Indian reservations.

LEADING INDUSTRIES.—Agriculture and grazing.

CHIEF CITIES.—Tahlequah, capital of Cherokees, Tishomingo, capital of Chickasaws, Tushkahoma, of Choctaws, Muscogee, of Creeks, Pawhuska, of Osages, Seminole Agency, of Seminoles, Pawnee Agency, of Pawnees, Kiowa and Comanche Agency, of Kiowas and Comanches.

POPULATION.—119,000; Cherokees 20,000, Choctaws 16,500, Creeks 14,500, Chickasaws 7,000, Seminoles 2,500, Osages 2,400, Cheyennes 3,298, Arapahoes 2,676, Kiowas 1,120, Pawnees 1,438, Comanches 1,475. Two-fifths of entire population can read.

IOWA.

"Hawkeye State." Name is of Indian origin, and means "The Beautiful Land." Settled first by Dubuque, 1788, a French Canadian, for whom that city is named. Part of the Louisiana purchase; merged into Missouri Territory, 1812; into Michigan, 1834; into Wisconsin, 1836. First settled miners of lead. Active immigration begun 1833. Iowa Territory organized July 4, 1838. Admitted as State 1846. Union soldiers furnished, 76,242. Number counties 99, miles of railroad 8,320. State has adopted prohibition. Number colleges 19, school age 5-21. School system admirable, endowment liberal.

CLIMATE.—Subject to extremes. Winter severe, with sharp north and west winds; summers pleasant. Temperature averages, summer 72 deg., winter 23 deg.; ranges from 10 deg. below to 99 deg. above zero. Rainfall 42 inches. Wheat harvest in August.

PRESIDENTIAL ELECTION RESULTS.—1848, Dem. plur. 1,009;

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IOWA—(Continued).

1852, Dem. maj. 303; 1856, Rep. plur. 7,784; 1860, Rep. maj. 12,487; 1864, Rep. maj. 39,479; 1868, Rep. maj. 46,359; 1872, Rep. maj. 58,149; 1876, Rep. maj. 50,191; 1880, Rep. maj. 45,732; 1884, Rep. plur. 19,796; 1888, Rep. plur. 31,721.

State elections annual, Tuesday after second Monday in October, excepting years of presidential elections, when all elections occur together. Number Senators 50, Representatives 100, sessions of Legislature biennial, in even-numbered years, meeting second Monday in January. Term of Senators 4 years, of Representatives 2 years. Number electoral votes 13, Congressmen 11, number voters 416,658. Idiots, insane, and criminals excluded from voting.

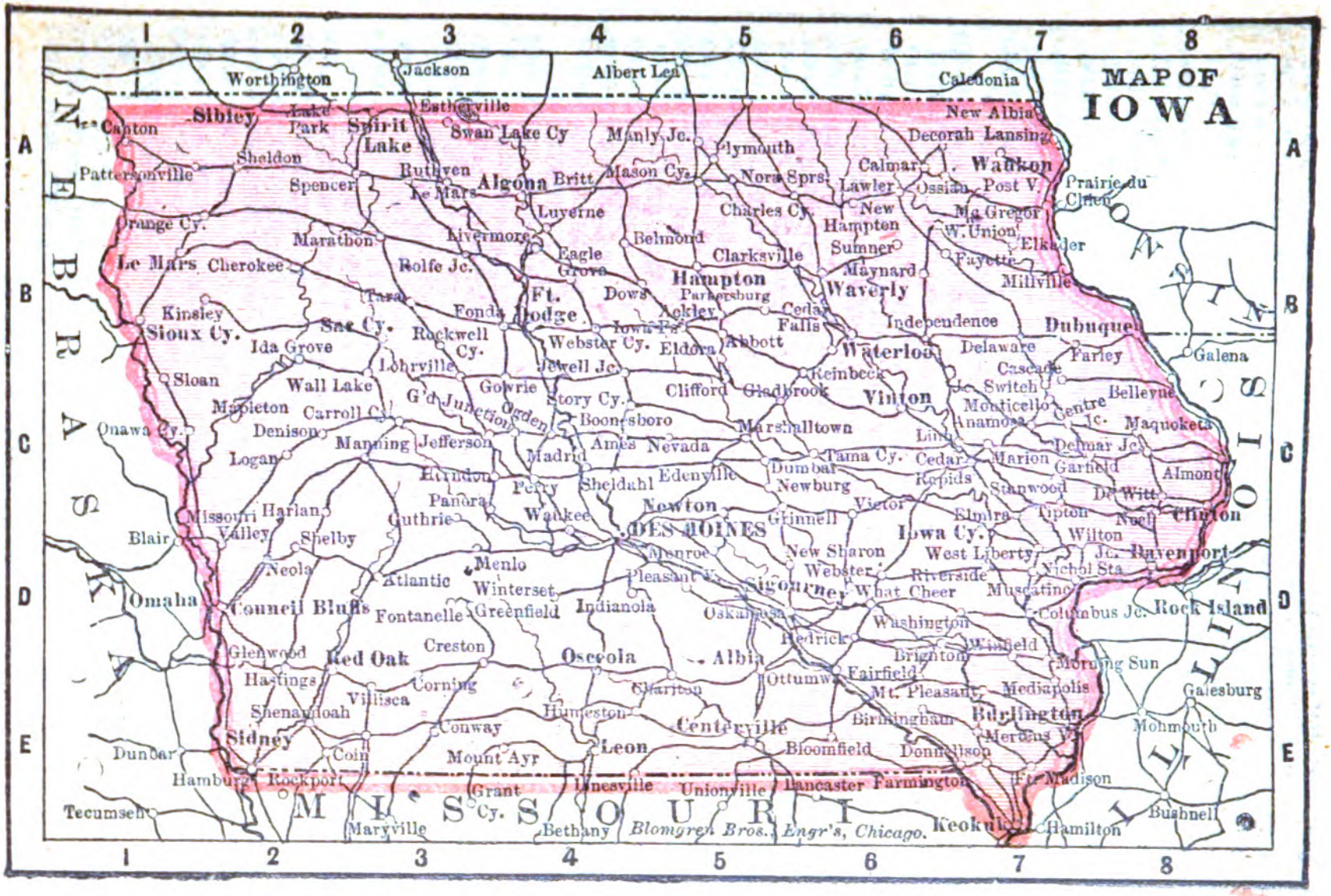
SALARIES OF STATE OFFICERS.—Governor, $3,000; Lieutenant Governor, $1,100; Secretary of State, $2,200; Treasurer, $2,200; Auditor, $2,200; Attorney General $1,500 and $5 a day; Superintendent Public Instruction, $2,200; three Railroad Commissioners, $3,000; Librarian, $1,500; Chief-Justice, $4,000; four Associate Justices, $4,000; Senators and Representatives, $550 per year; two District Judges, $3,500; Pension Agent, $4,000; four Collectors Internal Revenue, $2,500 to $4,500.

GEOGRAPHICAL, ETC.—Extreme length east and west 298 miles, width 208 miles, area 55,470 square miles, 35,500,800 acres. Surface almost an unbroken prairie, without mountains and with very few low hills. Natural meadows everywhere and water abundant. Many small lakes at north. Highest point, Spirit Lake, 1,600 feet above the sea. Coal area fair. Other minerals unimportant. Manufacturing active. Improved land averages $20; unimproved, including railroad and government domains, $12.50. State ranks first in hogs, second in milch cows, oxen and other cattle, corn, hay, and oats; third in horses; fifth in barley and miles of railway. Soil superior. Corn, wheat, oats, potatoes, hay, barley, sorghum, rye, staples. Apples unsurpassed in United States; pears, plums, cherries, grapes, and berries are excellent crops. Cattle and other stock interests large and thrifty. Dairying attractive. Forest area small—scarcely equal to home requirements.

LEADING INDUSTRIES.—Agriculture, stock-raising, and manufacturing.

COLLECTION AND EXEMPTION LAWS.—Exemptions—Tools, instruments, libraries, necessary team, etc., of mechanic, farmer, teacher, or professional man; homestead to head of family, 40 acres in country and ½ acre in city, including buildings, without limit as to value. Limitation of Actions—Unwritten contracts, 5 years; written instruments and real actions, 10 years; on judgments of any court of record, 20 years. Revivor—Admission that the debt is unpaid, or new promise to pay in writing. Redemption of lands sold on execution or foreclosure, 1 year, except where there has been a stay of execution or an appeal; for taxes, 3 years. Justices' Jurisdiction—$100; by consent of parties, $300. Witness—Party in interest may be. Stay of Execution—With freehold

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MAP OF
IOWA
Worthington
Jackson
Albert Lea
Caledonia
Sibley
Lake Park
Spirit Lake
Estherville
Swan Lake Cy
Manly Jc.
Plymouth
New Albin
Decorah
Lansing
Canton
Sheldon
Pattersonville
Spencer
Ruthven
Algona
Britt
Mason Cy.
Nora Spgs.
Calmar
Lawler
Ossian
Post V.
Waukon
Prairie du Chien
Le Mars
Orange Cy.
Marathon
Rivermore
Luverne
Charles Cy.
New Hampton
Ma Gregor
W. Union
Elkader
Fayette
Millville
Cherokee
Rolfe Jc.
Eagle Grove
Belmond
Clarksville
Sumner
Maynard
Waverly
Tara
Fonda
Ft. Dodge
Dows
Parkersburg
Hampton
Ackley
Cedar Falls
Independence
Dubuque
Kinsley
Sioux Cy.
Ida Grove
Sac Cy.
Rockwell Cy.
Webster Cy.
Iowa Falls
Eldora
Abbott
Waterloo
Delaware
Farley
Galena
Sloan
Lohrville
Jewell Jc.
Reinbeck
Cascade
Wall Lake
Goldfield
Story Cy.
Clifford
Gladbrook
Vinton
Jc. Switch
Monticello
Belleyne
Maquoketa
Onawa Cy.
Carroll Cy.
Denison
Boonesboro
Marshalltown
Anamosa
Centre Jc.
Manning
Jefferson
Ames
Nevada
Lisbon
Delmar Jc.
Logan
Madrid
Tama Cy.
Cedar Rapids
Marion
Garfield
Almond
Harrison
Perry
Sheldahl
Edenville
Dumbar
Newburg
Stanwood
De Witt
Missouri Valley
Harlan
Pandora
Guthrie
Waukee
Newton
Victor
Grinnell
Elmira
Tipton
Clinton
Blair
Shelby
DES MOINES
Iowa Cy.
Wilton
Monroe
New Sharon
West Liberty
Jc. Davenport
Neola
Menlo
Webster
Riverside
Nichol Sta.
Atlantic
Winterset
Pleasant Vy.
Sigourney
What Cheer
Muscatine
Omaha
Council Bluffs
Fontanelle
Greenfield
Indianola
Oskaloosa
Columbus Jc.
Rock Island
Washington
Glenwood
Red Oak
Creston
Osceola
Albia
Hedrick
Winfield
Brighton
Morning Sun
Hastings
Corning
Villisca
Ottumwa
Fairfield
Mediapolis
Galesburg
Mt. Pleasant
Shenandoah
Humeston
Centerville
Birmingham
Burlington
Mohmouth
Conway
Sidney
Coin
Leon
Bloomfield
Donnellson
Merdus Vy.
Dunbar
Mount Ayr
Hamburg
Rockport
Grant Cy.
Lineville
Unionville
Lancaster
Farmington
Ft. Madison
Tecumseh
Maryville
Bethany
Keokuk
Hamilton
Bushnell
NEBRASKA
MISSOURI
ILLINOIS
Blomgren Bros. Engr's, Chicago.

IOWA—(Continued).

sureties, $100, 3 months; over $100, 6 months; no stay after an appeal, and no appeal after a stay. Married women may own real or personal property acquired by descent, gift, or purchase, and control the same as if *femme sole*. Interest—Legal rate, 6 per cent.; by agreement in writing, 10. Usury—Contract for above 10 per cent. forfeits 10 per cent. on amount of contract.

CHIEF CITIES.—Des Moines, metropolis and capital, pop. 50,067. Pop. of Dubuque, 30,147; of Davenport, 25,161; of Burlington, 26,000; of Council Bluffs, 21,388. Keokuk, Burlington and Dubuque are United States ports of delivery

POPULATION.—Census of 1890.—1,911,896.

KANSAS.

Name Indian, means "Smoky water." Called the "Garden State." Visited by Spaniards 1541, and by French 1719. Part of Louisiana purchase, and afterward of Indian Territory. Organized as a Territory 1854. Admitted as a State January, 1861. Law known as "Missouri Compromise," forbidding slavery in States repealed, and question of slavery left to the territory. At first it was decided for slavery. Constitution prohibiting slavery adopted July, 1859. Union soldiers furnished, 20,149. Number colleges 8, number school-houses over 8,000, school age 5-21 years, school system magnificent. Endowment immense. Number counties 95, miles railroad 5,300, first railroad built 1864, 40 miles long.

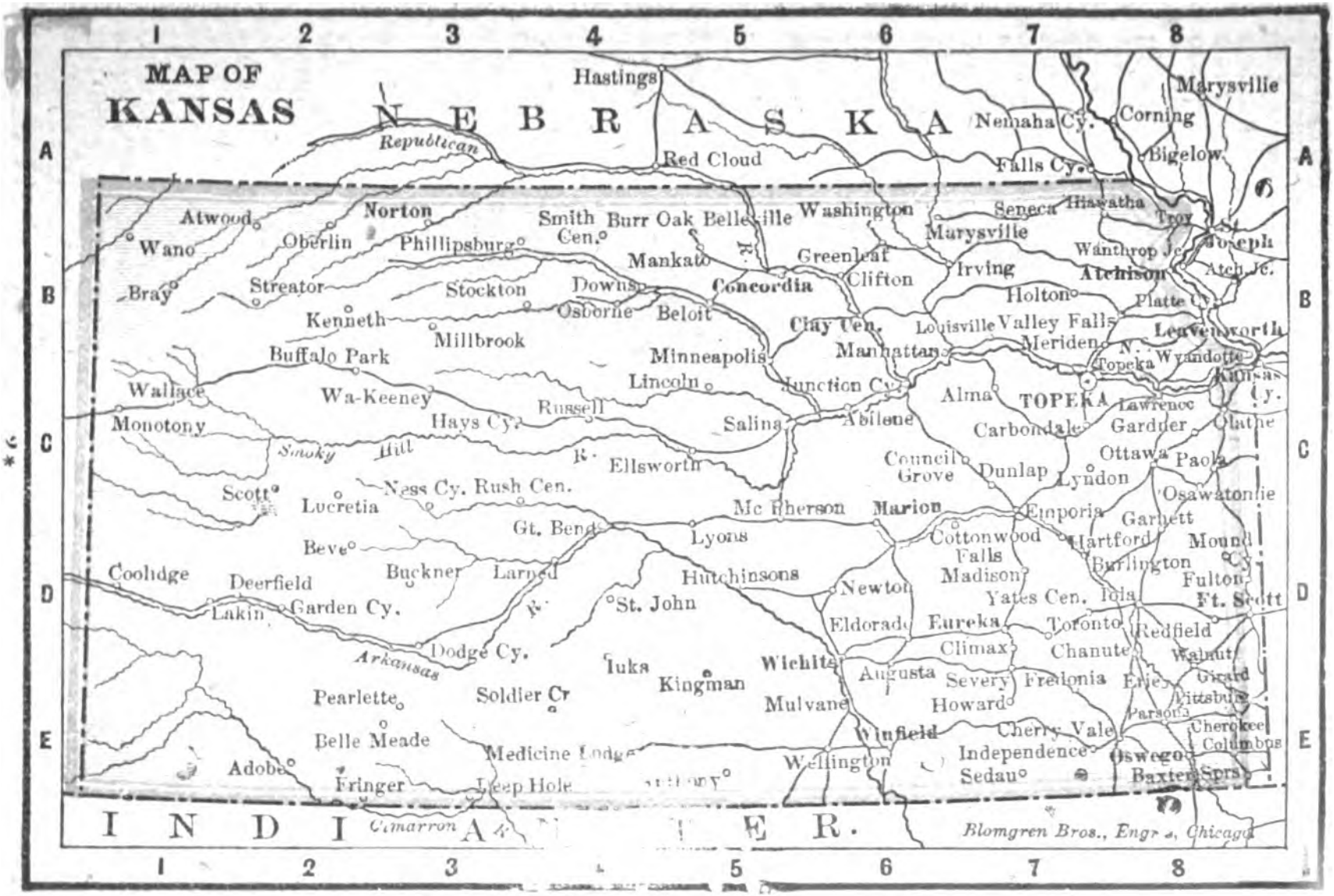
CLIMATE.—Salubrious. Winters mild, summers warm, air pure and clear. Temperature averages winter 31 deg., summer 78 deg., ranges 8 deg. below to 101 deg. above zero; such extremes exceptional. Rainfall averages 45 inches at east, 33 inches at west.

PRESIDENTIAL ELECTION RESULTS.—1864, Rep. maj. 12,750; 1868, Rep. maj. 17,058; 1872, Rep. maj. 33,482; 1876, Rep. maj. 32,511; 1880, Rep. maj. 42,021; 1884, Rep. plur. 64,274; 1888, Rep. plur. 79,961.

All elections Tuesday after first Monday in November. Senators 40, Representatives 125, sessions biennial, meeting second Tuesday in January in odd-numbered years, limit of sessions 50 days. Term of Senators 4 years, of Representatives 2 years. Number electoral votes 9, Congressmen 7, voters 295,714. Idiots, insane convicts, and rebels excluded from voting.

SALARIES OF STATE OFFICERS.—Governor, $3,000; Secretary of State, $2,000; Treasurer, $2,500; Auditor, $2,000; Attorney-General, $1,500; Superintendent of Public Instruction, $2,000; Secretary Board of Agriculture, $2,000; Insurance Commissioner, $2,500; three Railroad Commissioners, $3,000; State Librarian, $1,500; Chief-Justice, $3,000; two Associate Justices, $3,000; Senators and Representatives, $3 per day, mileage 15 cents; District Judge, $3,500; Pension Agent, $4,000.

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MAP OF
KANSAS
NEBRASKA
INDIAN TERR.
Republican
Smoky Hill
Arkansas
Cimarron
Hastings
Red Cloud
Nemaha Cy.
Falls Cy.
Corning
Marysville
Bigelow
Troy
Seneca
Hiawatha
Wanthrop Jc.
Atch. Jc.
Atchison
Platte Cy.
Holton
Louisville
Valley Falls
Meriden
Leavenworth
N. Topeka
Wyandotte
Kansas Cy.
Lawrence
TOPEKA
Alma
Carbondale
Gardner
Olathe
Ottawa
Paola
Lyndon
Osawatomie
Dunlap
Council Grove
Junction Cy.
Abilene
Salina
Manhattan
Clay Cen.
Minneapolis
Lincoln
Ellsworth
Russell
Hays Cy.
Wa-Keeney
Wallace
Monotony
Buffalo Park
Millbrook
Kenneth
Osborne
Beloit
Mankato
Concordia
Greenleaf
Clifton
Irving
Washington
Marysville
Smith Cen.
Burr Oak
Belleville
Phillipsburg
Oberlin
Norton
Atwood
Wano
Bray
Streator
Stockton
Downs
Scott
Lucretia
Ness Cy.
Rush Cen.
Mc Pherson
Marion
Emporia
Garnett
Gt. Bend
Lyons
Cottonwood Falls
Hartford
Burlington
Mound
Beve
Coolidge
Deerfield
Buckner
Larned
Hutchinsons
Madison
Fulton
Lakin
Garden Cy.
St. John
Newton
Yates Cen.
Iola
Ft. Scott
Eldorado
Eureka
Toronto
Redfield
Climax
Chanute
Walnut
Dodge Cy.
Iuka
Kingman
Wichita
Augusta
Severy
Fredonia
Erie
Girard
Pittsburg
Pearlette
Soldier Cr
Mulvane
Howard
Parsons
Belle Meade
Winfield
Cherry Vale
Cherokee
Columbus
Medicine Lodge
Independence
Oswego
Adobe
Fringer
Deep Hole
Wellington
Sedan
Baxter Sprs.
Blomgren Bros., Engr's, Chicago

KANSAS—(Continued).

GEOGRAPHICAL, ETC.—Extreme length east and west 410 miles, breadth 210 miles, area 81,700 square miles, 52,288,000 acres. No mountains. There is little navigable water. Value improved land averages $12 per acre, woodland $15. Manufacturing growing. State ranks fifth in cattle, corn, and rye. Fruits successful. Forests small. Limestone and colored chalk furnish building materials. Soil of prairies deep loam of dark color; bottoms sandy loam. Peculiarly favorable to stock-raising. Prairie rich in grasses. Dairying favored. Soil fine. Corn, wheat, oats, hemp, flax, and rye, staples. Castor beans and cotton grown successfully. Water powers of fair proportions, irrigation necessary in large sections. Coal area of moderate extent; veins usually thin; quality fair.

LEADING INDUSTRIES.—Agriculture, stock-raising, manufacturing, etc.

COLLECTION AND EXEMPTION LAWS.—Exemptions—To unmarried person: tools and stock, $400, or library and implements of professional man; to head of family: household furniture, $500, also team, wagon, etc.; farming utensils, $300; stock and tools of mechanic, $400; libraries, etc., of professional men; homestead, 160 acres farm land, or 1 acre in city, with improvements, without limit as to value. Limitation of Actions—Contract not in writing, 3 years; contract or promise in writing, 5 years; to recover land sold for taxes, 2 years after recording deed; on execution, 5 years; in other cases, 15 years. Revivor—Part payment or written promise or acknowledgment. Redemption—No redemption except of lands sold for taxes, then 3 years. Justices' Jurisdiction—$300. Witness—Party in interest or convict may be. Stay of Execution—In justices' courts, on $20 to over $100, 30 to 120 days. Married Women—Real or personal property acquired at any time (except from husband) remains sole and separate property of wife, and controlled as if unmarried. Interest—Legal, 7 per cent.; by agreement in writing, 10 per cent. Excess forfeits all interest.

CHIEF CITIES.—Leavenworth, pop. 21,613; Topeka (capital), pop. 31,809; State University at Lawrence; State asylums for insane and feeble-minded at Topeka and Ossawattomie; institution for education of the blind at Wyandotte; for deaf mutes, Olatho.

POPULATION.—Census of 1890.—1,427,096.

KENTUCKY.

Name Indian. Signifies dark and bloody ground, because the State was the hunting and battle ground of the tribes. Called "Corn Cracker State." Louisville founded 1780. Earliest explorations made by John Finley and others 1767; Daniel Boone established himself there 1769. Number colleges 15, public school system framed 1838, good schools, school age

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KENTUCKY—(Continued).

6-20. Admitted as a State June 1, 1792. State furnished 7,000 troops in War of 1812, and 13,700 in Mexican war. Won great credit in latter. Neutral at beginning of civil war. State the scene of continuous cavalry raids during the war, and some sharp battles at Perryville, Richmond, etc. Put under martial law 1864. Civil Government restored 1865. Union soldiers furnished 75,760. Number counties 118.

CLIMATE.—Variable, favorable to health and agriculture, healthfulness not surpassed. Snows fall, but disappear in a few days. Sleighing only for a day or so. Winters moderately long. Malaria very rare, except on the Ohio and Mississippi Rivers. Thermometer ranges from 5 deg. below zero to 98 above, rarely greater extremes are known. Temperature averages summer 75 deg., winter 38 deg., rainfall 50 inches.

PRESIDENTIAL ELECTION RESULTS.—1824, Loose Constructionist (Rep.) maj. 10,329; 1828, Dem. maj. 7 912; 1832, Loose Constructionist (Rep.) maj. 7,149; 1836, Whig (Rep.) maj. 5,520; 1840, Whig (Rep.) maj. 25,873; 1844, Whig (Rep.) maj. 9,267; 1848, Whig (Rep.) maj. 17,421; 1852, Whig (Rep.) maj. 2,997; 1856, Dem. maj. 6,912; 1860, Constitutional Union plur. 12,915; 1864, Dem. maj. 36,515; 1868, Dem. maj. 76,324; 1872, Dem. maj. 8,855; 1876, Dem. maj. 59,772; 1880, Dem. maj. 31,951; 1884, Dem. plur. 34,839; 1888, Dem. plur. 38,666.

State elections biennial, first Monday in August, in odd-numbered years. Number Senators 38, Representatives 100, sessions of Legislature biennial, in even numbered years, meeting last day of December, holds 60 days. Term of Senators 4 years, of Representatives 2 years. Number electoral votes 13, number Congressmen 11, number voters 376,221. Bribers, robbers, and forgers excluded from voting.

SALARIES OF STATE OFFICERS.—Governor, $5,000; Secretary of State, $1,500; Treasurer, $2,400; Auditor, $2,500; Attorney General, $5,000 and fees; Register of Land Office, $2,400; Commissioner of Agriculture, $2,000; Insurance Commissioner, $4,000; three Railroad Commissioners, $2,000; Chief-Justice, $5,000; three Associate Justices, $5,000; Senators and Representatives, $5 per day, mileage 15 cents; District Judge, $3,500; Pension Agent, $4,000; six Collectors Internal Revenue, $4,500; six y Deputy Collectors, $300 to $2,000.

GEOGRAPHICAL, ETC.—Extreme length east and west 350, width 179 miles, area 40,000 square miles, 25,600,000 acres. River frontage 832 miles, navigable water ways 4,120 miles. Natural wonder, Mammoth Cave, greatest in the world. Kentucky ranks high as an agricultural and stock State. Staple crops, corn, wheat, tobacco, oats, barley, hemp, rye, and vegetables; fruits do fairly. Famous for thoroughbred horses and cattle. Soil fair, except in the famous "Bluegrass region," extending for 40 or 50 miles around Lexington, and one of the most beautiful sections on the globe. Cleared land averages $20 and woodland $5 per acre. The average of the former is raised materially by the high prices, often $100 or more in the bluegrass section. Coal, marbles, minerals, oil,

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KENTUCKY—(Continued).

stone, etc., also abound. Iron deposits of immense magnitude are known to exist. Mules and hogs largely raised. At the east in the mountains are immense forests of virgin oak, poplar, ash, chestnut, elm, walnut, cucumber, and other valuable timber trees. Mountain lands rich in timber and minerals, and not without agricultural value rate $2 to $5 per acre. The State ranks first in tobacco, and fourth in malt and distilled liquors.

COLLECTION AND EXEMPTION LAWS.—Exemptions—The usual schedule of personal effects, furniture, implements and stock, and professional libraries, etc., $500; homestead, $1,000. Limitation of Actions—Open accounts, promissory notes and contracts not in writing, 5 years; contracts in writing and judgments or decrees of any court, 15 years; real actions, 30 years. Revivor—New promise. Redemption—Real estate sold under execution for less than two-thirds its appraised value. 1 year; for taxes, 2 years. Justices Jurisdiction—$50; Jefferson County, $100. Witness—Party in interest may be. Stay of Execution On filing bond, 3 months. Married Women—Wife's separate estate is not liable for husband's debts, but is subject to court in its control. Interest—Legal rate, 6 per cent.; by agreement in writing, 6 per cent. Usury—Above 6 per cent. forfeits whole interest.

CHIEF CITIES.—Louisville, pop. 161,005. Frankport (capital), pop. 8,500, Covington, 37,375; Lexington, former capital, founded 1776, pop. 22,355. Newport connected with Covington by bridge, pop. 24,938.

POPULATION.—Census of 1890.—1,818,635. In 1860 there were 225,489 slaves in the state of Kentucky. (For Map of Kentucky see page 491.)

LOUISIANA.

Named in honor of Louis XIV. of France. Called the "Creole State." Purchased by United States, 1803, for $15,000,000. Louisiana admitted as a State under present name, April 8, 1812. First sugar cane cultivated in United States near New Orleans 1751. First sugar mill 1758. First shipment of cotton abroad 1784. Seceded January 21, 1861. Some fighting on the river between boats and forts. New Orleans captured May 1, 1862. In June, 1868, State re-entered Union. In the war with England the State made a glorious record, and at the battle of New Orleans, January 2, 1815, humiliated the British and ended the war. Educational facilities average. Number of parishes, or counties, 58, miles railroad 1,316.

CLIMATE. Temperature ranges from 44 to 100 deg., average summer 81 deg., winter 55 deg. Rainfall 57 inches, chiefly in spring and summer. Summers long and occasionally hot. Health average. Actual death-rate lower than in many Northern sections. Occasional yellow fever in the cities.

PRESIDENTIAL ELECTION RESULTS.—1828, Dem. maj. 508, 1832, Dem. maj. 1,521; 1836, Dem. maj. 270; 1840, Whig (Rep.)

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LOUISIANA—(Continued)

maj. 8,680; 1844, Dem. maj. 699; 1848, Whig (Rep.) maj. 2,847; 1852, Dem. maj. 1,392; 1856, Dem. maj. 1,455; 1860, Dem. plur. 2,477; 1868, Dem. maj. 46,962; 1872, Rep. maj. 14,634; 1876, Rep. maj. 4,499; 1880, Dem. maj. 33,419; 1884, Dem. plur. 16,250; 1888, Dem. plur. 54,760.

Legislature and State officers elected quadrennially, members of Congress biennially, State elections Tuesday after third Monday in April. Number Senators 36, Representatives 98, sessions biennial, in even-numbered years, meeting second Monday in May, holds 60 days. Terms of Senators and Representatives 4 years each. Number electoral votes 8, Congressmen 6, voters 216,787, colored 107,977, native white 81,777, foreign white 27,033. Idiots, insane, and criminals excluded from voting.

SALARIES OF STATE OFFICERS.—Governor, $4,000; Lieutenant Governor $8 per day; Treasurer, $2,000; Secretary of State, $1,800; Auditor, $2,500; Attorney General, $3,000; Adjutant General, $2,000; Superintendent Public Instruction, $2,000; Commissioner of Agriculture and Immigration, $2,000; Chief-Justice, $5,000; Associate Justices, $5,000; Senators and Representatives, $4 per day and mileage; two District Judges, $3,500 and $4,500; Collector of Customs, New Orleans, $7,000; Collector Internal Revenue, $3,875; Surveyor General, $1,800; Chief Draftsman, $1,500; Superintendent of Mint, $3,500; Chief Clerk, $2,000; Cashier, $2,000.

GEOGRAPHICAL, ETC.—Extreme length east and west 294 miles, breadth 284 miles, area 45,420 square miles, 29,068,800 acres. Coast line 1,276 miles, very irregular navigable rivers 2,700. Mississippi flows in or on the borders of the State. Bays numerous on coast but harbors indifferent. Many small islands in gulf. Reclamation of marshes very profitable and beginning to be done on a large scale. Moss-gathering profitable and invites more attention. Iron discovered. Cleared land averages $12.50, woodland $3 to $4 per acre. Forests almost inexhaustible. Timber superior in kind and quality, lumber important industry. Salt produced on a large scale.

INDUSTRIES.—Three fifths of laboring population engaged in agriculture. Average income of rural population among highest in Union. Number industries 1,600. Staple products, sweet potatoes, sugar, molasses, rice, corn, cotton, grasses, oats, etc. All fruits of the semi-tropical climate thrive. State ranks first in sugar and molasses, and third in rice.

COLLECTION AND EXEMPTION LAWS.—Exemptions—To head of family: 160 acres of land and improvements, if owned and occupied as residence, together with certain furniture; stock, implements, provisions, etc., the property not to exceed $2,000, and no exemption if wife has separate property worth over $1,000 and enjoyed. Limitation of Actions—Open accounts, 3 years; notes, bills, etc., 5 years; judgments, foreign or domestic, and mortgages, 10 years. Revivor—Express acknowledgment and promise to pay. Redemption—None for property sold under execution or mortgage; tax sales, 2

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LOUISIANA—(Continued)

years. Justices' Jurisdiction—$100. Witness—Party in interest may be. Stay of Execution—Discretion of court. Married Women—Separate property of wife controlled by her; revenues of all separate property and all property acquired by either husband or wife after marriage held in community—a marriage partnership. Interest—Legal rate, 5 per cent.; 8 per cent. by written contract: a higher rate if embodied in face of obligation. Usury—Stipulation for over 8 per cent. after maturity forfeits entire interest.

CHIEF CITIES.—Capital, Baton Rouge, pop. 10,397; New Orleans, port of entry and largest cotton market in the world, pop. 241,995 Shreveport, pop. 11,482; Morgan City, port of entry. State institution for insane at Jackson, for deaf mutes and blind, Baton Rouge.

POPULATION.—Census of 1890.—1,118,587.—In 1860 there were 331,726 slaves in the state of Louisiana.

MAINE.

The "Pine Tree State," or "Lumber State," originally included New Hampshire. Settled by the English at Bristol, 1624; admitted 1820. Number counties, 16; Union soldiers, 70,170; miles of railroad, 1,142. Number colleges, 3: system of common, high, and normal schools excellent; school age, 4-21 years.

CLIMATE.—Excellent, except for pulmonary troubles. Winter average 29 deg., summer 67 deg., rainfall 45 inches; snow lies 80 to 130 days. Death-rate low.

PRESIDENTIAL ELECTION RESULTS.—1824, Loose Constructionist (Rep.) maj. 4,540; 1828, Loose Constructionist (Rep.) maj. 6,848; 1840, Whig (Rep.) maj. 217; 1844, Dem. maj. 6,505; 1848, Dem. plur. 4,755; 1852, Dem. maj. 1,036; 1856, Rep. maj. 24,974; 1860, Rep. maj. 27,704; 1864, Rep. maj. 17,592; 1868, Rep. maj. 28,033; 1872, Rep. maj. 32,355; 1876, Rep. maj. 15,814; 1880, Rep. maj. 4,460; 1884, Rep. plur. 30,069; 1888, Rep. plur. 23,252.

State elections second Monday in September. Number Senators 31, Representatives 151, sessions biennial in odd-numbered years, meeting first Wednesday in January. Terms of Senators and Representatives 2 years each. Number electoral votes 6, Congressmen 4, number voters 187,323; paupers and Indians not taxed excluded from voting.

SALARIES OF STATE OFFICERS.—Governor, $2,000; Secretary of State, $1,200; Treasurer, $1,600; Attorney General, $1,000; Adjutant General, $900; Superintendent Common Schools, $1,000; Secretary Board of Agriculture, $600; State Librarian, $600; Chief-Justice, $3,000; Seven Associate Justices, $3,000; Senators and Representatives, $150, mileage 20c.; District Judge, $3,500; Collector Internal Revenue, $2,500; Collector Customs, $4,000; Surveyor Customs, $4,500; Pension Agent, $3,000.

GEOGRAPHICAL, ETC.—Extreme length north and south 298

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MAINE—(Continued).

miles, width 210 miles, shore line about 2,480 miles, area 33,056 square miles, land 29,885 square miles, 21,155,840 acres, 37th of States and Territories in size. Valuable slate quarries from the Kennebec to the Penobscot; granite is obtained in blocks of immense size; latest reported product value, $1,175,286. Ranks fifth in buckwheat and copper; eighth in hops and potatoes. Number farms, 64,309; average value per acre, cleared land, $15; woodland, $14. Hay the most valuable crop, yielding 1,214,033 tons in 1883; corn crop, 1884, 1,062,000 bushels; wheat, 629,400 bushels; oats, 2,428,000 bushels; latest reported dairy products, 3,720,783 gallons milk, 14,109,966 lbs. butter and 1,945,095 lbs. cheese. Area of lakes and streams, one-thirteenth entire State. The soil is medium only, except on some of the streams, where it is rich. Surface hilly, mountainous toward center. Highest point, Katahdin, 5,400 feet; largest island, Mount Desert, 92 square miles. The ordinary vegetables grow. Cattle do fairly, dairying pays. Half the State is forest of excellent timber.

CHIEF INDUSTRIES.—Lumbering one of chief industries, forests covering over 10,000,000 acres; number saw-mills 848, total products $7,933,868. Agriculture and kindred pursuits, lumbering, fisheries, $3,620,000 yearly; quarrying, shipbuilding (380 establishments).

COLLECTION AND EXEMPTION LAWS.—Exemptions—The usual furniture, library, tools, implements, stock, team, boat, etc.; homestead to householder registering claim, $500. Limitation of Actions—Debt contracts and liabilities, express or implied, not under seal, 6 years; all other actions, 20 years. Revivor—New promise in writing or part payment. Redemption—Land sold on execution, 1 year; under mortgage, 5 years, except when power of sale contained in mortgage; tax sales 2 years. Justices' Jurisdiction—$20. Witness—Party civil or criminal may be. Stay of Execution—Discretion of court in extreme cases. Married women—May own, manage, and convey real and personal estate acquired from any source except from husband, as if single. Interest—Legal, 6 per cent.; by contract in writing, any rate. Usury—No law.

PRINCIPAL CITIES.—Portland (seaport), pop. 36,608; Lewiston, 21,668; Bangor, port of entry, 19,090; Biddeford, 14,418; and Augusta, the capital, 10,521.

POPULATION.—Census of 1890.—661,086.

MARYLAND.

One of the thirteen original States; named in honor of Maria, wife of Charles II., King of England; first permanent settlement made by English Roman Catholics at St. Mary's, 1634. Number counties, 23. Miles railroad, 1,082. Baltimore founded 1730. Federal Congress met at Annapolis 1783, when Washington resigned command of army. Federal constitution ratified April 28, 1778. Fredericktown and other places

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MARYLAND—(Continued).

burned in war of 1812, and Fort McHenry bombarded. First blood of civil war shed at Baltimore April 19, 1861. Legislature opposed war April 26, 1861, but passed resolutions favoring the South. Battle of Antietam September 16 and 17, 1862. Slavery abolished 1864. Union soldiers furnished, 46,638. Number colleges 11, school age 5-20, school system fair.

CLIMATE—Mild, agreeable, and healthful; some little malaria in lowlands. Temperature softened by ocean. Winter averages 37 deg., summer 78 deg. Rainfall, 42 inches.

PRESIDENTIAL ELECTION RESULTS.—1824, Loose Constructionist (Rep.) plur. 109; 1828, Loose Constructionist (Rep.) maj. 1,181; 1832, Loose Constructionist (Rep.) maj. 4; 1836, Whig (Rep.) maj. 3,685; 1840, Whig (Rep.) maj. 4,776; 1844, Whig (Rep.) maj. 3,308; 1848, Whig (Rep.) maj. 3,049; 1852, Dem. maj. 4,900; 1856, Know-Nothing maj. 8,064; 1860, Dem. plur. 722; 1864, Rep. maj. 7 414; 1868, Dem. maj. 31,919; 1872, Dem. maj. 908; 1876, Dem. maj. 19,756; 1880, Dem. maj. 15,191; 1884, Dem. plur. 11,305; 1888, Dem. plur. 6,182.

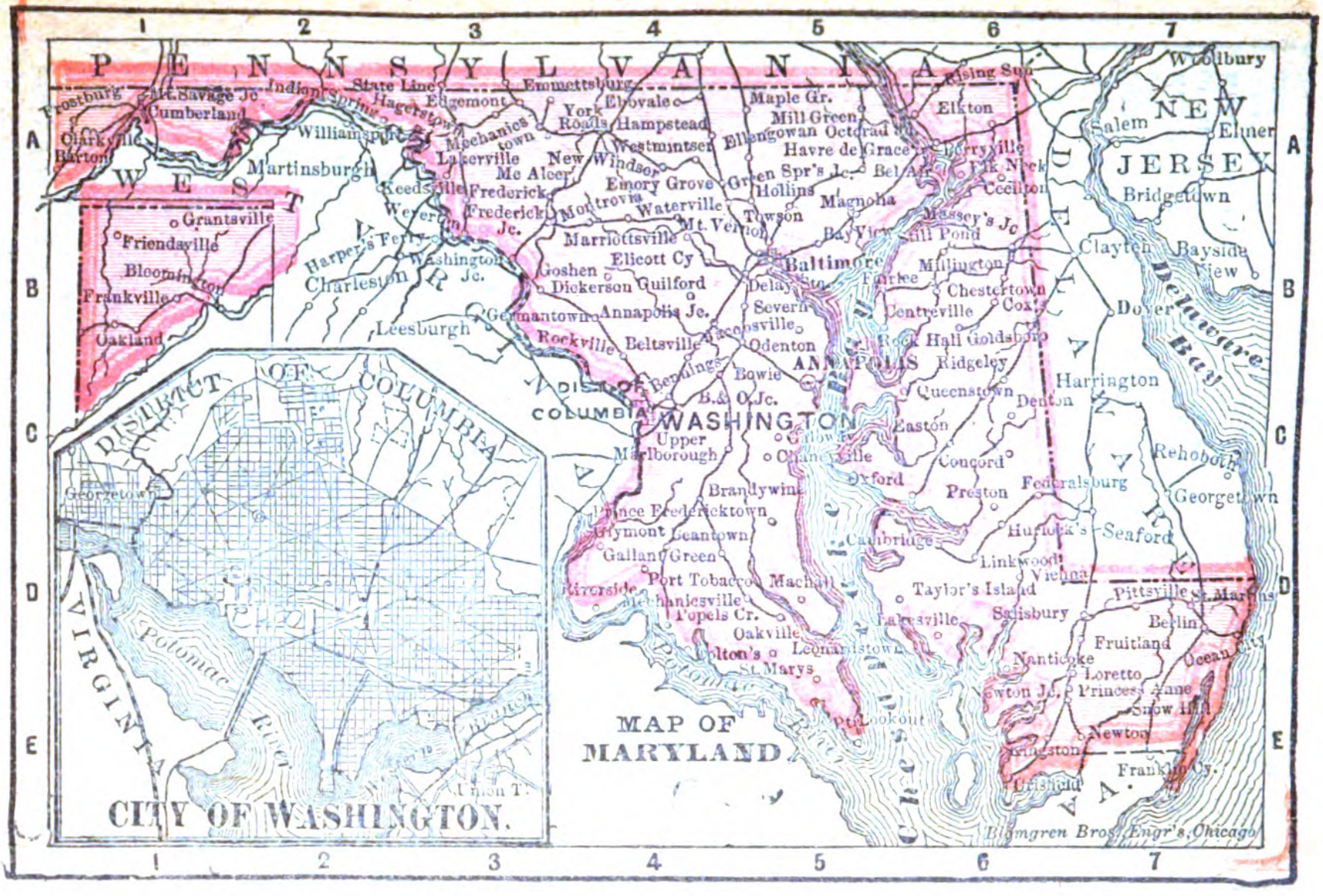
All elections Tuesday after first Monday in November, number Senators 26, Representatives 91, sessions biennial in even-numbered years, meet first Wednesday in January and hold 90 days, term of Senators 4 years, of Representatives 2 years. Number of electoral votes 8, Congressmen 6. Insane, convicts, and bribers excluded from voting.

SALARIES OF STATE OFFICERS.—Governor, $4,500; Secretary of State, $2,000; Treasurer, $2,500; Comptroller, $2,500; Attorney General, $3,000; Chief-Justice, $3,500; seven Associate Justices, $3,500; District Judge, $4,000; Senators and Representatives, $5 per day and mileage; two Collectors Internal Revenue, $2,625 to $4,700; Collector of Customs, $7,000; two Collectors, $250 and $1,200 fees; Auditor, $2,500; Naval Officer, $5,000; Surveyor, $4,500.

GEOGRAPHICAL, ETC.—Length east and west 196 miles, width 8 to 122 miles. Area, 9,860 square miles. Acreage of State 6,310,400, water surface large. Western and northern sections mountainous and broken. Chief navigable rivers, Potomac, Susquehanna, Patuxent, Patapsco, empty into the bay. At the west is the Youghiogheny. Chesapeake Bay almost divides the State. Tide-water coast nearly 500 miles. Copper is found in Frederick and Carroll counties, iron ore in Allegany, Anne Arundel, Carroll, Baltimore, Frederick, and Prince George's counties. Great oyster, fish, fruit and vegetable producing State. Oyster beds most valuable in Union. Wheat, corn, oats, buckwheat, and tobacco staple crops. Opportunities for capital are yet excellent. Soil varies from very poor to very good. Cleared land averages $22.50, and woodland $14 per acre. The average value of latter lowered by mountain sections. Considerable good timber remains. Enormous coal fields west.

CHIEF INDUSTRIES.—Agriculture and fruit growing, oyster and other fishing, canning, coal, iron and copper mining, manufacturers of cotton goods, etc.

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MARYLAND—(Continued).

COLLECTION AND EXEMPTION LAWS.—Exemptions—Wearing apparel, books, mechanics' tools, and other property to the value of $100; no homestead. Limitation of Actions—Open accounts and simple contracts, 3 years; sealed instruments and judgments, 12 years. Revivor—No statute. Redemption—Tax sales, 1 year. Justices' Jurisdiction—$100. Witness—Party in interest may be. Stay of Execution—When under $30, 6 months; when over $30, 1 year. Married Women—Property of wife, real or personal, acquired at any time, separate estate, and not subject to debts of husband. Interest—Legal, 6 per cent. Usury forfeits all interest.

CHIEF CITIES.—Baltimore, port of entry, pop. 433,547; Annapolis, capital, contains United States Naval Academy, pop. 7,625. Cumberland, pop. 10,030.

POPULATION.—Census of 1890.—1,042,390. Number of slaves in 1860, 87,189.

MASSACHUSETTS.

"Old Bay State." One of the thirteen original States. First settlement 1602, abandoned the same year. First permanent settlement made by English Puritans at Plymouth, 1620. Explored 1614 by Captain John Smith. Pilgrims landed on Plymouth Rock December 22. Boston settled 1630. First American newspaper Boston, 1690. Battle of Lexington first blood of Revolution. Ratified United States Constitution February 6, 1788. Massachusetts was active in bringing on Revolution. Boston massacre March 5, 1770. Destruction of tea December 16, 1773. Boston port bill passed March, 1774. School system excellent; attendance compulsory; age 5-15 years. Seven colleges, including Harvard. Union soldiers, 146,730, besides sailors. Number counties 14. Miles railroad 2,399.

CLIMATE.—Winters severe and protracted, summers short and warm, thermometer ranges from 10 deg. below to 100 deg.; averages summer 73 deg., winter 24 deg. Snow falls October to April. Rainfall, including snow, 44 inches.

PRESIDENTIAL ELECTION RESULTS.—1824, Loose Constructionist (Rep.) maj. 28,071; 1828, Loose Constructionist (Rep.) maj. 22,817; 1832 Loose Constructionist (Rep.) maj. 18,458; 1836, Whig (Rep.) maj. 7,592; 1840, Whig (Rep.) maj. 19,305; 1844, Whig (Rep.) maj. 2,712; 1848, Whig (Rep.) plur. 23,014; 1852, Whig (Rep.) plur. 8,114; 1856, Rep. maj. 49,324; 1860, Rep. maj. 43,981; 1864, Rep. maj. 77,997; 1868, Rep. maj. 77,069; 1872, Rep. maj. 74,212; 1876, Rep. maj. 40,423; 1880, Rep. maj. 49,097; 1884, Rep. plur. 24,372; 1888, Rep. plur. 31,457.

All elections Tuesday after first Monday in November. Number Senators 40, Representatives 240, meeting first Wednesday in January. Terms of Senators and Representatives, 1 year. Number electoral votes 14. Congressmen 12. Number voters 502,648. Paupers, persons under guardians, non-taxpayers, and men unable to read and write, excluded from voting.

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MASSACHUSETTS—(Continued).

SALARIES OF STATE OFFICERS.—Governor, $5,000; Lieutenant Governor, $2,000; Secretary of State, $3,000; Treasurer, $4,000; Auditor, $2,500; Attorney General, $4,000; Chief-Justice, $6,500; Six Associate Justices, $6,000; District Judge, $4,000; Senators and Representatives, $650 per year; Pension Agent, $4,000; three Collectors of Internal Revenue, $3,000 to $4,500; Collectors of Customs, Boston, $8,000; Naval Officer, $5,000.

GEOGRAPHICAL, ETC.—Length north-east to south-west 162 miles, breadth 47 miles in western and 100 in eastern part, area of 8,040 square miles, 5,145,600 acres. Coast extensive and irregular, with numerous good harbors. The Merrimac only large stream entering sea within the State. Soil generally light; hay best crop; wheat, oats, corn, and vegetables grown. Forests practically exhausted. Cleared land averages $80 and woodland $45 per acre. Stone is found. No minerals mined. The Taconic and Hoosac ridges traverse the State at the west. Saddle Mountain, 3,600 feet, the highest peak. The east and north east divisions are hilly and broken, and the south-east low and sandy. Scenery very beautiful, especially in Berkshire hills. Elizabeth Island, Martha's Vineyard, Nantucket, and smaller islands to the south belong to the State.

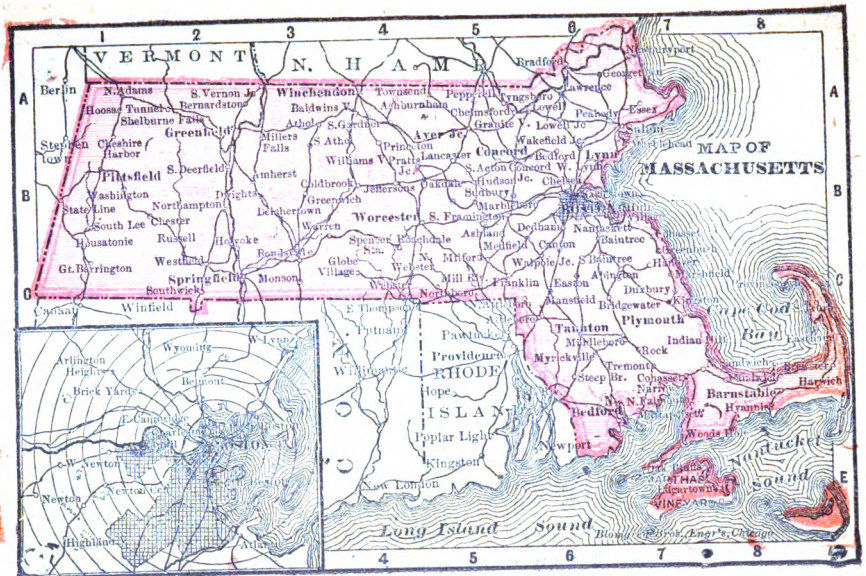
BOSTON'S GREAT FIRE.—The Boston fire occurred November 9, 1872, and burned over sixty-five acres in the very heart of the business section of the city. The most authentic reports place the number of buildings burned at 446, and the loss at $76,000,000. Some of the most substantial structures in the city were, as in the great fire of the age at Chicago, swept away like frame buildings, and fireproof edifices shared a similar fate.

CHIEF INDUSTRIES.—Agriculture and kindred callings. Fishing for cod and mackerel (half the fishing vessels of the Union owned here.) Manufacture of cotton, woolen, worsted, silk, iron and steel goods, soap and implements, quarrying.

COLLECTION AND EXEMPTION LAWS.—Exemptions—Household furniture, $300; library, $50; tools and implements, $100; stock, $100; boat and fishing tackle, $100; certain live-stock, etc.; home-tead to householder, if recorded as such, $800. Limitation of Actions—Contracts or liabilities not under seal, express or implied, 6 years; real actions upon an attested note and personal actions on contracts not otherwise limited, 20 years. Revivor—Part payment (as to party making it) or new promise in writing. Redemption—Real estate set off on execution by the debtor, 1 year; none under foreclosure; tax sales, 2 years. Justices' Jurisdiction—$300. Witness—Party in interest may be. Stay of Execution—No special stay. Married Women—Real and personal property of wife, acquired at any time, subject solely to her liabilities and control. Interest—Legal, 6 per cent.; any rate by contract in writing. Usury—No law.

PRINCIPAL CITIES.—Boston, 446,507; Lowell, pop. 77,605.

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MASSACHUSETTS—(Continued).

Lawrence and Fall River, famous for cotton manufactures, pop. 44,559 and 74,351; Worcester, railroad and manufacturing center, pop. 84,536; Cambridge, seat of Harvard College, pop. 69,837; Lynn, famous for manufacture of boots and shoes, pop. 55,684; New Bedford, greatest whaling port in the world, pop. 40,705; Springfield contains greatest arsenal in the United States, pop. 44,164.

POPULATION.—Census of 1890.—2,238,943

MICHIGAN.

"Wolverine State." Name of Indian origin, signifying Lake Country. First white settlement within limits of State, Sault Ste. Marie, 1668; organized as Territory 1805; admitted 1837. Thirteenth State to enter Union. Received upper peninsula as compensation for disputed territory same year. Union soldiers furnished 87,364. Number counties 79. Miles railroad 5,233. Number colleges 9, efficient public schools, school age 5-20 years.

CLIMATE.—Temperature averages at Detroit winter 30 deg., summer 70 deg., at Sault Ste. Marie, winter 23 deg., summer 65 deg. Rainfall at Detroit 30 inches, at Sault Ste. Marie 24 inches. Health excellent. Temperature at Marquette averages about 3 deg. lower than at Sault Ste. Marie.

PRESIDENTIAL ELECTION RESULTS.—1836, Dem. maj. 3,370; 1840 Whig (Rep.) maj. 1,514; 1844, Dem. plur. 3,423; 1848, Dem. plur. 6,747; 1852, Dem. maj. 746; 1856, Rep. maj. 17,966; 1860, Rep. maj. 22,213; 1864, Rep. maj. 16,917; 1868, Rep. maj. 31,481; 1872, Rep. maj. 55,968; 1876, Rep. maj. 15,542; 1880, Rep. maj. 19,095; 1884, Rep. plur. 3,308; 1888, Rep. plur. 22,903.

All elections Tuesday after first Monday in November. Number Senators 32, Representatives 100, sessions of Legislature biennial, in odd-numbered years, meeting first Wednesday in January. Terms of Senators and Representatives two years each. Number electoral votes 13, number Congressmen 11. Number voters 467,687. Duelists excluded from voting.

SALARIES OF STATE OFFICERS.—Governor, $1,000; Lieutenant Governor, $3 a day; Secretary of State, $800; Treasurer, $1,000; Auditor General, $2,000; Superintendent Public Instruction, $1,000; Adjutant General, $1,000; Secretary Board of Agriculture, $1,500; Insurance Commissioner, $2,000; Railroad Commissioner, $2,500; Immigration Commissioner, $2,000; Chief-Justice, $4,000; Senators and Representatives, $3 a day and 10c. per mile; two District Judges, $3,500; Pension Agent, $4,000; four Collectors Internal Revenue, $3,875 to $2,625.

GEOGRAPHICAL, ETC.—Lower peninsula consists of plains and table lands, heavily timbered with pine and hardwoods and small prairies. Soil generally good, but patches of sand occur. Fruit raising, especially apples, peaches, and grapes, very successful. All cereals make good crops, except corn at

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MICHICAN—(Continued).

north. Staples, wheat, corn, oats, buckwheat, potatoes, barley, etc. Upper peninsula broken, rocky, and almost mountainous, rising at west to 2,000 feet above sea. Western portion mining region, eastern portion favorable to agriculture. State ranks first in copper, lumber, and salt, second in iron ore, third in buckwheat, fifth in sheep, hops, and potatoes. Cleared land averages $20 per acre, forest $10. Rivers, inlets, and small lakes numerous. Water good and well distributed. Copper, valuable iron, coal, and salt abundant. Timber yet in immense tracts of virgin pine and hardwoods. Vessels go up to Lake Superior by a ship canal cut through the rock, and going around the rapids of the Strait. The canal was constructed by the State of Michigan in 1855. It was, when first made, 100 feet wide at the surface and 12 feet deep, was one mile in length, with a lock 370 feet long and 70 feet wide. This canal was enlarged about 1873, at the expense of the General Government. It is now 102½ feet wide at the top of the side wall or rock, and is 20 feet deep. It has a system of two locks of 400 by 80 feet, and a single lock of the same dimensions to overcome the difference of level at one lift.

CHIEF INDUSTRIES.—Lumbering, mining, farming, fruit raising, manufacturing, fishing, etc.

COLLECTION AND EXEMPTION LAWS.—Exemptions—Various personal property and library, $150; certain live stock, household goods and furniture, $250; tools, implements, stock, and team, etc., to carry on trade or profession, $250; homestead, 40 acres of land, or lot in city and house thereon, $1,500. Limitation of Actions—Contracts or liabilities not under seal, 6 years; on judgments or decrees of any court, and actions on contract not otherwise limited, 10 years. Revivor—Part payment or promise in writing to pay. Redemption—Real estate sold under execution and foreclosure at law, 1 year; none under foreclosure in chancery; tax sales, 1 year. Justices' Jurisdiction—$300. Witness—Party not excluded by reason of interest or crime. Stay of Execution—In justice's court, $50 four months; over $50 six months. Married Women—Real and personal property of wife acquired from any source, at any time, held and controlled by her as if unmarried. Interest—Legal, 7 per cent.; by contract in writing 10. Usury—Forfeits excess over 7 per cent.

CHIEF CITIES.—Detroit, pop. 205,669; Grand Rapids, pop. 64,147; Lansing (capital), pop. 12,630; Bay City, pop. 27,826; East Saginaw, 46,137; Jackson, 20,779; Muskegon, 22,668; Saginaw, 10,525; Detroit, Marquette, Port Huron, Grand Haven, ports of entry.

POPULATION.—Census of 1880.—2,093,889.

MINNESOTA.

"Gopher State." Named from the river; term of Indian origin signifying "whitish or sky-colored water." It is the

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MINNESOTA—(Continued).

State of small lakes, including over 7,000, varying from a few rods to 32 miles across. In one of these, the Itasca, the Mississippi rises and flows 800 miles through the State. The other principal rivers are the Minnesota, Red River of the North, and the St. Louis. Small streams and lakes make water plentiful. The scenery is picturesque and beautiful. Organized as a Territory 1849; admitted 1858. Explored by Fathers Hennepin and La Salle 1680, via Mississippi River to Falls St. Anthony. Foreign immigration immense. Number Union soldiers furnished 25,052. Number counties 80. Miles railroad 4,193. Number colleges 5, school age 5-21, school system first-class.

CLIMATE.—Healthful. Air pure and dry, summers warm, averaging 68-70 deg.; winters cold, averaging 9-24 deg. Rainfall 36 inches, chiefly in summer. Snow-fall medium. The dryness mitigates the cold in winter.

PRESIDENTIAL ELECTION RESULTS.—1860, Rep. maj., 9,339; 1864, Rep. maj. 7,685; 1868, Rep. maj. 15,470; 1872, Rep. maj. 20,694; 1876, Rep. maj. 21,780; 1880, Rep. maj. 40,588; 1884, Rep. plur. 38,738; 1888, Rep. plur. 36,695.

All elections Tuesday after first Monday in November. Number Senators 47, Representatives 103, sessions biennial, in odd-numbered years, meeting Tuesday after first Monday in January, holds 60 days. Term of Senators 4 years, Representatives 2 years. Number electoral votes 7, Congressmen 5, voters 213,485. Idiots, insane, and convicts not voting.

SALARIES OF STATE OFFICERS.—Governor, $3,800; Lieutenant-Governor, $600; Secretary of State, $1,800; Treasurer, $3,500; Auditor, $3,000; Attorney General, $3,500; Superintendent of Public Instruction, $2,500; Adjutant General, $1,500; Public Examiner, $3,000; Insurance Commissioner, 2,000.

GEOGRAPHICAL, ETC.—Length north and south 378 miles, average width 261 miles, area 79,206 square miles, 50,691,200 acres. Surface rolling plain 1,000 feet above sea level, except at north-east, where are a series of sand hills called "Heights of Land" 1,600 feet high. Dairy interest increasing in value; production of butter and cheese becoming one of great industries; latest reports give 19,223,835 lbs. butter, cheese 975,329 lbs. The soil is splendid as a rule, and the accessibility to market and general attractions render the state especially favored by agriculturists. Cleared land averages $12.50 per acre and woodland $8. Wheat is the great crop. Corn, oats, barley, hay, and dairy products are also staples. State ranks fourth in wheat. The forests of the State are small (2,000,000 acres), but in parts are rich in fine timbers. Two thirds of the State is unoccupied. A law has just taken effect in Minnesota (1889) punishing drunkards. It provides a fine of $10 to $40 for the first offense, $40 to $60 for the second, and ninety days in the workhouse for the third. It was passed to aid temperance, and proceeds upon the theory that if it is wrong to sell intoxicants it is wrong to purchase them.

CHIEF INDUSTRIES.—Agriculture, dairying, mining, etc.

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MANITOBA
CANADA
St. Vincent
Hallock
Kennedy
Middle River
Warren
Angus
Fanny
Black River
Crookston
Kittson
Edna
Stanley
Ada
Wild Rice
Felton
Moorhead
Hawley
Lake Park
Audubon
Detroit City
Glyndon
Barnesville
Perham
Bangor
Manston
Breckinridge
Wadena
Elizabeth Town
Fergus Falls
Parkdale
Campbell
Tintah
Lake Traverse
Herman
Sauk Centre
Browns Valley
Big Stone
Graceville
Ortonville
Appleton
Milbank Jc.
Milan
Lac Qui Parle
Granite Falls
Canby
Dalston
Renville
Beaver Falls
Minnesota
Marshall
Redwood Falls
Marshfield
Tracy
Redwood Jc.
Verde
Lamberton
Woodstock
Currie
Pipestone
Ayoca
Mountain Lake
Edgerton
Iona
Heron Lake
Luverne
Brewster
Jackson
Adrian
Worthington
Sibley
Blomgren Bros. Engr's Chicago
RED LAKE INDIAN LAND
CEDED
Red Lake
Red Lake
Rainy Lake
INDIAN RESERVATION
Vermillion Lake
Vermillion Lake
Lake Winnibigoshish
Leech Lake
Leech Lake
Pokegarma Lake
Park Rapids
Pine River
Island Lake
Grand Rapids
Beaver Bay
Lake Superior
Duluth
Superior City
Thompson
Kimberly
Barnum
Aitkin
Brainerd
Mille Lacs
Kettle River
Mission Creek
Pine City
Rush City
Cambridge
Sauk Rapids
Princeton
Becker
Centre Cy.
Wyoming
Elk River
Anoka
Lake Shore
Stillwater
Eau Claire
Durand
Whitehall
Winona
St. Charles
Chattfield
Rushford
Hokah
Caledonia
Rose Cr.
Preston
Austin
LeRoy
Albert Lea
Lake Mills
Ridgeway
Fountain
Brownsville
Lansing
Rochester
Eyota
Owatonna
Kasson
Lewiston
Medford
Faribault
Zumbrota
Dora
Erin
Wabasha
Northfield
Lake City
Prague
Wing
Red Wing
Farmington
Hastings
Glencoe
Jordan
Chaska
Shakopee
Excelsior
Minneapolis
ST. PAUL
St. Paul Jc.
Mississippi R.
Henderson
Le Sueur
Le Sueur Cen.
St. Peter
Waterville
Mankato
Lake Crystal
New Ulm
Lohland
Sacred Heart
Henryville
Howard Lake
Watertown
Delano
Cokato
Ditchfield
Atwater
Clear Water
Murdock
Benson
Glenwood
Morris
Otto
Alexandria
Long Prairie
Little Falls
Motley
Pillager
Wadena
Ft. Ripley
Wykeman
Evansville
Melrose
Avon
St. Cloud
Clear Water
Wilmar
Grove
Montevideo
Milan
Benson
Appleton
Ortonville
Graceville
Big Stone
Browns Valley
Herman
Sauk Centre
Tintah
Campbell
Parkdale
Fergus Falls
Elizabeth Town
Wadena
Breckinridge
Manston
Bangor
Barnesville
Glyndon
Moorhead
Hawley
Lake Park
Audubon
Detroit City
Felton
Ada
Stanley
Edna
Kittson
Crookston
Black River
Nashville
Angus
Fanny
Warren
Middle River
Kennedy
Hallock
St. Vincent
Gulf of the Woods
Grand Portage
Grand Marais
Superior
MAP OF MINNESOTA
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MINNESOTA—(Continued.)

COLLECTION AND EXEMPTION LAWS.—Exemptions—Personal property, household effects, etc., $500.; implements and stock of farmer, $300; tools, stock, etc., of mechanic or miner, $400; library and implements of professional man; presses and material of printer or publisher, $2,000, together with stock, $400; homestead, 80 acres in country, ½ acre in village less than 5,000 inhabitants, or 1 lot in city over 5,000 inhabitants, and dwelling on each. Limitation of Actions—On contracts, express or implied, 6 years; on judgments or to foreclosure mortgage, 10 years; real actions, 20 years. Revivor—Part payment or new promise in writing. Redemption—Real estate sold under execution and foreclosure, 1 year; for taxes, 3 years. Justices' Jurisdiction—Any amount under $100. Witness—Party not excluded by reason of interest or crime. Stay of Execution—Judgment of district court, 6 months; justices' courts, $10 to over $75, 1 to 6 months. Married Women—All property acquired by wife, before or after marriage, remains her separate estate, neither controlled by nor subject to debts of husband. Interest—Legal, 7 per cent.; by contract in writing, 10. Usury—Interest taken above 10 per cent., or compounding, forfeits all interest.

CHIEF CITIES.—Pembina, port of entry on Red River; St. Paul (capital), pop. 133,156; Minneapolis, pop. 164,738.

POPULATION.—Census of 1890.—1,301,826.

MISSISSIPPI.

Name of Indian origin, signifying "Father of Waters." "Bayou State." Visited by De Soto 1542, by La Salle 1682. Settled Biloxi, 1699, by M. de Iberville. Admitted 1817; seceded 1861; re-admitted 1870. Formed part of the territory of Louisiana, and belonged to France. Seventh State admitted. Capital fixed at Jackson, 1822. State active in war 1814 and with Mexico. Shiloh the most notable battle of the rebellion in the State. Miles railroad 1844, 26. Number colleges 3, school age 5–21, school system fair.

CLIMATE.—Mild, snow and ice unknown. Summers long and warm, July and August hottest months. Temperature averages summer 80 deg., winter 50 deg. Rainfall 46 inches at north, 58 inches at south. Highlands very healthy. Malaria in bottoms.

PRESIDENTIAL ELECTION RESULTS.—1824, Dem. maj. 1,421; 1828, Dem. maj. 5,182; 1832, Dem. maj. 5,919; 1836, Dem. maj. 291; 1840, Whig (Rep.) maj. 2,523; 1844, Dem. maj. 5,920; 1848, Dem. maj. 615; 1852, Dem. maj. 9 328; 1856, Dem. maj. 11,251; 1860, Dem. maj. 12,474; 1872, Rep. maj. 34,887; 1876, Dem. maj. 59,568; 1880, Dem. maj. 35,099; 1884, Dem. plur. 33,001; 1888, Dem. plur. 55,375.

State officers elected quadrennially, and Legislature every two years. All elections Tuesday after first Monday in Nov. Sessions of Legislature biennial, in even-numbered years,

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MISSISSIPPI—(Continued).

meeting Tuesday after first Monday in January. Number Senators 37, Representatives 120. Term of Senators 4 years, of Representatives 2 years. Number electoral votes 9, Congressmen 7, voters 238,532, colored 130,278, foreign white 5,674. Idiots, insane, and criminals excluded from voting.

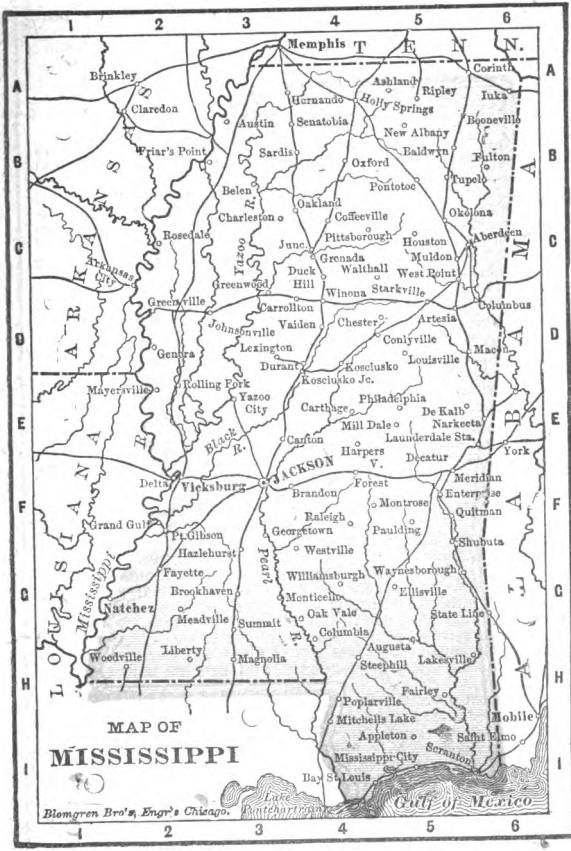
SALARIES OF STATE OFFICERS.—Governor, $4,000; Lieutenant Governor, $800; Secretary of State, $2,500; Treasurer, $2,500; Auditor, $2,500; Attorney General, $2,500; Superintendent of Public Education, $2,000; Commissioner of Agriculture, $1,000; Land Commissioner, $1,000; Adjutant General, $500; Librarian, $800; Chief-Justice, $3,500; two Associate Justices, $3,500: Senators and Representatives, $400 a year; two District Judges, $3,500; Collector Internal Revenue, $2,750.

GEOGRAPHICAL, ETC.—Greatest length north and south 304 miles, average width 143 miles, area 46,340 square miles, 29,657,600 acres. Some hills reach 200 feet above surrounding country. From Tennessee line south to Vicksburgh, Mississippi bottoms wide, flat, with more or less swamp, and covered with cypress and oak. Soil an inexhaustible alluvium. Soil light but productive, at south sandy, with pine growth. Surface undulating, with a gradual slope from elevation of 700 feet at north-east, west, and south to the Mississippi and Gulf. Coast line, including islands, 512 miles. Harbors, Biloxi, Mississippi City, Pascagoula, and Shieldsburg. Cleared land averages $7.50 per acre, woodland $3. Forest area large, pine, oak, chestnut, walnut, and magnolia grow on uplands and bluffs, long-leafed pine on islands and in sand. Lumbering important industries, mules raised with great success. State ranks second in cotton, fifth in rice. Oyster and other fisheries valuable. Cotton lands mostly in Yazoo and Mississippi bottoms. Cotton prolific. Staple crops cotton, rice, sugar, molasses, tobacco, corn, sweet potatoes, grapes for wine. Fruits and vegetables are splendid crops, but are neglected.

LEADING INDUSTRIES.—Agriculture, lumbering, fishing, and canning.

COLLECTION AND EXEMPTION LAWS.—Exemptions—Necessary tools and implements of farmer or mechanic, library and implements of professional man, $250; household furniture, $100; homestead 80 acres, or residence in city, value $2,000. Limitation of Actions—Open accounts, 3 years; contracts not under seal, express or implied, 6 years; bonds, notes, and contracts under seal, 7 years; judgments and decrees rendered in another State against resident of this, 3 years; rendered in this, 7 years; real actions, 10 years. Revivor—An acknowledgment of the debt or new promise in writing. Redemption—No law of. Justices' Jurisdiction—$150. Witness—Party in interest may be. Stay of Execution—Justice's court, 60 days. Married Women—Property of wife acquired in any manner and at any time, her separate property. Interest—Legal, 6 per cent., by contract in writing 10. Usury—Stipulation for more than 10 per cent. forfeits excess.

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MISSISSIPPI.—Continued.

CHIEF CITIES.—Jackson, capital, pop. 6,041; Natchez, pop. 10,132; Vicksburgh, pop. 13,298.

POPULATION.—Census of 1890.—1,289,600. In 1860 there were 436,631 slaves in the state of Mississippi.

MISSOURI.

"The Pennsylvania of the West." Name Indian, means "Muddy River," and was taken from that of the river of the same name. Settled first at St. Genevieve. Organized as Territory under present name 1812, included Arkansas, Indian Territory, etc. Admitted March 20, 1821. Eleventh State admitted. Number counties 115. Miles railroad 4,710. State divided on secession, and was scene of perpetual internal warfare. Martial law declared August, 1862. Union soldiers furnished 109,111. Admission aroused much discussion. "Missouri Compromise" effected and State permitted to retain slavery. Number colleges 17, school age 6-20, school system good, endowments large.

CLIMATE.—Variable, with sudden changes, but generally pleasant and healthy. Average temperature summer 76 deg., winter 39 deg. Rainfall greatest in May, averages 34 inches. Summers are long and warm, but not enervating. Winters moderate, with occasional severe days.

PRESIDENTIAL ELECTION RESULTS.—1824, Loose Constructionist (Rep.) maj. 103; 1828, Dem. maj. 4,810; 1832, Dem. maj. 5,192; 1836, Dem. maj. 2,658; 1840, Dem. maj. 6,788; 1844, Dem. maj. 10,118; 1848, Dem. maj. 7,406; 1852, Dem. maj. 8,369; 1856, Dem. maj. 9,640; 1860, Dem. plur. 429; 1864, Rep. maj. 41,073; 1868, Rep. maj. 21,232; 1872, Dem. maj. 29,809; 1876, Dem. maj. 54,389; 1880, Dem. maj. 19,937; 1884, Dem. plur. 33,059; 1888, Dem. plur. 25,701.

State officers elected quadrennially, and Legislature every two years. All elections Tuesday after first Monday in Nov. Number Senators 34, Representatives 141, sessions of Legislature biennial in odd-numbered years, meeting Wednesday after January 21, holds 70 days. Term of Senators 4 years, Representatives 2 years. Number electoral votes 16, Congressmen 14, number voters 541,207. United States Army and inmates of asylums, poor-houses, and prisons excluded from voting.

SALARIES OF STATE OFFICERS.—Governor, $5,000; Secretary of State, $3,000; Treasurer, $3,000; Auditor, $3,000; Attorney-General, $3,000; Adjutant-General, $2,000; Superintendent of Public Schools, $3,000; Register of Lands, $3,000; three Railroad Commissioners, $3,000; Superintendent Insurance Department, $4,000; Chief-Justice, $4,500; Senators and Representatives, $5 a day and mileage and $30; two District Judges, $3,500; five Collectors Internal Revenue, $2,250 to $4,500; Surveyor of Customs, St. Louis, $5,000.

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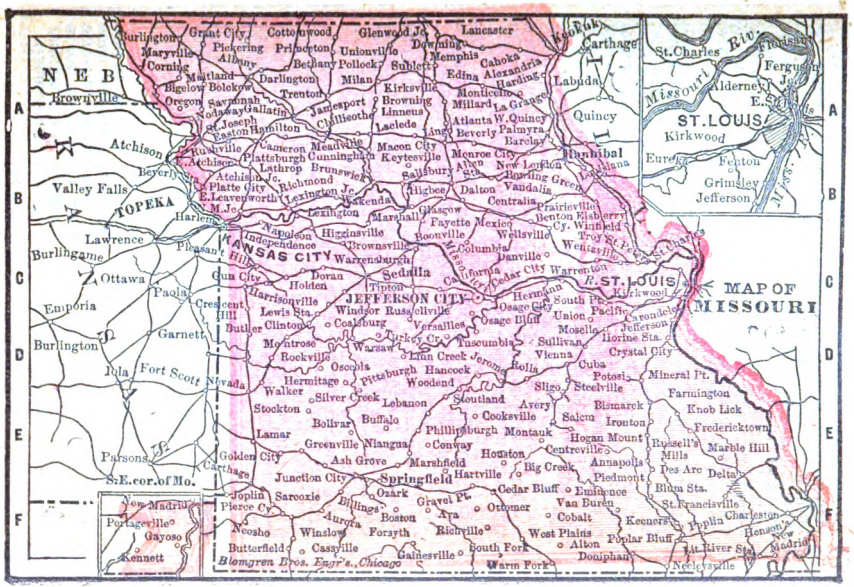
MISSOURI—(Continued.)

GEOGRAPHICAL, ETC.—Length north and south 575 miles. Average width 240 miles. Area 68,735 square miles, 43,990,400 acres. Soil generally good. Entire area well watered by small streams, springs, etc. South the surface is broken with hills, sometimes 1,000 feet high. The most noted, Iron Mountain and the Ozarks. West of Ozarks is a prairie region with wide, deep, fertile valleys. State ranks first in mules, third in oxen, hogs, corn, and copper; fifth in iron ore. Growth walnut, poplar, oak, and the hardwoods; grazing a leading business both in extent and profit. Stock of all kinds raised with success. Improved land averages $12, unimproved $7 per acre. Coal, iron, marble, granite, limestone, lead, and copper found in enormous deposits. Lead area 5,000 square miles. Forests magnificent. Chief crops corn, wheat, oats, potatoes, tobacco. Fruits do splendidly. Peaches especially fine. Vegetable gardening successful. In the early forties the first railroad was built in Upper Missouri. It extended from the brick mill, four miles south of Richmond, to the Lexington ferry on the north bank of the Missouri River. It was constructed, owned, and operated by Allen & Reeves. It was graded, and had wooden rails, and the cars were drawn by mules. When first completed an excursion was given, and all the neighbors for miles distant were invited to take a ride over it to the river and return. The cars used were flat, and chairs were placed on them for the convenience of the excursionists.

LEADING INDUSTRIES.—Agriculture, mining, manufacturing, quarrying, grazing, fruit and vegetable growing, lumbering, etc.

COLLECTION AND EXEMPTION LAWS.—Exemptions—To heads of families—Personal property, various articles and stock named, or else, if chosen by debtor, in value $300; homestead, 160 acres in country, or 30 square rods in city of less than 40,000 inhabitants, either in value, $1,500; in cities over 40,000 inhabitants, 18 square rods, value $3,000. Limitation of Actions—Open accounts and all promises not in writing, 5 years; contracts and instruments in writing 10 years; judgments and decrees of courts of record, 20 years. Revivor—New promise in writing. Redemption—Lands sold since May, 1877, under trust deed, without foreclosure, 1 year. Justices' Jurisdiction—On contracts, debts, or balance due, exclusive interest, $90; on bonds and notes, exclusive of interest, $150; in counties over 50,000 inhabitants, the above limits are enlarged respectively, as follows, $90 to $200, and $150 to $300. Witness—Party in interest may be. Stay of Execution—Neither stay nor attachment known in this State. Married Women—Wife holds her real and personal property free from her husband and his debts, but through the intervention of a trustee. Interest—Legal, 6 per cent.; by contract in writing 10. Usury—It is unlawful to take or stipulate for more than 10 per cent.; if done, lender forfeits all interest, but borrower pays 10 per cent., which goes to school fund.

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MAP OF MISSOURI
JEFFERSON CITY
KANSAS CITY
ST. LOUIS
TOPEKA
Springfield
Hannibal
Quincy
Carthage
Lancaster
Glenwood
Princeton
Unionville
Memphis
Kirksville
Milan
Sublette
Pollock
Bethany
Trenton
Darlington
Maitland
Albany
Pickering
Cottonwood
Grant City
Burlington
Maryville
Cornig
Bigelow
Bolckow
Oregon
Savannah
Rosadale
Gallatin
Jamesport
Chillicothe
Browning
Linneus
Laclede
Macon City
Keytesville
Salisbury
Brunswick
Richmond
Lexington
Arrow Rock
Glasgow
Marshall
Fayette
Mexico
Columbia
Boonville
Wellsville
Danville
Centralia
Prairieville
Benton
Elsberry
Cy. Winfield
Troy
Wentzville
St. Charles
Florissant
Ferguson
Alderney
Kirkwood
Eureka
Fenton
Grimsley
Jefferson
Missouri River
Mississippi River
Bloomgren Bros. Engr's., Chicago
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MISSOURI—(Continued).

CHIEF CITIES.—St. Louis, largest city west of the Mississippi, port of entry, and great commercial and manufacturing point, pop. 460,357; Jefferson City, capital, pop. 6,732; St. Joseph, pop. 52,811; Kansas City, 132,416.

POPULATION.—Census of 1890.—2,679,184.

MONTANA.

Formerly a part of Idaho. Became a Territory 1864. Received about 2,000 square miles from Dakota 1873. School age 4-21 years, graded schools in Deer Lodge City, Virginia City, and Helena. School lands reserved for sale when Territory becomes a State valuable and extensive. State admitted to the Union February 22. 1889, at same time as North and South Dakota and Washington. Custer massacre June 25, 1876, 350 men of the Seventh United States Cavalry annihilated by Sioux under Sitting Bull, on the Little Big Horn River. Number counties 14. Miles of railroad 1,046.

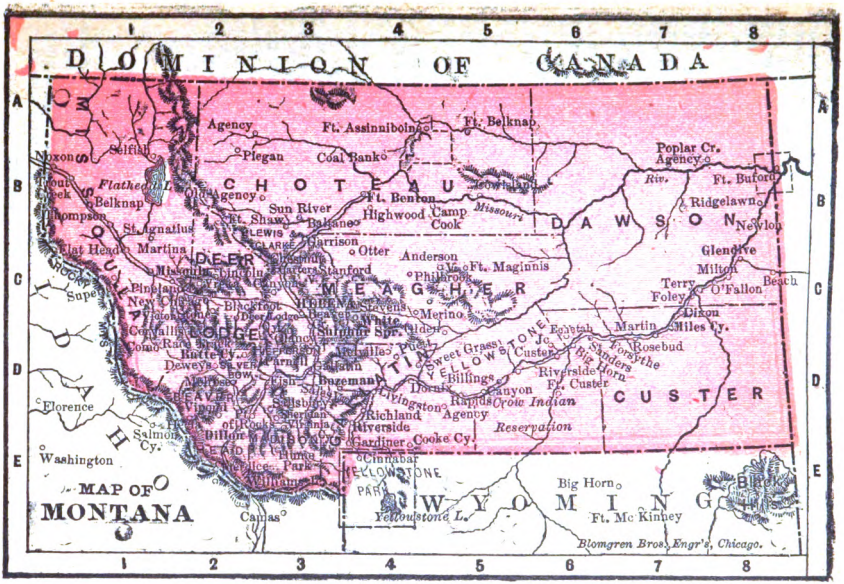
CLIMATE.—Dry. Rainfall about 12 inches. Warmer than same latitude farther east. Snows heavy in mountains, light in valleys and on plains. Temperature averages summer 62 deg., winter 18 deg. Colder in mountains. Health excellent.

ELECTIONS.—All elections Tuesday after first Monday in November. Number Senators 12, Representatives 24, sessions of Legislature biennial, in odd-numbered years, meeting second Monday in January, holds 60 days. Terms of Senators and Representatives 2 years each. Voters 21,544, native white 12,162, foreign white 7,474, colored 1,908.

SALARIES OF STATE OFFICERS.—Governor, $2,600; Secretary, $1,800; Treasurer, $1,500; Auditor, $1,500; Superintendent of Public Instruction, $1,200; Chief-Justice, $3,000; two Associate Justices, $3,000; Senators and Representatives, $4 per day, 20 cents mileage; Surveyor General, $2,500; Chief Clerk, $1,800; Chief Draftsman, $1,600; Collector of Internal Revenue, $2,500.

GEOGRAPHICAL, ETC.—Extreme length east and west 540 miles, average width 274 miles, area 145,310 square miles. The largest county in the United States is Custer County, Montana, which contains 36,000 square miles, being larger in extent than the States of Vermont, Massachusetts, Connecticut, Delaware, and Rhode Island. One-tenth of the present population of the United States could find means of a livelihood within this immense county; then it would not be as overcrowded as Belgium was at the time of the last census. Three-fifths of the territory rolling plains, rest mountainous. Surface fairly supplied with small streams; 92,998,400 acres, two fifths good farm land, of which about 4,000 acres is cultivated. Too cold for corn. Area grazing land, over two-thirds territory. Grazing interests great. Splendid grazing grounds yet untaken. Timber supply ample. Soil good. Immense area of arable land. Wheat best crop, oats, potatoes, hay,

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DOMINION OF CANADA
Agency
Ft. Assiniboine
Ft. Belknap
Poplar Cr. Agency
Pegan
Coal Banks
Selfish
Dixon
Flathead L.
Belknap
Agency
CHOTEAU
Ft. Benton
Sun River
Highwood
Camp Cook
Missouri
Ft. Buford
Ridgelawn
Newlon
DAWSON
Thompson
St. Ignatius
Flat Head
Martina
Garrison
Otter
Anderson
Glendive
Milton
Terry
O'Fallon
Beach
Foley
Dixon
Miles Cy.
Rosebud
Custer
Riverside
Ft. Custer
Billings
Bozeman
Livingston
Crow Indian Reservation
Richland
Agency
Riverside
Cooke Cy.
Gardiner
Cinnabar
YELLOWSTONE PARK
Florence
Washington
Salmon Cy.
MAP OF MONTANA
Big Horn
WYOMING
Ft. Mc Kinney
Yellowstone L.
Blomgren Bros. Engr's, Chicago.

MONTANA—(Continued).

also staples. Mineral wealth great. Ranks fifth in silver and in gold. One of the richest mining countries in the world; mineral wealth almost inexhaustible. Grazing interest of value; estimated area valuable grazing land, 100,000 square miles; great extent of plains and mountain valleys yet untouched by herdsmen.

LEADING INDUSTRIES.—Mining, lumbering, grazing, agriculture, smelting, etc.

COLLECTION AND EXEMPTION LAWS.—Exemptions—Usual personal schedule, and to farmer, implements, stock, seeds, etc., $800; tools, teams, and libraries of mechanics, business, and professional men; dwelling of miner, $500, his tools and machinery, $500, also team; homestead, 80 acres in country, ¼ acre in city, value each $2,500. Limitation of Actions—Upon contract or account not in writing, 2 years; contracts, obligations or instruments in writing, judgment, and decrees of any court, 6 years. Revivor—Part payment, acknowledgment or promise in writing. Redemption—Lands sold under execution, 6 months. Justices' Jurisdiction—$100. Witness—Party in interest may be. Stay of Execution—Discretion of court. Married Women—Wife's property, acquired at any time, her separate estate, provided it is specified in a list and recorded as such. Interest—Any rate by stipulation; when no contract, 10 per cent. Usury—No law.

CHIEF CITIES.—Three United States districts, court held twice a year at Helena, twice at Virginia City, pop. (about) 4,000, and three times at Deer Lodge, pop., 1,500; Helena, pop. 13,834, capital and most important town.

POPULATION.—Census of 1890.—132,159.

NEBRASKA.

Name first applied to the river, and is of Indian origin, signifying "Shallow Water." Nebraska Territory organized May, 1854. Few settlements till 1864. Idaho cut off March, 1863, and present boundaries fixed. Bill to admit July, 1866, unsigned by President Johnson, and another January, 1867, vetoed. Bill passed over veto February, 1867. Admitted that year. Number colleges 9, school age 5-21, school system superior, school endowments liberal. Union soldiers furnished 3,157. Number counties 74. Miles railroad, 1865, 122; 1885, 2,794.

CLIMATE.—Dry, salubrious, and free from malaria. Temperature averages summer 73 deg., winter 20 deg. Rainfall east of 100th meridian, including snow, 25 inches, heaviest in May. At west precipitation falls to 17 inches. Rainfall gradually increasing.

PRESIDENTIAL ELECTION RESULTS.—1868, Rep. maj. 4,290; 1872, Rep. maj. 10,517; 1876, Rep. maj. 10,326; 1880, Rep. maj. 22,603; 1884, Rep. plur. 22,512; 1888, Rep. plur. 27,873.

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NEBRASKA—(Continued).

All elections Tuesday after first Monday in November. Number Senators 33. Representatives 100, sessions biennial, in odd-numbered years, meeting first Tuesday in January, holding 40 days. Terms of Senators and Representatives 2 years each, number electoral votes 5, number Congressmen 3, number voters 129,042. United States Army, idiots, and convicts excluded from voting.

SALARIES OF STATE OFFICERS.—Governor, $2,600; Secretary of Territory, $1,800; Treasurer, $2,000; Auditor, $1,000; Superintendent of Public Instruction, $1,500; Chief-Justice, $3,000; five Associate Justices, $3,000; Senators and Representatives, $4 a day, mileage 20c.; ten Indian Agents, $1,000 to $2,200; Surveyor General, $2,500; Chief Clerk, $1,800; Chief Draftsman, $1,500; Assistant Draftsman, $1,200; Collector of Internal Revenue, $2,750; four Deputy Collectors, $1,600.

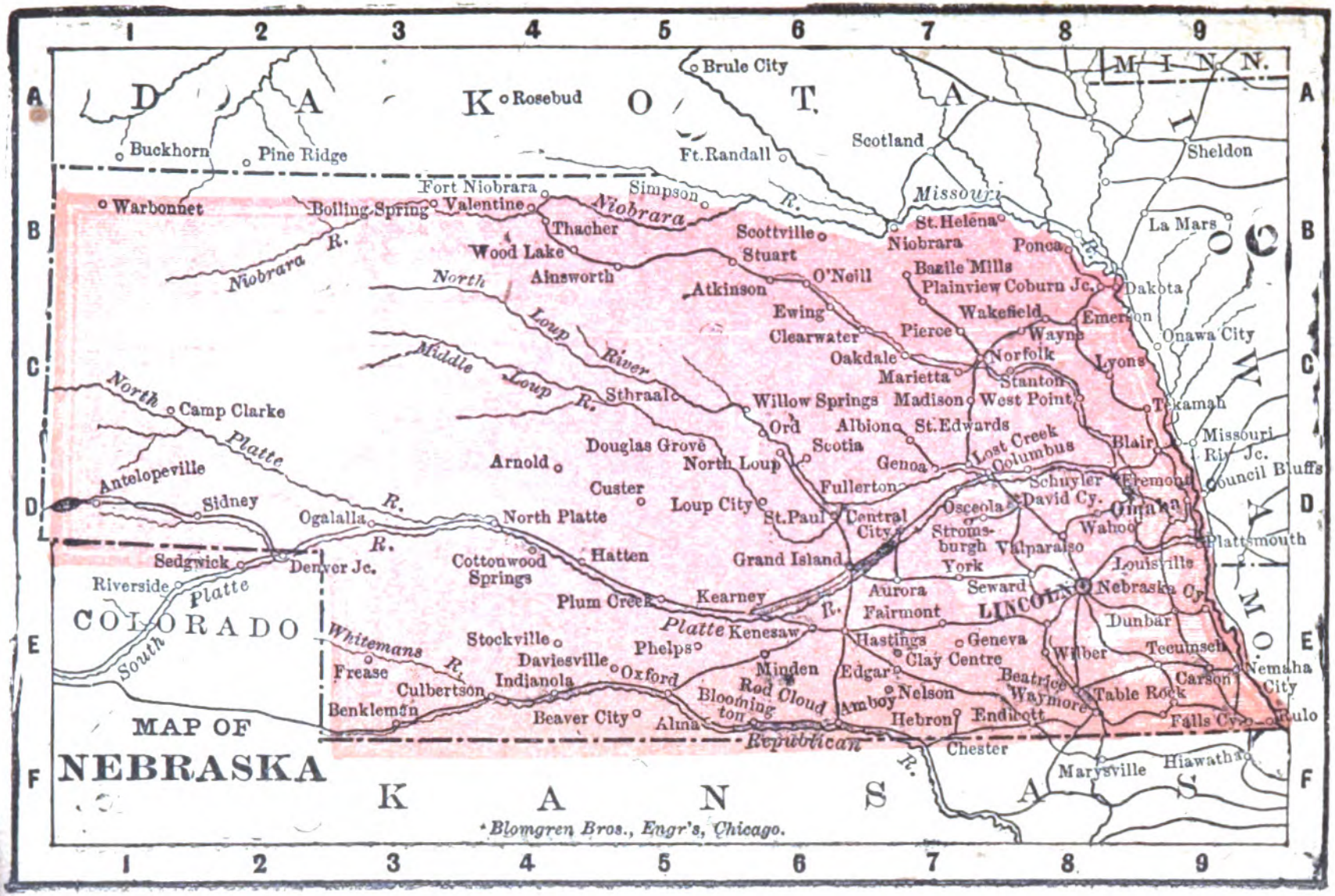
GEOGRAPHICAL, ETC.—Extreme length east and west 424 miles, width 210 miles, area 76,185 square miles, 48,755,000 acres. Manufacturing growing wonderfully. Improved land averages $9, unimproved $5, and woodland $18 per acre. Cattle raising of vast importance and magnitude. Good herd laws. No important minerals. Whole eastern two-fifths a great natural garden. Corn the great crop; wheat, oats, hay, rye, buckwheat, barley, flax, hemp, apples, plums, grapes, berries, staples, and flourish. Surface a vast plain, undulating gently, and principally prairie, with a few low hills. Missouri, Platte, Niobrara, Republican, and Blue, principal rivers, and are fed by numerous smaller streams. Southern portion of State peculiarly favorable to all kinds of crops, western half magnificent series of pastures, and best suited to grazing. At extreme north-west are spurs of the Rocky Mountains, and Black Hill country begins; general slope from west to east.

LEADING INDUSTRIES.—Agriculture, cattle-raising, dairying, manufacturing, etc.

COLLECTION AND EXEMPTION LAWS.—Exemptions—The usual schedule of furniture, tools, stock, etc.; homestead, 160 acres in country, or ¼ acre if within the town plat; if debtor has no lands, then $500 in personal property. Limitation of Action—Upon verbal contracts, express or implied, 4 years; specialty or promise in writing or foreign judgments, 5 years; real actions, 10 years. Revivor—Part payment or an acknowledgment, or any promise to pay in writing. Redemption—None under execution or mortgage, except before confirmation of sale; after confirmation title is absolute, even if judgment is subsequently reversed; tax sales, 2 years. Justices' Jurisdiction—$100. Witness—Party in interest may be. Stay of Execution—$50, 3 months; $100, 6 months; all others, 9 months. Married Women—Property of wife acquired at any time from any source except from her husband her sole property and controlled as if unmarried. Interest—Legal, 7 per cent.; by contract in writing, 7. Usury forfeits all interest.

CHIEF CITIES.—Omaha. U. S. port of delivery, commercial

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NEBRASKA—(Continued).

center, pop., 139,526; Lincoln contains State University, pop., 55,491; Plattsmouth, pop., 8,403; Nebraska City, 11,472.

POPULATION.—Census of 1890.—1,058,910.

Below is a table showing in round numbers the increase of school children in the State for the past four years;

Census of 1885, number of children, 233,000.
Census of 1886, number of children, 256,000.
Census of 1887, number of children, 279,000.
Census of 1888, number of children, 298,000.
Census of 1889, number of children, 317,000.

The population of Nebraska, according to the returns of the school-children for 1889, was 1,041,180. This is arrived at by using the usual multiple of 3 1-10.

NEVADA.

"Sage Hen State." First settlement in Washoe and Carson Valleys 1848. Gold discovered 1849, silver 1859. Territory organized March, 1861. Admitted as State October, 1864. Number counties 15. Miles railroad 948. School age 6-18 years. Although for twenty-five years one of the States of the American Union, her population is but little over 60,000, and many of her own residents think there has been an actual decrease in the number of inhabitants since 1880. The State has nothing of value except her mining interests, and as these are beginning to decay, the people are forced to go elsewhere for support. Nevada is nearly as large as Ohio, Indiana, and Kentucky combined, but in all its vast area there is not as much good agricultural land as many single counties of the former States afford. The soil is not even suitable for grazing, unless cattle and sheep learn to live on sand and sage grass. Lonely mountains and lengthy deserts offer little promise to settlers, and Nevada is destined to remain to us what the wildest and bleakest of the Highlands have been to Scotland, fortunate if she should ever have a history rich in romance like the country which Scott has most picturesquely depicted. Fifty years from now the State will probably not have reached a population of 100,000. Nevada's statehood has already been the subject of criticism. She ought never to have been admitted into the Union. Either Arizona or Wyoming is better fitted for membership, but having brought her in, we cannot put her out again, and she remains the only State not gaining in inhabitants, but nevertheless on an equal basis in the Senate with the greatest and most populous. The two men who represent her 60,000 people there have the same power as those who vote in the name of Ohio's four millions or New York's six millions.

CLIMATE.—Mild in valleys; little snow except on mountains. At north mercury sometimes falls to 15 deg. below zero; air bracing, health good. Extremes of cold unknown. Summer heat occasionally reaches above 100 deg. Temperature aver-

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NEVADA—(Continued).

ages summer 71 deg., winter 36 deg. Rainfall slight, chiefly in spring.

PRESIDENTIAL ELECTION RESULTS.—1864, Rep. maj. 3,232; 1868, Rep. maj. 1,262; 1872, Rep. maj. 2,177; 1876, Rep. maj. 1,075; 1880, Dem. maj. 879; 1884, Rep. plur. 1,615; 1888, Rep. plur. 1,939.

Governor and State officials elected quadrennially, and Legislature every two years, on Tuesday after first Monday in November. Number Senators 20, Representatives 40, sessions of Legislature biennial, in odd-numbered years, meeting first Monday in January, holding 60 days. Terms of Senators 4 years, of Representatives 2 years. Voting population 31,255, native white 11,442, foreign white 14,191, colored 5,622. Idiots, insane, and convicts excluded from voting.

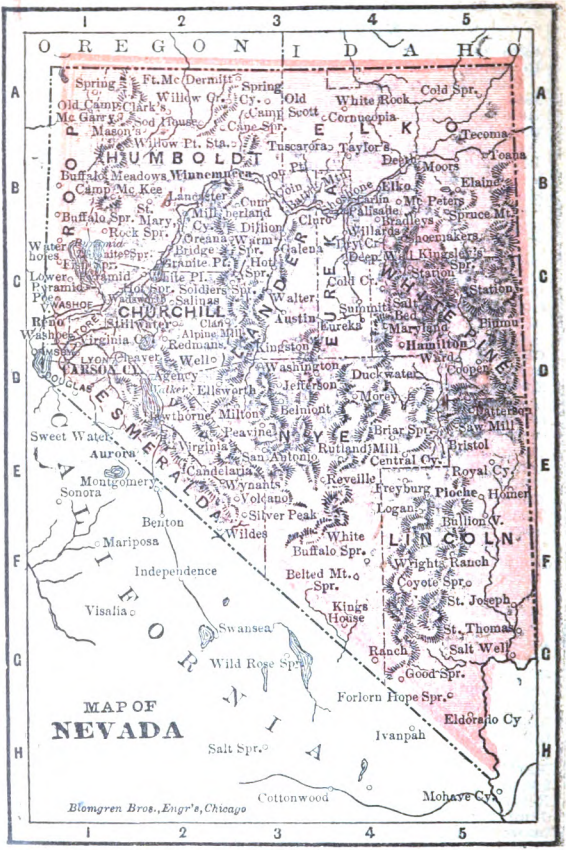
SALARIES OF STATE OFFICERS.—Governor, $5,000; Lieutenant Governor, $3,000; Secretary of State, $3,000; Treasurer, $3,000; Comptroller, $3,000; Attorney General, $3,000; Superintendent of Public Instruction, $2,400.

GEOGRAPHICAL, ETC.—Extreme length north and south 485 miles, width 320 miles, area 109,740 square miles, 70,223,000 acres. Lake Tahoe, 1,500 feet deep, 10x22 miles in area, and 9,000 feet above sea, temperature year round 57 deg. Rich in lead and copper; zinc, platinum, tin and nickel, plumbago, manganese, cobalt, cinnebar, etc., found. Extensive deposits of borax. Coal and iron. Mineral resources enormous. Comstock lode supposed to be richest silver mine in the world; Eureka one of the most productive. Ranks second in gold, fourth in silver. Kaolin, building stones, slate, soda, and salt are obtained. Little land improved. Corn, wheat, potatoes, oats, and barley, staple crops; horses, mules, cattle, hogs, and sheep do well. Forests valuable. Considerable areas of grazing land; many valleys, rich, easily worked, and prolific soil. Many mineral springs, warm, and cold. Great part of surface unavailable for cultivation.

LEADING INDUSTRIES.—Mining, reducing ores, lumbering, agriculture, etc.

COLLECTION AND EXEMPTION LAWS.—Exemptions—Office furniture, $100; household furniture, farming utensils, $200; team, etc., tools of mechanic, libraries, etc., of professional men, dwelling of miner, $500, also tools and machinery, $500; homestead to head of family, $5,000. Limitations of Actions Open or store account and contract not in writing, 2 years; upon contract or instrument of writing, 4 years; recovery of mining claims, 2 years: real actions, or judgment or decree of any court, 5 years. The above applies to contracts before March 2, 1877; to contracts since that date (the above periods), 2 years extended to 4, and 4 and 5 respectively to six years. Revivor—Acknowledgment or new promise in writing. Redemption—Of lands sold on execution, 6 months; except for taxes, then none. Justices' Jurisdiction—$300, exclusive of interest. Witness—Party in interest may be. Stay of Execution—In discretion of court. Married Women—All property

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OREGON
IDAHO
HUMBOLDT
ELKO
LINCOLN
WHITE PINE
ESMERALDA
NYE
CHURCHILL
LYON
DOUGLAS
WASHOE
CARSON CY.
CALIFORNIA
Fort McDermitt
Spring Ft.
Willow Cr.
Old Camp
Clark's
Mc Garry's
Sod House
Mason's
Willow Pt. Sta.
Buffalo Meadows
Camp Mc Kee
Buffalo Spr.
Rock Spr.
Water holes
Lower Pyramid
Pyramid
Reno
Washoe
Virginia
Dayton
Carson
Silver City
Genoa
Carson City
Empire City
Dayton
Virginia
Gold Hill
Silver City
Gold Hill
Virginia City
Gold Hill
Silver City
Gold Hill
Virginia City
Gold Hill
Silver City
Gold Hill
Virginia City

NEVADA—(Continued).

of the wife, owned by her before marriage, and that acquired afterward by gift, bequest, devise or descent, her separate property; all other property acquired during coverture by husband or wife, common property, but controlled by husband. Interest—Legal, 7 per cent.; any rate by agreement. Usury—No law.

CHIEF CITIES.—Virginia City, chief commercial center, pop. 6,377; Carson City (capital), and contains a branch mint, pop., 4,080.

POPULATION.—Census of 1890.—45,761.

NEW HAMPSHIRE.

One of the thirteen original States. Settled by English Puritans at Dover and Portsmouth 1623. Named for Hampshire County, England, called the "Granite State." Ratified United States Constitution June 21, 1788. Dartmouth College, at Hanover, founded 1769. Compulsory education law, common schools excellent, school age 5-15. Union soldiers' 33,937. Number counties 10. Miles railroad 660.

CLIMATE.—Winter average 24, summer 69 deg. Extremes great in White Mountains. Winter begins in November, cold till May. Snow lies two-thirds of year in mountains, elsewhere 70 to 130 days. Health good. Summer short and hot, with violent storms. Rainfall 41 inches. Frost late in spring and early in fall.

PRESIDENTIAL ELECTION RESULTS.—1824, Loose Constructionist (Rep.) maj. 3,464; 1828, Loose Constructionist (Rep.) maj. 3,384; 1832, Dem. maj. 6,476; 1836, Dem plur. 12,494; 1840, Dem. maj. 6,386; 1844, Dem. maj. 5,133; 1848, Dem. maj. 5,422; 1852, Dem. maj. 7,155; 1856, Rep. maj. 5,134; 1860, Rep. maj. 9,085; 1864, Rep. maj. 3,529; 1868, Rep. maj. 6,967; 1872, Rep. maj. 5,444; 1876, Rep. maj. 2,954; 1880, Rep. maj. 3,530; 1884, Rep. plur. 4,059; 1888, Rep. plur. 2 370.

All elections Tuesday after first Monday in November, number Senators 24, Representatives 321, sessions of Legislature biennial in odd-numbered years, meeting first Wednesday in June. Terms of Senators and Representatives 2 years each. Number electoral votes 4, Congressmen 2, voters 105,138. Paupers excluded from voting.

SALARIES OF STATE OFFICERS.—Governor, $1,000; Secretary of State, $800 and fees; Treasurer, $1,800; Attorney-General, $2,200; Superintendent of Public Instruction, $2,000; three Railroad Commissioners, $2,000 to $2,500; Adjutant-General, $1,000; Secretary Board of Agriculture, $1,000; Librarian, $800; Chief-Justice, $2,900; six Associate Justices, $2,700; Senators and Representatives, $3 a day and mileage; District Judge, $3,500; Pension Agent, $4,000; Collector Internal Revenue, $3,125.

GEOGRAPHICAL, ETC.—Extreme length north and south 181 miles, extreme width 92 miles, area 9,005 square miles, 5,763,-

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NEW HAMPSHIRE—Continued).

200 acres. Coast line 18 miles. State ranks high in cotton manufacturing. Cleared lands average $16⅔ and woodland $25 per acre. Mica quarried at Grafton, soapstone at Haverhill, Keene, and Francestown, granite at Plymouth, Troy, Roxbury, Concord. The White Mountains occupy the northern portion of the State with unsurpassed scenery. Highest peak Mount Washington. Largest lake, Winnipiseogee, 74 square miles. General elevation 1,200 feet. Isles of Shoals form part of State. Soil rocky, with small fertile districts. Hay best crop; corn, wheat, oats, and ordinary vegetables do fairly with close cultivation. Forests largely exhausted, except at the north.

PRINCIPAL INDUSTRIES.—Agriculture, manufacture of cotton, woolens, lumber, leather, boots and shoes, etc. Quarrying mica, granite, and soapstone.

COLLECTION AND EXEMPTION LAWS.—Exemptions—Household furniture, $100; tools of mechanic, $100; library, $200; together with the usual live-stock, teams, etc.; homestead or interest therein to wife, widow, and children during life or minority, $500. Limitation of Actions—Contracts not under seal, 6 years; real actions, judgments, notes secured by mortgage and contracts under seal, 20 years. Revivor—New promise, verbal or written. Redemption—Lands sold under execution, foreclosure, or for taxes, 1 year. Justices' Jurisdiction—$13.33. Witness—Party in interest may be. Stay of Execution—Discretion of Court. Married women may hold and control their separate property, real and personal, and earnings, as if *sole*. Interest—Legal, 6 per cent. Usury—A person receiving above 6 per cent, forfeits three times the excess.

PRINCIPAL CITIES.—Manchester, pop., 43,983; Nashua, 19,266; Concord (the capital), 16,948; Dover, 12,779; Portsmouth (chief harbor), 9,811. The harbor of the latter place, Great Bay, never freezes over.

POPULATION.—Census of 1890.—376,530. (For Map of New Hampshire see page 499.)

NEW JERSEY.

Named in honor of grantee. Sir George Carteret, at one time Governor of the Island of Jersey. One of the thirteen original States. Settled by Dutch, at Bergen, 1620. Delaware Water Gap and Falls of Passaic are the natural wonders of the State. State Constitution adopted 1776, revised 1844, and amended in the present decade. United States Constitution unanimously adopted December, 1787. Battles of Trenton, Princeton, Monmouth, and others fought within its borders during the Revolution. Capital established at Trenton 1790. A slave State till 1860, when but eighteen slaves remained, and it was counted a free State. Union soldiers furnished 75,814. Number colleges 4, schools good, school age 5-18.

CLIMATE.—Variable. Temperature averages summer 68 deg.

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NEW JERSEY—(Continued).

to 75 deg., winter 31 to 38 deg. Range of temperature from about zero to 100 deg. Rainfall, including snow, 46 inches, reaching 50 inches in the highlands, and falling to 40 inches at the south. Highlands and sea-shore healthy. Ague and malarial fevers in the lowlands.

PRESIDENTIAL ELECTION RESULTS.—1824, Dem. maj. 679; 1828, Loose Constructionist (Rep.) maj. 1,808; 1832, Dem. maj. 463; 1836, Whig (Rep.) maj. 545; 1840, Whig (Rep.) maj. 2,248; 1844, Whig (Rep.) maj. 692; 1848, (Whig (Rep.) maj. 2,285; 1852, Dem. maj. 5,399; 1856, Dem. plur. 18,605; 1860, Dem. maj. 4,477; 1864, Dem. maj. 7,301; 1868, Dem. maj. 2,870; 1872, Rep. maj. 14,570; 1876, Dem. maj. 11,690; 1880, Dem. plur. 2,010; 1884, Dem. plur. 4,412; 1888, Dem. plur. 7,149.

State elections annual, same date as Congressional and Presidential. Number of Senators 21, Representatives 60. meeting of Legislature second Tuesday in January. Term of Senators 3 years, Representatives 1 year. Number of electoral votes 9, Congressmen 7. Paupers, idiots, insane, and convicts excluded from voting.

SALARIES OF STATE OFFICERS.—Governor, $5,000; Secretary of State, $6,000; Treasurer, $4,000; Comptroller, $4,000; Attorney General, $7,000; Superintendent of Public Instruction, $3,000; Adjutant General, $1,200; Librarian, $1,500; Chief-Justice, $7,500; eight Associate Justices, $7,000; Chancellor, $10,000; Senators and Representatives, $500 a year; District Judge, $3,500; Superintendent of Life Saving Service, $1,800; thirty-nine Keepers, $700.

GEOGRAPHICAL, ETC.—Length north and south 158 miles, width 38 to 70 miles, area 7,455 square miles, or 4,771,200 acres. Forty-third State in size. State contains 21 counties, and has 1 890 miles railroad. Toward center State slopes to a rolling plain, and at south becomes flat and low. Hudson River forms the eastern border. Atlantic coast 128 miles, Delaware Bay coast 118 miles. The famous Palisades of the Hud on at the north-east are 600 feet high. Little woodland valuable for timber remains. Iron and fertilizing marls are abundant. Cleared land averages $80 and woodland $60 per acre. Hay the best crop. Other staple crops are potatoes, wheat, corn, rye, buckwheat, cranberries, fruit, and garden produce. Cranberry growing a specialty, Burlington, Ocean, and Atlantic Counties being especially adapted to this industry. Central region a vast market garden.

CHIEF INDUSTRIES.—Manufacture of fabrics, jewelry, clay wares, and brick, flour, crystals, fishing, oyster fishing, gardening, agriculture, marl, and iron ore digging, etc.

COLLECTION AND EXEMPTION LAWS.—Exemptions—Personalty, $200; homestead under statutory notice, lot and building occupied as residence, $1,000. Limitation of Actions—Debt not founded on specialty and all actions of account, 6 years; upon sealed instruments, 16 years; judgments and real actions, 20 years. Revivor—Part payment or written acknowledgment. Redemption—None except for taxes, then

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NEW JERSEY—(Continued).

time governed by special laws. Justices' Jurisdiction—$100. Witness—Party in interest may be. Stay of Execution—Justices' court, not over $15, 1 month; over $15 and under $60, 3 months; over $60, 6 months. Married Women—Wife holds and controls her property, acquired at any time, as if she was single. Interest—Legal, 6 per cent. Usury forfeits all interest.

PRINCIPAL CITIES.—Newark, Perth, Amboy, Great Egg Harbor, Tuckerton, Bridgeton, and Lumberton are ports of entry; Newark, pop., 181,518; Jersey City, 163,987; Trenton (capital), 58,488; Paterson, 78,358; Elizabeth, 37,670; Hoboken, 43,561; Camden, 56,274.

POPULATION.—Census of 1890.—1,444,933.

NEW MEXICO.

Named in honor of one of the gods of the Aztecs, the ancient inhabitants of Mexico. Organized as Territory 1850. Number counties 12. Santa Fe being oldest town in United States, next to St. Augustine. Permanent settlement 1596. Santa Fe, then an Indian town, chosen as a seat of Spanish Government. The natives were enslaved and forced to work in the fields and mines. Santa Fe captured by Confederates, 1862, but soon abandoned. School age 7-18 years.

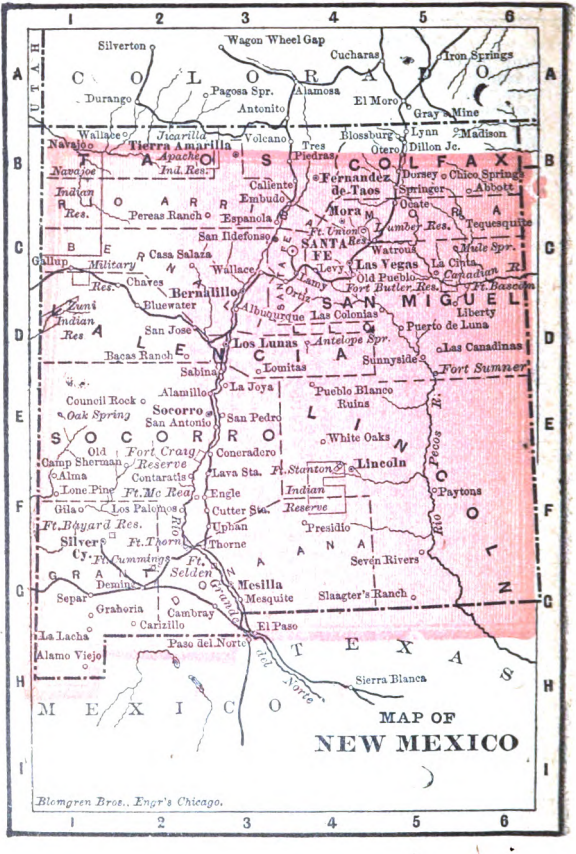
CLIMATE.—Varies with different elevations. It is much warmer than the average in the lower altitudes, and colder in the higher. Air dry, rarefied, and pure. Rainfall 9 to 11 inches. Temperature averages summer 70 deg., winter 32 deg. Range of temperature 4 deg., below zero to 90 deg. above.

ELECTIONS.—All elections Tuesday after first Monday in November. Number Senators 12, Representatives 24, sessions of Legislature biennial in even-numbered years, meeting first Monday in January, holds 60 days. Terms of Senators and Representatives 2 years. Voters 34,076, native white 26,423, foreign white 4,558, colored 3,095.

SALARIES OF TERRITORIAL OFFICERS.—Governor, $2,600; Secretary, $1,800; Treasurer, $1,000; Auditor, $1,000; Commissioner of Immigration, $900; Librarian, $600; Chief-Justice, $3,000; two Associate Justices, $3,000; Senators and Representatives, $4 a day and 20c. mileage; Collector of Internal Revenue, $2,500; two Deputy Collectors of Internal Revenue, $1,200 to $1,700; Surveyor General, $2,500; Translator and Chief Clerk, $2,000.

GEOGRAPHICAL, ETC.—Average length north and south 363 miles, width 335 miles. Area 122,000 square miles, 78,400,200 acres. Zinc, quicksilver, lead, manganese, and large deposits of coal have been found. Irrigable surface 7,000 square miles. Soil rich where water can be had for irrigation or on streams. Gold found in Grant, Lincoln, Colfax, and Bernalillo Counties, rich copper mines in Bernalillo County, and in the Pinos Altos region. Corn, wheat, oats, alfalfa, grapes, vegetables,

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NEW MEXICO—(Continued).

especially onions and root crops and semi-tropical fruits are prolific. Sheep raising very profitable. Grazing interests extensive. Elevation 3,000 to 4,000 feet. Mountain peaks 12,000 feet. The Staked Plain, an elevated region unwatered and without food, extends into the south-eastern part of the territory. The mountains are clothed with pine, spruce and fir. Cedar grows in foot-hills, and cotton-wood and sycamore in valleys. No streams are navigable in the territory. Timber scarce, except in few sections.

LEADING INDUSTRIES.—Mining, stock-raising, and agriculture.

COLLECTION AND EXEMPTION LAWS.—Exemptions—Real estate to head of family residing on the same, provided it is claimed as exempt, $1,000; also small amount of personal property, including tools, etc. Limitation of Actions—No statute affecting the collection of moneys: adverse possession, 10 years. Revivor—No statute. Redemption—Lands sold under execution or for taxes, 1 year. Justices' Jurisdiction—Any amount less than $100. Witness—Rules of common law govern exclusively. Stay of Execution—No statute, except by appeal. Married Women—Wife is the sole owner of her separate property, but it is subject to the control of her husband, and the proceeds become their joint property. Interest—Legal, 6 per cent., but any amount by agreement. Usury—No law of.

CHIEF CITIES.—Santa Fe (capital), pop., 6,713; Las Vegas, Silver City and Albuquerque.

POPULATION.—Census of 1890.—153,593.

NEW YORK.

One of the thirteen original States, "Empire State." Explored by Henry Hudson, September 1609. Samuel de Champlain discovered and named Lake Champlain. Holland owned the territory. Indian troubles 1640-45. Named in honor of the Duke of York, to whom the patent was granted. New York, the battle-field of the French-English war, 1754, was prominent in the Revolution. West Point fortified 1777-78. New York city capital 1784 to 1797. Slavery abolished 1817. Union soldiers furnished 448,850. Dutch settled on Manhattan Island 1614. Country called "New Netherlands." Manhattan Islands purchased from Indians for $24 in 1626. Swedish settlements on the Delaware incorporated with the New Netherlands 1655. England claimed the country as part of Virginia, captured Manhattan (New Amsterdam), Aug. 1664, and named it New York. First railroad Albany to Schenectady 1831, miles of railroad 7,812, miles canal 900. School system superior, includes 28 colleges; school age 5 to 21 years.

CLIMATE.—Diverse, mean annual temperature for the State 47 deg. Range of temperature 10 deg. below to 100 above zero. In the Adirondacks the annual mean is 39 deg., in the extreme south it is 50 deg., average rainfall 43 inches, including

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NEW YORK—(Continued).

snow, the fall being greatest in the lower Hudson Valley, and smallest (32 inches) in the St. Lawrence Valley.

PRESIDENTIAL ELECTION RESULTS.—1828, Dem. maj. 4,350; 1832, Dem. maj. 13,601; 1836, Dem. maj. 28,272; 1840, Whig (Rep.) maj. 10,500; 1844, Dem. plur. 5,106; 1848, Whig (Rep.) maj. 98,093; 1852, Dem. maj. 1,872; 1856, Rep. plur. 80,129; 1860, Rep. maj. 50,136; 1864, Rep. maj. 6,749; 1868, Dem. maj. 10,000; 1872, Rep. maj. 51,800; 1876, Dem. maj. 26,568; 1880, Rep. maj. 8,660; 1884, Dem. plur. 1,148; 1888, Rep. plur. 14,373.

State officers elected every 4 and Senators (32 in number) every 2 years, Representatives (125 in number) yearly, on same day as Presidential election. Legislature meets first Tuesday in February yearly, Congressmen 34, Presidential electors 36. Election betters and bribers and convicts excluded from voting.

SALARIES OF STATE OFFICERS.—Governor, $10,000 and house; Lieutenant Governor, $5,000; Secretary of State, $5,000; Treasurer, $5,000; Comptroller, $6,000; Attorney General, $5,000; Chief-Justice, $7 500; Senators and Representatives, $1,500, mileage 10 cents; three District Judges, $4,000; Pension Agent, $4,000; Postage Stamp Agent, $2,500; Deputy Superintendent Railway service, $2,500; twelve Collectors Internal Revenue, $2,750 to $4,500; Collector Customs, New York, $12,000; Superintendent Assay Office, $4,500.

GEOGRAPHICAL, ETC.—Extreme length east and west 410 miles, extreme width 311 miles, area 47,620 square miles, 30,476,800 acres, water frontage 900 miles, surface varied. The State is noted for the beauty of its lakes. Long, Manhattan, and Staten Islands form important divisions of the State. The Allegheny and its tributaries drain the south-west, and the Susquehanna the southern central division. The Mohawk is the chief affluent of the Hudson. The Hudson, rising in the Adirondacks, and flowing south over 300 miles to New York Bay, is the chief stream. The average annual ice crop of the Hudson River is 3,500,000 tons. The State ranks first in value of manufactures, soap, printing, publishing, hops, hay, potatoes, buckwheat, and milch cows; second in salt, silk goods, malt and distilled liquors, miles railway, and barley; third in agricultural implements, iron ore, iron and steel, oats and rye. Considerable forests yet remain. The production of corn, wheat, and dairy products is very large. The soil is varied, and agriculturally the State is very rich. Cleared land averages $60 and wooded $40 per acre.

ORIGINAL COUNTIES OF THE STATE.—There are sixty counties in this State. Albany, Duchess, Kings, New York, Orange, Queens, Richmond, Suffolk, Ulster, and Westchester were erected November 1, 1683, and are the original counties. The next oldest are Montgomery and Washington, created March 12, 1762. The youngest is Schuyler, created April 17, 1854. There are twenty-eight cities—Albany, Amsterdam, Auburn, Binghampton, Brooklyn, Buffalo, Cohoes, Dunkirk, Elmira, Hudson, Ithaca, Jamestown, Kingston, Lockport, Long Island

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NEW YORK—(Continued).

City, Middletown, Newburgh, New York, Ogdensburgh, Schenectady, Syracuse, Troy, Utica, Watertown, and Yonkers.

LEADING INDUSTRIES.—Manufacturing of all kinds, agriculture, dairying, the trades, etc.

COLLECTION AND EXEMPTION LAWS.—Exemptions—Necessary furniture, tools, team, library, etc., not to exceed $250; homestead lot and building, owned and occupied as residence, and recorded as homestead, $1,000. Limitation of Actions—Contracts, express or implied, except those under seal, 6 years; recovery of real estate upon judgments of courts of record and sealed instruments, 20 years. Revivor—Part payment or new promise in writing. Redemption—No law, except for lands sold for taxes, then 2 years. Justices' Jurisdiction—$100. Witness—Party in interest may be. Stay of Execution—No law, but court may order in discretion. Married Women—Wife has same rights and subject to same liabilities in relation to her separate property as if single. Interest—Legal, 6 per cent. Usury voids contract, forfeits principal and interest, and is misdemeanor.

PRINCIPAL CITIES.—New York city, pop., 1,513,501; Brooklyn, pop., 804,377; Buffalo, "Queen City of the Lakes," pop., 254,457; Rochester, pop., 138,327; Syracuse, pop., 87,877; Albany, pop., 94,640.

POPULATION.—Census of 1890.—5,997,853.

NO-MAN'S LAND.

An account of No-Man's Land. Where is it, and why so-called?

No-Man's Land is the strip lying between Colorado and Kansas on the north, and Texas on the south. It was ceded by Texas to the United States, and has been classed geographically with Indian Territory for convenience. It extends from the 100th to the 103rd meridian, and is about 75 miles in width. The following account is given of its condition and settlement: "For forty years or more the country has been without a name and without law. Even the land laws of the United States do not cover its nearly 4,000,000 fertile acres. Its well-watered valleys have been a vast herding-ground. Those who are now living there enjoy to the fullest extent the 'squatter sovereignty' extolled by Stephen A. Douglas, and the great Illinois Senator is responsible for it. In fixing up the boundaries during the territorial legislation in which he took a leading part, this strip of land, containing 5,761 square miles, was left out entirely, and from that day has been absolutely without law. It is one of the most fertile spots in the United States, but for the reason that the land and other laws of the nation do not apply to its settlers have been chary about going on to it. Some years ago adventurous persons went in and took up lands. They are simply 'squatters.' They have no title whatever to the lands, and can get none. The population has grown to 10,000, which lives without law or lawyers. Several small villages have grown up."

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NORTH CAROLINA.

One of the thirteen original States. Called "Old North State," "Fur State," and "State of Turpentine." Discovered by Lord Raleigh, 1584. Settled by English, 1650. State seceded May 21, 1861. State re-entered Union June, 1868. Number of counties 96, miles railroad 1,366. Forts, etc., seized by State troops. Coast section scene of sharp fighting during civil war. Public school system adopted 1840; at present over 2,000 public schools in operation; school age 6-21; separate schools for whites and blacks.

CLIMATE.—Is varied, warm, and moist in low sections; cool and dry in mountains, with all intermediate conditions. Frosts light, and seldom come until the end of fall. Rainfall, including some snow in mountains, 45 deg. Health good. Average winter temperature 49 deg., summer 78 deg. to 79 deg.

PRESIDENTIAL ELECTION RESULTS.—1824, Dem. maj. 4,794; 1828, Dem. maj. 23,939; 1832, Dem. maj. 20,239; 1836, Dem. maj. 3,284; 1840, Whig (Rep.) maj. 12,153; 1844, Whig (Rep.) maj. 3,945; 1848, Whig (Rep.) maj. 8,681; 1852, Dem. maj. 627; 1856, Dem. maj. 11,360; 1860, Dem. maj. 648; 1868, Rep. maj. 12,168; 1872, Rep. maj. 24,675; 1876, Dem. maj. 17,010; 1880, Dem. maj. 8,326; 1884, Dem. plur. 17,884; 1888, Dem. plur. 13,118.

All elections Tuesday after first Monday in November. Number Senators 56, Representatives 120, sessions biennial, in odd-numbered years, meeting Wednesday after first Monday in January, holds 60 days. Term of Senators and Representatives 2 years each. Number electoral votes 11, number Congressmen 9. Convicts are excluded from voting.

SALARIES OF STATE OFFICERS.—Governor, $3,000; Secretary of State, $2,000; Treasurer, $3,000; Auditor, $1,500; Attorney-General, $2,000; Superintendent of Public Instruction, $1,500; Adjutant-General, $600; Comissioner Agriculture, $1,200; State Librarian, $750; Chief-Justice, $2,500; two Associate Justices, $2,500; Senators and Representatives, $4 a day, mileage 10c.; four Collectors Internal Revenue, $2,500 to $3,750; sixty-four Deputy Collectors, $300 to $1,700.

GEOGRAPHICAL, ETC.—Greatest length east and west 453 miles; greatest width, 185 miles; area, 52,240 square miles, or 33,433,600 acres, less area water surface. Swamps extensive, most noted of them, the Great Dismal, north of Albemarle Sound, contains 148,000 acres. Coast line 423 miles, with many harbors. Much forest yet remains. Small streams abundant, water power numerous. Corn best crop, tobacco largest product, other staples are orchard products, sweet potatoes, rice, wheat, oats, peanuts, cotton, hay, and vegetables in the order named. Has rich deposits of gold and the baser minerals. Stone, slate, coal, marble, mica. Excellent fisheries. Ranks first in tar and turpentine, second in copper, third in peanuts and tobacco, fourth in rice, ninth in cotton. Number of different industries, 3,802; flour and grist mills, 1,313; saw mills, 776; latest reported value oyster fisheries, $60,000; number boats engaged in general fisheries.

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NORTH CAROLINA—(Continued).

about, $3,000; copper mined, 1,640,000 lbs. Natural resources but slightly developed. Ample opportunities for homes, enterprise, and capital. Cleared land averages $10 and woodland $5 per acre, and much of excellent quality in the market below this average. Stock thrives. Scenery varied, ordinary, picturesque, and grand. Wheat harvested June. Corn ripe in September.

CHIEF INDUSTRIES.—Agriculture principal occupation. Fishing, manufacture of turpentine and lumber, mining, etc. Number of different industries, 3,800. Number boats engaged in fisheries about 3,000.

COLLECTION AND EXEMPTION LAWS.—Exemptions—Personalty, $500, homestead, $1,000. Limitation of Actions—Contracts not under seal, 3 years; upon instruments under seal, judgments, courts of record or foreclosure of mortgage. Revivor—New promise in writing. Redemption—None for property sold on execution or mortgage; tax sales, 1 year. Justices' Jurisdiction—$200. Witness—Incompetency for interest or crime abolished. Stay of Execution—$25, 1 month; $25 to $50, 3 months; $50 to $100, 4 months; above $100, 6 months. Married Women—Property of wife acquired at any time and in any manner her separate estate, but cannot convey without consent of husband. Interest—Legal, 6 per cent., by stipulation, 8. Usury forfeits entire interest, and party paying may recover double the amount paid.

CHIEF CITIES.—Wilmington, pop., 20,008; Raleigh (capital), pop., 12,798; Charlotte contains assay office, pop., 11,555; New Berne, pop., 7,832.

POPULATION.—Census of 1890.—1,617,947. In 1860 there were 331,059 slaves in the state of North Carolina. (For Map of North Carolina see page 488.)

OHIO.

Name of Indian origin, signifying "Beautiful River." "Buckeye State." Explored by La Salle 1679. Ohio Territory organized May 7, 1800. Admitted as a State April 30, 1802. First permanent settlement at Marietta, 1788. Area 41,060 square miles. Miles of railroad 7,276. Number of Union soldiers furnished 313,180. Number counties 88. Number colleges 35, school age 6-21, school system first-class.

CLIMATE.—As healthful as any in the United States. Warmest on Ohio River. Average rainfall, including snow, 42 inches; decreases to 37 inches at north, and increases to 47 inches at south. Temperature for State averages winter 35 deg., summer 77 deg. range of temperature 16 deg. below zero to 101 deg. above. Snowfall considerable.

PRESIDENTIAL ELECTION RESULTS.—1824, Loose Constructionist (Rep.) plur. 798; 1828, Dem. maj. 4,201; 1832, Dem. maj. 4,707; 1836, Whig (Rep.) maj. 8,457; 1840, Whig (Rep. maj. 22,472; 1844, Whig (Rep.) plur. 5,940; 1848, Dem. plur. 16,415; 1852, Dem. plur. 16,694; 1856, Rep. plur. 16,623; 1860, Rep. maj. 20,479; 1864, Rep. maj. 59,586; 1868, Rep. maj. 41,617;

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OHIO—(Continued).

1872, Rep. maj. 34,268; 1876, Rep. maj. 2,747; 1880, Rep. maj. 27,771; 1884, Rep. plur. 31,802; 1888, Rep. plur. 19,599.

State and Congressional elections second Tuesday in Oct. Number Senators 33, Representatives 105, sessions biennial, but "adjourned sessions" practically amount to annual meetings; assemblies first Monday in January. Terms of Senators and Representatives 2 years each. Number electoral votes 23. Number Congressmen 21, number voters 826,577. Insane and idiots excluded from voting.

SALARIES OF STATE OFFICERS.—Governor, $4,000; Secretary of State, $3,000; Treasurer, $3,000; Auditor, $3,000; Attorney General, $2,000; School Commissioner, $2,000; Superintendent Insurance Department, $1,800; Railroad Commissioner, $2,000; Secretary Board Agriculture, $1,800; Commissioner Labor Statistics, $2,000; Chief-Justice, $3,500; Senators and Representatives, $600 a year and 12c. mileage; two District Judges, $3,500 and $4,000; Pension Agent, $4,000; three Collectors Internal Revenue, $2,500 to $4,500.

GEOGRAPHICAL, ETC.—Extreme length east and west 225 miles, breadth 200 miles, area 40,760 square miles, 25,686,400 acres. Cleared land averages $45, woodland $40 per acre. Little forest valuable for lumber remains, except in small reserves. Coal, building stones, iron ore, and salt are found in vast quantities. Staple crops, wheat, corn, oats, potatoes, tobacco, buckwheat, etc., vegetables, apples, and the hardier fruits. Ohio ranks first in agricultural implements and wool, second in dairy products, petroleum, iron, and steel; third in wheat, sheep, coal, malt, and distilled liquors; fourth in printing and publishing, salt, miles railway, and soap; fifth in milch cows, hogs, horses, hay, tobacco, and iron ore. Includes Kelley's and Bass Islands in Lake Erie. Lake frontage 230 miles. Ohio River frontage 432 miles. Entire State well watered. Valleys extremely productive. Uplands fertile as a rule. Number of uncanceled mortgages in real estate in Ohio January 1, 1870, till January 1, 1888, is 291,640, representing a total mortgage indebtedness of $330,999,205.78, while the assessed valuation of real estate is placed at $1,220,262,525. The number of employees in the different manufacturing establishments in 107 cities and villages of the State shows that 194,061 men, 33,123 women, and 18,400 boys, or 245,674 men, women, and boys, united with $202,990,836, produced $348,519,450. The number of men employed in Columbus 10,769, women 2,680, boys 356, with an invested capital of $8,583,700, while the value of the annual product is placed at $44,910,585.

LEADING INDUSTRIES.—Agriculture, dairying, mining, quarrying, pork packing, manufacturing.

COLLECTION AND EXEMPTION LAWS.—Exemptions—The usual furniture, tools, instruments, library, horse or team, etc., and if no homestead, to head of family $500; additional personal property, homestead, $1,000. Limitation of Actions—Upon contracts not in writing, express or implied, 6 years; specialty or any agreement in writing, 15 years; real actions, 20 years.

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Map of
OHIO
Blomgren Bros., Engr's, Chicago
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OHIO—(Continued.)

Revivor—Part payment, acknowledgment or promise in writing. Redemption—None for lands sold under execution or foreclosure; for taxes, 2 years. Justices' Jurisdiction—$300. Witness—Neither interest nor crime disqualifies. Stay of Execution—Only in justices' court, then on judgments from $5 to over $50 from 60 to 240 days. Married Women—Real and personal property of wife acquired at any time her separate estate and under her sole control. Interest—Legal, 6 per cent., may contract in writing for 8; if contract is for more than 8 per cent., only principal and 6 can be recovered.

CHIEF CITIES.—Cincinnati, "Queen City of the West," pop. 296,309; Cleveland, pop., 261,546; Columbus, capital, pop., 90,398; Chillicothe, Zanesville, Toledo, Sandusky, Cleveland and Cincinnati, ports of entry.

POPULATION.—Census of 1890.—3,672,316.

OREGON.

Name derived from Spanish word signifying "Wild Thyme," so called on account of the abundance of the herb found by early explorers. Credit of discovery generally given to Capt. Gray, of Boston, 1792. Fur Company's trading post at Astoria, 1811. Organized as a Territory, 1848; admitted 1859. Number counties, 25; miles of railroad, 1,165. Number of colleges 7, school age 4-20, school system good.

CLIMATE.—In western Oregon moist, equable, rainfall 59 inches. In eastern Oregon dry. Both pleasant and healthful, though subject to occasional extremes at east. Frosts on high lands. Average temperature summer 65 deg., winter 45 deg.

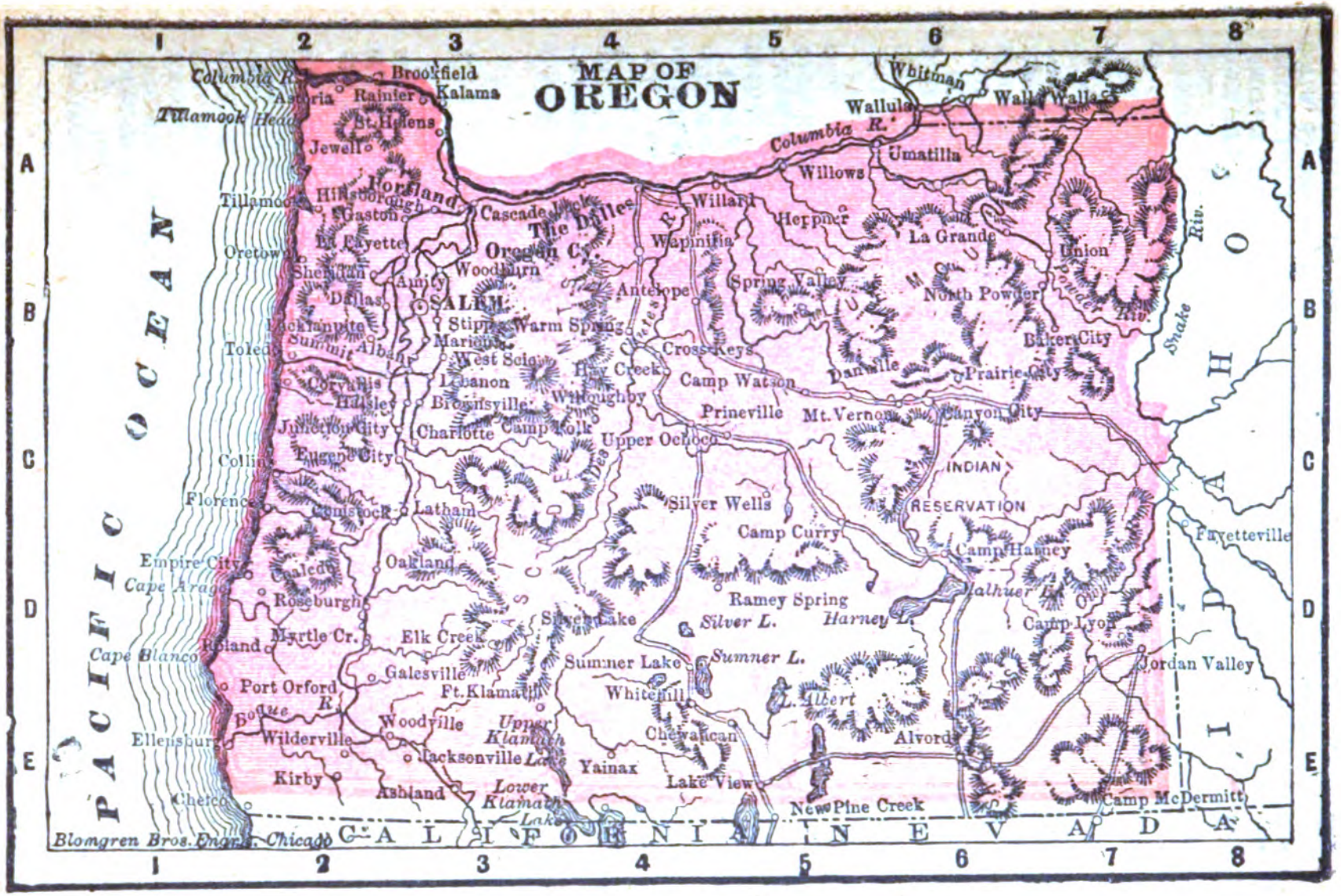
PRESIDENTIAL ELECTION RESULTS.—1860, Rep. plur. 1,318; 1864, Rep. plur. 1,431; 1868, Dem. maj. 164; 1872, Rep. maj. 3,517; 1876, Rep. maj. 547; 1880, Rep. maj. 422; 1884, Rep. plur. 2,256; 1888, Rep. plur. 6,769.

State officers elected quadrennially, and Legislature every two years. Number of Senators 30, Representatives 60, sessions of Legislature biennial in odd-numbered years, meeting first Monday in January, holds 40 days. Term of Senators 4 years, Representatives 2 years. Number electoral votes 3, Congressmen 1, voters 59,629, including women. United States Army, idiots, insane, convicts, and Chinese not voting.

SALARIES OF STATE OFFICERS.—Governor, $1,500; Secretary of State, Auditor, and Comptroller, $1,500; Treasurer, $800; Superintendent of Public Instruction, $1,500; State Librarian, $500; Chief-Justice, $2,000; two Associate Justices, $2,000; Senators and Representatives, $3 a day and 15c. per mile; District Judge, $3,500, District Attorney, $200 and fees; Collector Internal Revenue, $2,500; Collector of Customs, Astoria, $3,000; Appraiser, $3,000; Surveyor General, $2,500.

GEOGRAPHICAL, ETC.—Average length east and west 362 miles, average width 260 miles, area 94,560 square miles.

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MAP OF
OREGON
PACIFIC OCEAN
Columbia R.
Astoria
Brookfield
Kalama
Rainier
Tillamook Head
St. Helens
Jewell
Portland
Columbia R.
Whitman
Wallula
Walla Walla
Umatilla
Willows
Tillamook
Hillsborough
Gaston
Cascade Locks
The Dalles
Willard
Heppner
La Grande
Union
Powder Riv.
Snake Riv.
Oretown
Ft. Fayette
Sheridan
Amity
Woodburn
Oregon City
Wapinitia
Spring Valley
North Powder
Dallas
SALEM
Antelope
Buckhampite
Stipps
Warm Springs
Baker City
Toledo
Summit
Albany
Marion
Crooked R.
Cross Keys
Danville
Prairie City
West Scio
Hay Creek
Camp Watson
Corvallis
Lebanon
Willoughby
Hasles
Brownsville
Prineville
Mt. Vernon
Canyon City
Junction City
Charlotte
Camp Polk
Upper Ochoco
Collins
Eugene City
Des
INDIAN
Florence
Silver Wells
RESERVATION
Latham
Camp Curry
Fayetteville
Empire City
Oakland
Camp Harney
Cape Arago
Ramey Spring
Roseburgh
Silver Lake
Silver L.
Harney L.
Malheur L.
Camp Lyon
Myrtle Cr.
Elk Creek
Cape Blanco
Roland
Summer Lake
Sumner L.
Jordan Valley
Galesville
Port Orford
Ft. Klamath
Whitehill
L. Albert
Bodue R.
Woodville
Upper Klamath Lake
Chewaucan
Alvord
Ellensburg
Wilderville
Jacksonville
Yainax
Kirby
Lake View
Ashland
Lower Klamath Lake
Chetco
New Pine Creek
Camp McDermitt
Blomgren Bros. Engrs. Chicago
CALIFORNIA
NEVADA
1
2
3
4
5
6
7
8
A
B
C
D
E

OREGON—(Continued).

60,518,400 acres. Crops in east do not suffer, however, from drouth. At west snow and ice unknown, except on peaks, where it is perpetual. Soil generally superior. Wheat the best crop, superior in yield and quality: other crops do well, as do also fruits, vegetables, etc. Two-thirds entire State mountainous, with wide rich valleys. Columbia River, 1,300 miles long, navigable 175 miles, full of cascades, and runs through enchanting scenery. Timber resources enormous, and but little touched. Salmon fisheries among best in world. Improved land averages $17.50, unimproved $4. Area arable two-fifths State, forest one-sixth State. Extremely favorable to cattle and sheep. Rich in minerals; gold in Jackson, Josephine, Baker, and Grant Counties; copper in Josephine, Douglas, and Jacksn; iron ore throughout the State, coal along coast range.

LEADING INDUSTRIES.—Agriculture, grazing, mining, fishing, lumbering, fruit growing, canning, etc.

COLLECTION AND EXEMPTION LAWS.—Exemptions—The usual schedule, also necessary tools, implements, library, team, etc., of trade or profession, $400; and furthur to householder, if kept for use; farm stock, utensils, etc., $300; no homestead. Limitation of Actions—On contracts not under seal, express or implied, 6 years: on judgments or decrees of any court and sealed instruments, 10 years; recovery real property, 20 years. Revivor—Part payment or new promise, in writing. Redemption—Lands sold under execution or mortgage may be within 50 days from sale, or last redemption; for taxes, 2 years. Justices' Jurisdiction—$250. Witness—Party in interest may be. Stay of Execution—No statute for. Married Women—Wife controls her separate estate as if single, except that it must be registered as such. Interest—Legal, 10 per cent.: 12 by contract; above 12 per cent., illegal.

CHIEF CITIES.—Portland, Astoria and Coos Bay, ports of entry; Portland, pop., 47,294; Salem, capital, 4,515; Astoria-7,071.

POPULATION.—Census of 1890.—313,7 7.

PENNSYLVANIA.

One of the thirteen original States, named for Wm. Penn, the "Keystone State." First permanent settlement made by Swedes at Chester, 1638. Number counties 67, miles railroad 7,546. Number colleges 20, school age 6-21, school system good. Union soldiers furnished, 337,930. State invaded three times by Confederates, 1862, 1863, when battle of Gettysburgh was fought, and 1864, when Chambersburg was destroyed.

CLIMATE.—In mountains severe in winter, with much snow. Average winter temperature 34 deg., summer 74 deg., rainfall, including snow, averages 42 inches. Healthy. Summers pleasant. Summers hot on the Delaware, reaching 100 deg. Summers long in Susquehanna Valley. West of mountains summers hot, and of moderate length, winters cold.

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PENNSYLVANIA—(Continued).

PRESIDENTIAL ELECTION RESULTS.—1824, Dem. maj. 24,845; 1828, Dem. maj. 50,804; 1832, Dem. maj 34,267; 1836, Dem. maj. 4,364; 1840, Whig (Rep.) maj. 2; 1844, Dem. maj. 3,194; 1848, Whig (Rep.) maj. 3,074; 1852, Dem. maj. 10,869; 1856, Dem. maj. 1,025; 1860, Rep. maj. 59,618; 1864, Rep. maj. 20,075; 1868, Rep. maj. 28,898; 1872, Rep. maj. 135,918; 1876, Rep. 9,375; 1880, Rep. maj. 16,608; 1884, Rep. plur. 81,019; 1888, Rep. plur. 79,458.

State elections annual, same date as Presidential. Number Senators 50, Representatives 201, sessions biennial, meeting first Tuesday in January, hold 150 days. Terms of Senators 4 years, Representatives 2 years. Number electoral votes 30, Congressmen 28. Non-taxpayers and bribers excluded from voting.

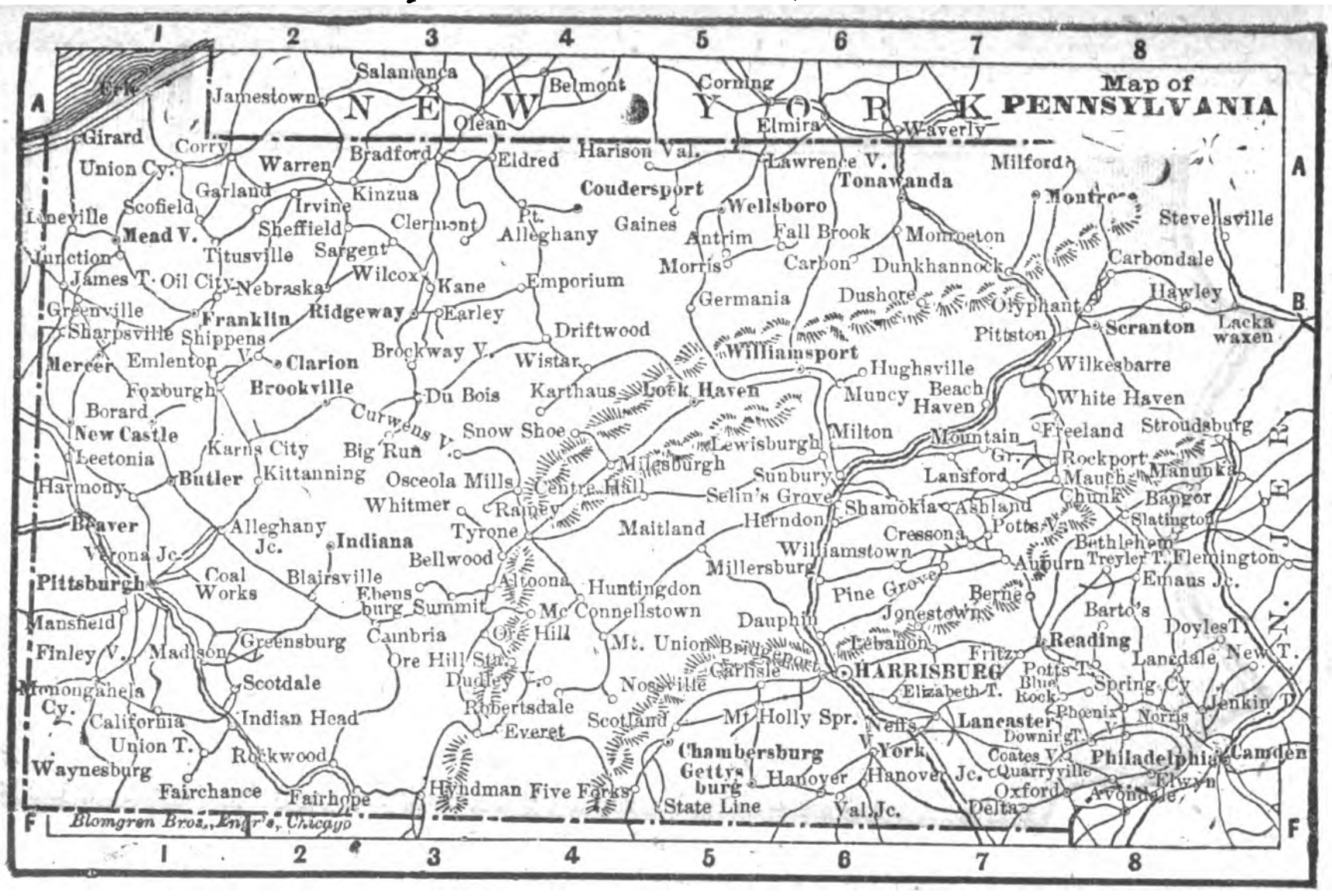
SALARIES OF STATE OFFICERS—Governor, $10,000; Lieutenant-Governor, $3,000; Secretary of State, $4 000; Treasurer, $5,000; Auditor General, $3,000; Attorney General, $3,500; Chief-Justice, $8,500; six Associate Justices, $8,000; Senators and Representatives, $1,000 for 100 days, $10 per day, mileage 5c.; two District Judges, $4,000; two Pension Agents, $4,000; ten Collectors of Internal Revenue, $4,500 to $2,375; Collector of Customs, Philadelphia, $8,000.

GEOGRAPHICAL, ETC.—Length east and west 300 miles, width 176 miles, area 44,985 square miles, 28,790,400 acres. Surface very diverse. Soil varies from barren hills to sections of great fertility. Many superb farms. Level at the south-east, hilly and mountainous toward the center, and rolling and broken at the west and south-west. Oil, coal (anthracite at east, bituminous at west), iron, copper, kaolin, building stones, salt abound. Rye, corn, wheat, buckwheat, potatoes, vegetables, hay, oats, tobacco, are staple crops. Dairying and stock flourish. Cleared land averages $45, woodland $30 per acre. Much good timber remains. Farms average 100 acres.

LEADING INDUSTRIES.—Pennsylvania is the great iron, oil, and coal State. The other industries include agriculture and kindred pursuits, lumbering, manufacture of paper, woolens, liquors, implements, machinery, etc.

COLLECTION AND EXEMPTION LAWS.—Exemptions—Either real or personal property, $300; no homestead law. Limitation of Actions—Contr cts, notes and instruments not under seal, 6 years; judgments, mortgages, and sealed instruments, 20 years. Revivor—Acknowledgment coupled with promise to pay; promise may be implied, if acknowledgment is plain, express, and nothing to negate such implication. Redemption—None except sales for taxes and municipal doings, then 2 years. Justices' Jurisdiction—Generally $100; Erie, Venango, Lawrence, Crawford, Mercer and Warren Counties, $300. Witness—Party in interest may be. Stay of Execution—Judgment not exceeding $200, 6 months; $200 to $500, 9 months; over $500, 1 year. Justices' judgments, $20 to over $60, 3 to 9 months. Married Women—All property of wife acquired before or after marriage, held and enjoyed as her

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PENNSYLVANIA—(Continued).

separate estate, but may be charged for necessaries contracted by her for her family. Interest—Legal, 6 per cent.; usurious interest cannot be collected.

CHIEF CITIES.—Philadelphia, second city in United States, contains mint and navy yard, pop., 1,046,252; Pittsburgh, extensive manufacturing city, pop., 238,473; Harrisburg, capital, pop., 40,164; Philadelphia, Pittsburgh and Erie are ports of entry.

POPULATION.—Census of 1890.—5,258,014.

RHODE ISLAND.

One of the thirteen original States and smallest in the Union; supposed temporary settlement of Icelanders as early as 1000. Settled by Roger Williams at Providence 1636. Island of Aquidneck (Rhode Island) bought from Indians 1638, and Newport and Portsmouth founded. Lands of Narragansett Indians acquired by purchase 1709. Last of the thirteen Colonies to ratify the Constitution, which it did in 1790. Rhode Island men distinguished themselves in Anglo-French wars, 1750 to 1763, and in the Revolution. Brown's University at Providence founded 1764. Common school system excellent, school age 5-15. Union soldiers furnished, 23,236; number counties, 5; miles railroad, 147.

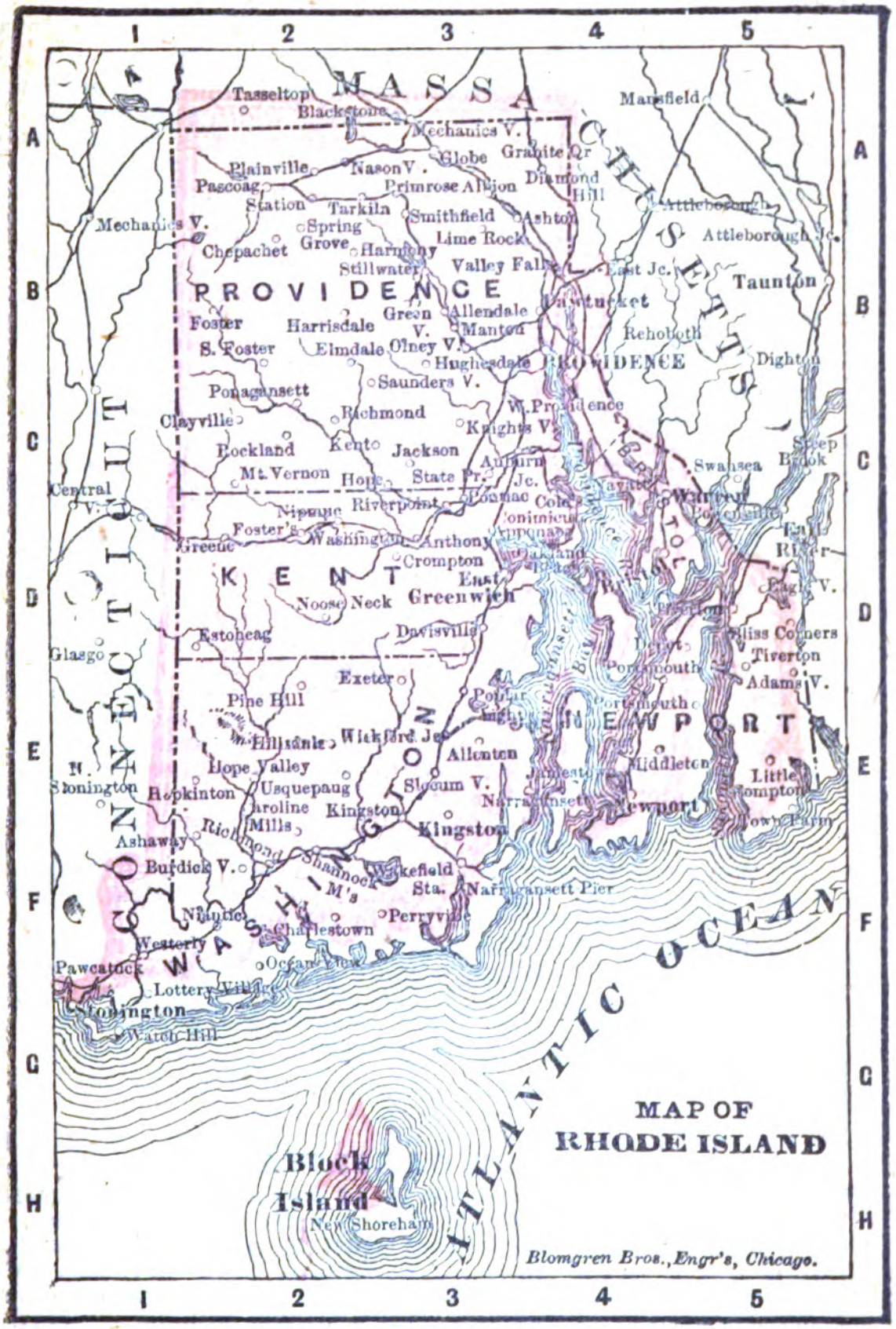
CLIMATE.—Owing to nearness to sea, moderate. Average temperature, winter 24 to 42 deg., summer 44 to 74 deg. Rainfall 43 inches. Snow lies 60 to 100 days. Health good.

PRESIDENTIAL ELECTION RESULTS.—1824, Loose Constructionist (Rep.) maj. 1,945; 1828, Loose Constructionist (Rep.) maj. 1,933; 1832, Loose Constructionist (Rep.) maj. 684; 1836, Dem. maj. 254; 1840, Whig (Rep. maj. 1 935; 1844, Whig (Rep.) maj. 2,348; 1848, Whig (Rep.) maj. 2,403; 1852, Dem. maj. 465; 1856, Rep. maj. 3,112; 1860, Rep. maj. 4,537; 1864, Rep. maj. 5,222; 1868, Rep. maj. 6,445; 1872, Rep. maj. 8,336; 1876, Rep. maj. 4,947; 1880, Rep. maj. 7,180; 1884, Rep. plur. 6,639; 1888, Rep. plur. 4,427.

State elections first Wednesday in April. Elects 72 Representatives, 34 Senators, 3 Congressmen, and 4 Presidential electors. Legislature meets annually on last Tuesday in May, at Newport, and holds adjourned sessions annually at Providence. Terms of Senators and Representatives one year. Persons without property to the value of $134 excluded from voting.

SALARIES OF STATE OFFICERS.—Governor, $1,000; Lieutenant Governor, $500; Secretary of State, $2,500; General Treasurer, $2,500; State Auditor and Insurance Commissioner, $2,500; Railroad Commissioner, $500; Attorney General, $2,500; Adjutant General, $600; Commissioner of Public Schools, $2,500; Chief-Justice, $4,500; four Associate-Justices, $4,000; Senators and Representatives, $1 per day, mileage 8 cents; District Judge, $3,500; Appraiser of Customs, $3,000; Clerk, $1,200; Three Collectors, fees.

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RHODE ISLAND—(Continued).

GEOGRAPHICAL, ETC.—Area 1,088 square miles, or 696,320 acres. Length north and south 46 miles, width 40 miles. Outranks, in proportion to its size, all other States in value of manufactures. Scenery varied and pretty. Soil middling quality. Hay best crop. Potatoes, corn, and oats are the next most important products. No forests. Dairying profitable. Land high-priced. No minerals mined. The State contains numerous small lakes, some of great beauty. Chief rivers—Pawtucket and Pawtuxet, entering Narragansett Bay, and Pawcatuck, falling into Long Island Sound. Block Island, at the western entrance of the bay, belongs to this State. Narragansett Bay divides the State unequally, the western and larger part extending north from the ocean some 27 miles. The bay is 3 to 12 miles wide, and contains several islands, of which Aquidneck, Canonicut, and Prudence are largest. Surface of State broken and hilly. Small rivers unfit for navigation are numerous, and afford valuable water powers.

CHIEF INDUSTRIES.—Manufacture of fabrics of cotton, flax, linen, wool, boots and shoes, rubber goods, metal, jewelry, etc., agriculture, dairying.

COLLECTION AND EXEMPTION LAWS.—Exemptions—Necessary working tools, $200; also, if householder, furniture, etc., $300, besides certain stock; no homestead law. Limitation of Actions—All actions of account, except between merchants, and any contract without specialty, 6 years; other actions of debt and conveyance, 20 years. Revivor—No statutory provision, as at common law. Redemption—None of sale on execution; under mortgage, 3 years; for taxes, 1 year. Justices' Jurisdiction—$100. Witness—Neither interest nor crime disqualifies. Stay of Execution—Discretion of the court. Married Women—Property of wife, acquired before or after marriage, remains her separate estate. Interest—Legal, 6 per cent., but any rate may be taken by agreement.

PRINCIPAL CITIES.—Providence (capital and seaport), pop. 132,043. Newport, capital, seaport finest in the world, and great pleasure resort, pop., 19,449; Bristol, seaport; Warren, seaport; Pawtucket, pop., 27,502; Woonsocket, pop., 20,759.

POPULATION.—Census of 1890.—345,506.

SOUTH CAROLINA.

Named in honor of Charles II. of England, by whom the province was created in 1663. First state to secede, November, 1860. Sumter bombarded April 12 and 13, 1861. Ordinance of secession repealed September, 1865, and slavery abolished. Re-entered the Union June, 1868. One of thirteen original States, "Palmetto State." Revolutionary record brilliant. English seized the territory, but were thrashed at Cowpens and Eutah Springs, and penned up in Charleston.

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SOUTH CAROLINA—(Continued).

First railroad in United States using American locomotive, 1830. Largest rivers, Savannah, Great Pee Dee, Santee, and Edisto. Number counties, 34. Number colleges 9, school age 6-16, school system fair.

CLIMATE.—Temperature ranges 15 to 96 degrees. Averages, summer 82 degrees, winter 51 degrees. Resort for consumptives. Changes slight and infrequent, frosts rare. Average rainfall 48 inches, decreasing to the south. Health good. Epidemics rare and confined to seaports.

PRESIDENTIAL ELECTION RESULTS.—1868, Rep. maj. 17,064; 1872, Rep. maj. 59,400; 1876, Rep. maj. 964; 1880, Dem. maj. 54,241; 1884, Dem. plur. 48,112; 1888, Dem. plur. 52,085.

State, Congressional and Presidential elections Tuesday after first Monday in November. State Senators, 35; Representatives, 124. Sessions annual, meeting fourth Tuesday in November. Term of Senators 4 years, of Representatives 2 years. Number of electoral votes 9, number Congressmen 7. Insane, inmates of asylums, alms-houses and prisons, United States Army, and duelists excluded from voting.

SALARIES OF STATE OFFICERS.—Governor, $3,500; Lieutenant Governor, $1,000; Secretary of State, $2,100; Treasurer, $2,100; Comptroller General, $2,100; Attorney General, $2,100; Superintendent of Public Instruction, 2,100; Commissioner of Agriculture, $2,100; Adjutant and Inspector General, $1,500; Chief-Justice, $4,000; Associate Justices, $3,500; Clerk of Supreme Court, $1,000; Senators and Representatives, $5 per day, mileage 10 cents; District Judge, $3,500; Collector of Internal Revenue, $3,250.

GEOGRAPHICAL ETC.—Greatest length 280 miles, greatest width 210 miles, area 30,170 square miles, or 19,308,800 acres, coast line 212 miles, The Savannah River is navigable 130 miles. Magnificent water power, undeveloped. Number of flour and grist mills, 720; value of lumber products, $2,031,507; tar and turpentine, $1,893,206; oyster fishery, $20,000; sea, river, and lake fisheries, $192 482. Ranks first in phosphates; production, 332,077 tons; value, $1,992,462. Phosphate beds enormous, gold, mica, marbles of all colors, building stones found in large quantities. Turpentine, tar, lumber, and oysters largely produced. Stock thrives. Rice and cotton best crops. All other cereals as well as vegetables, fruits, grasses, and fiber crops grow well. Soil from medium to very rich. Forests extensive and valuable. Land, cleared or uncleared, averages $7 per acre. Gold mines in Abbeville, Edgefield, and Union Counties; first mint deposits, $3,500, in 1827. White and variegated marbles found in Spartanburgh and Laurens Counties.

PRINCIPAL INDUSTRIES.—Agriculture, mining, fishing, quarrying lumbering, turpentine and tar making, and phosphate digging.

COLLECTION AND EXEMPTION LAWS.—Exemptions—To head of family: furniture, library, tools, farming implements, cattle, work animals, etc., $500; homestead, $1,000. Limitation

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MAP OF
NORTH & SOUTH
CAROLINA
ATLANTIC OCEAN
Blomgren Bros., Engr's, Chicago
Wise C.H.
Pineville
Whitley C.H.
Jonesville
Ahingdon
Wytheville
Pittsylvania
Hampton
Norfolk
Hicksford
Suffolk
Currituck C.H.
Sparta
Danbury
Dobson
Wentworth
Yancey
Roxborough
Warrenton
Gaston
Winton
Gatesville
Jackson
Hertford
Oxford
Henderson
Weldon
Edenton
Greensboro
Graham
Hillsboro
Halifax
Rocky Mt.
Tarborough
Plymouth
Boone
Wilkesboro
Yadkins V
Winston
Durnam
Mocksville
Asbury
Lexington
Ashboro
Staley
Wilson
Williamston
Mantee
Roanoke Tal.
Lenoir
Morganton
Statesville
Salisbury
Pittsboro
RALEIGH
Greenville
Washington
Rodanthe
Marion
Lincolnton
Carthage
Smithfield
Swan Quarter
Shelby
Dallas
Troy
Sanford
Snow Hill
Rutherfordton
Concord
Goldsboro
Kinston
Vandemere
Cape Hatteras
Webster
Henderson
Wright
Albemarle
Lillington
New Bern
Franklin
Columbus
Charlotte
Hayesville
Gaffney's
Yorkville
Wadesboro
Fayetteville
Clinton
Warsaw
Trenton
Monroe
Devanes
Greenville
Spartanburg
Rockingham
Hamlet
Kenansville
Jacksonville
Walhalla
Union
Chester
Lancaster
Cape Fear
Lumberton
Moorhead Cy.
Beaufort
Seneca Cy
Chesterfield
Cheraw
Bladenboro
S. Washington
Andesson C.H.
Belton
Strother
Kingsbury
Plainview
Gainesville
Laurens
Winnsborough
Dove's
Elizabethtown
Ashton
Donnald's
Cokesbury
Newberry
Camden
Darlington
Whitesville
Marion
Wilmington
Abbeyville
Boykins
Brinkley's
Athens
Greenwood
COLUMBIA
Camden Jc.
Florence
Smithville
Sumter
Conwayborough
Edgefield
Lexington
Kingville
Kingstree
Johnston
Manning
Aiken
Windsor
Orangeburg
Lanes
Atlanta
Augusta
Blackville
Georgetown
Newman
Robbins
Branchville
Barnwell C.H.
George's
Mt Holly
Cape Roman
Millen
Martins
Waterboro
Charleston
Macon
Hoovers
Jacksonboro
Yemassee
Ridgeland
Beaufort
Eastman
Ft Valley
Savannah

SOUTH CAROLINA—(Continued).

of Actions—Upon contracts not under seal, sealed notes, or personal bonds, 6 years; judgments or decrees of any court, and upon sealed instruments (except as above) 20 years; to recover real property, 10 years. Revivor—No statute, as at common law. Redemption—No law except of sales for taxes, then 2 years. Justices' Judgment—$100. Witness—Party in interest may be. Stay of Execution—No law of; court may grant order for. Married Women—All property of a woman held at time of marriage, or acquired afterwards (except that gift or grant of husband shall not be detrimental to his creditors) held as her separate property, and controlled as if unmarried. Interest—Legal, 7 per cent.; same by contract in writing; usury laws abolished.

CHIEF CITIES.—Charleston, pop., 54,592, port of entry, seat of a Catholic Bishop. United States customs districts at Beaufort, Charleston and Georgetown. Capital, Columbia.

POPULATION.—Census of 1890.—1,151,149. Number of slaves in 1860, 402,406.

TENNESSEE.

"Big Bend State." Name derived from "Tannassee," Indian name for Little Tennessee River. First permanent settlement 1756, on Tennessee River, about 30 miles from present site of Knoxville; first Anglo-American settlement west of the Alleghanies and south of Pennsylvania. Became a part of North Carolina 1777. Organized as the State of Franklin 1785, but again became part of North Carolina 1788. Ceded to United States by North Carolina 1789. Admitted as a State 1796. Seceded February, 1861; re-admitted 1868. Number counties 96. First railroad part of N. & C., 1853, Nashville to Bridgeport. Schools fair. Miles railroad 2,166.

CLIMATE—One of healthiest in the world. Mild and pleasant, and owing to varying elevation very diverse. Average temperature winter 38 deg., summer 75 deg. Extremes seldom occur. Rainfall 45 to 47 inches. Air bracing. Snow light and lays briefly. Ice rarely more than a mere film in thickness.

PRESIDENTIAL ELECTION RESULTS.—1824, Dem. maj. 19,669; 1828, Dem. maj. 41,850; 1832, Dem. maj. 27,304; 1836, Whig (Rep.) maj. 9,842; 1840, Whig (Rep.) maj. 12,102; 1844, Whig (Rep.) maj. 113; 1848, Whig (Rep.) maj. 6,286; 1852, Whig (Rep.) maj. 1,880; 1856, Dem. maj. 7,460; 1860, Constitutional Union plur. 4,565; 1868, Rep. maj. 30,499; 1872, Dem. maj. 8,736; 1876, Dem. maj. 43,600; 1880, Dem. maj. 14,598; 1884, Dem. plur. 8,275; 1888, Dem. plur. 18,798.

State, Congressional, and Presidential elections, Tuesday after first Monday in November. Number Senators 33, Representatives 99, sessions biennial, in odd-numbered years, meeting first Monday in January; holds 75 days. Terms of Senators and Representatives 2 years each. Number electoral votes 12, number Congressmen 10, number voters 571,244, native white 240,939, foreign white 250,055, colored 80,250, non-payers of poll-tax excluded from voting.

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TENNESSEE—(Continued).

SALARIES OF STATE OFFICERS.—Governor, $4,000; Secretary of State, $1,800 and fees; Treasurer, $2,750; Comptroller, $2,750; Attorney General, $3,000; Superintendent of Public Instruction, $1,800; Adjutant General, $1,200; Commissioner Agriculture, $3,000; three Railroad Commissioners. $2,000; Librarian, $1,000; Chief-Justice, $4,000; Senators and Representatives, $4 a day and 16 cents a mile; three District Judges, $3,500; Pension Agent, $4,000; three Collectors Internal Revenue, $4,375 to $2,250.

GEOGRAPHICAL, ETC.—Extreme length east and west 430 miles, width 110 miles. Area 41,750 square miles. 26,720,000 acres. Mountainous at east, where Apalachians separate State from North Carolina. Soil fair, except in central basin, where it is very productive. Ranks second in peanuts and third in mules. Resources but little developed; 5,000 square miles of coal field, with 3 to 7 workable veins. Cleared land averages $12.50, forests $5 per acre. Grape growing pays. Principal timbers, walnut, oak, poplar, ash, hickory, etc. Staple products, mules, hogs, peanuts, corn, wheat, cotton, vegetables of all kinds, potatoes, tobacco, hemp, flax, broomcorn, iron, copper, etc. S ate abounds in coal, iron, fine marbles and building stones, copper, and other minerals. Possesses one of the finest areas of forest in the Union.

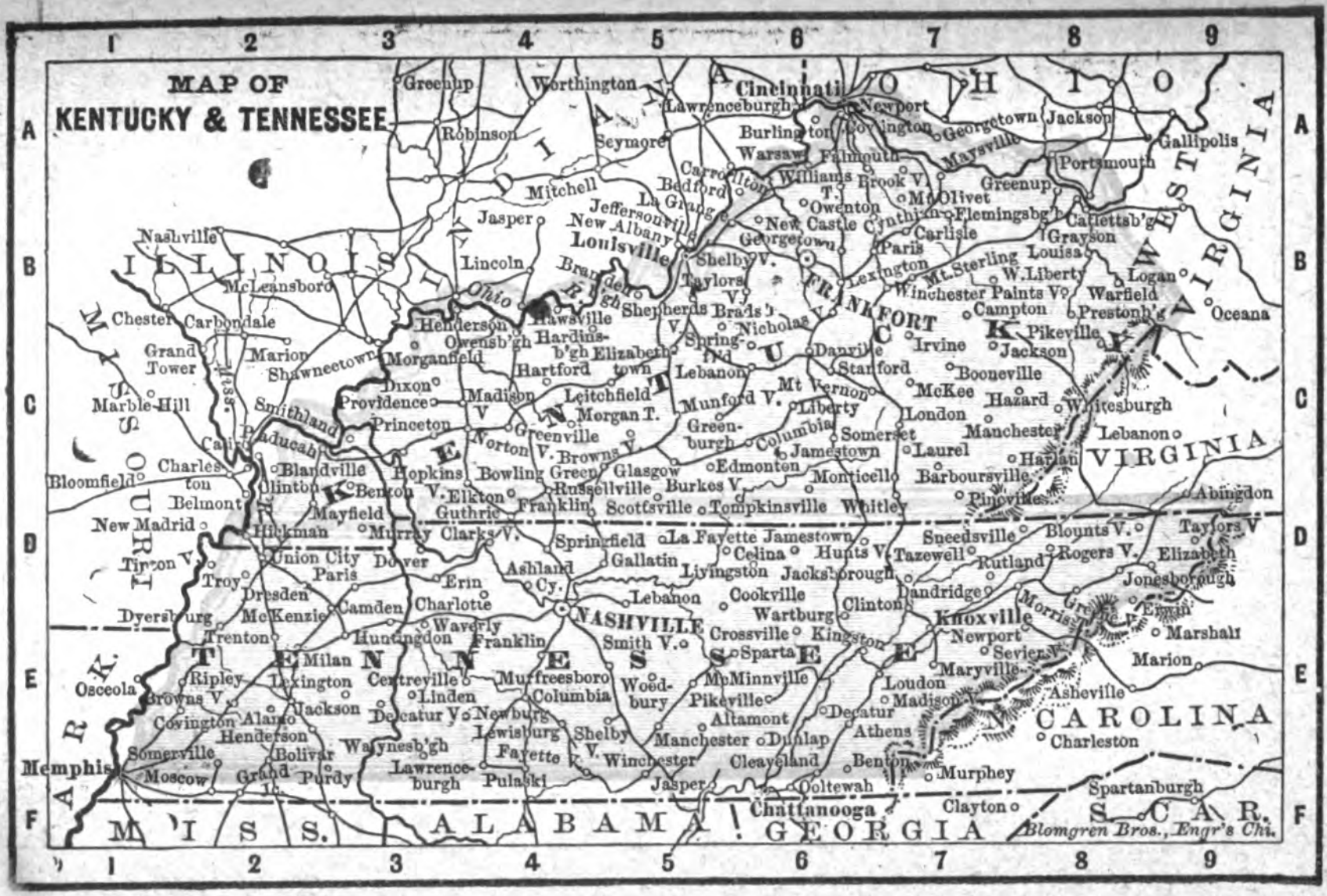
LEADING INDUSTRIES.—Agriculture, mining, lumbering, and iron making.

COLLECTION AND EXEMPTION LAWS.—Exemptions—To head of family: various articles, food, etc., together with furniture, cattle, team, tools, etc., to value of $165; homestead in possession of head of family, $1,000. Limitation of Actions—Upon bonds, notes, accounts, and contracts generally, 6 years; judgments or decrees of courts of record, and other cases not expressly provided for, 10 years. Revivor—Acknowledgment, expressed willingness to pay or promise; part payment not in itself sufficient. Redemption—Of lands sold for cash under execution or mortgage (with power sale), 2 years; for taxes, 1 year. Justices' Jurisdiction—Against makers of notes, acceptors of bills, and upon liquidated accounts signed by party to be charged, $1,000; against indorsers of notes and bills, and on open or unliquidated accounts, $500. Witness—Party in interest may be. Stay of Execution—On justices' judgment, 8 months. Married Women—Wife's separate property not subject to debt or disposition of husband, except authorized by instrument under which she acquired it. Interest—Legal, 6 per cent., prior to March 20, 1877; by contract, 10 per cent.; since that date, excess of 6 per cent. usury.

CHIEF CITIES.—Nashville (capital), pop., 76,309; **Memphis**, pop., 64,586; Chattanooga, pop., 29,100; **Jackson**, pop., 60,022; Knoxville, pop., 22,447.

POPULATION.—Census of 1890.—1,767,518. In 1860 there were 275,519 slaves in the state of Tennessee.

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TEXAS.

"Lone Star State." Number counties 228, miles of railroad 6,108. Origin of name not definitely known; supposed by some to have been name of Indian tribe. Settled first by French under La Salle 1685; was a part of Old Mexico. Independence declared December 20, 1835. Houston inaugurated as President October, 1836. Independence of the Republic recognized by United States March, 1837, by European powers 1839 and '40. Continued wars with Mexico, embarrassed finances. Proposition for union with United States 1845, and admitted as a State December 29. State paid $10,000,000 by United States for all lands outside present limits 1850. Seceded February 1861. Houston, who refused to secede, deposed. Military operations small. Last battle of the war near Rio Grande May 13, 1868. Re-entered Union 1870. Number colleges 10, school age 5-14. School endowment enormous, includes 23,470,377 acres yet unsold.

CLIMATE—Varies, temperate at north, semi-tropical at south. Health everywhere most excellent. Rainfall averages at Brownsville 37 inches, increases on coast and to the south, decreases to 13 inches in north-west. Thermometer ranges from 35 to 98 deg., but seldom rises to the latter temperature. At Austin averages winter 56 deg., summer 80 deg.

PRESIDENTIAL ELECTION RESULTS.—1848, Dem. maj. 6,150; 1852, Dem. maj. 8,557; 1856, Dem. maj. 15,530; 1860, Dem. maj. 32,110; 1872, Dem. maj. 16,595; 1876, Dem. maj. 59,955; 1880, Dem. maj. 70,878; 1884, Dem. plur. 132,168; 1888, Dem. plur. 146,605.

All elections Tuesday after first Monday in November, number Senators 31, Representatives 106, sessions of Legislature biennial in odd-numbered years, meeting second Tuesday in January, holds 60 days, term of Senators 4 years, of Representatives 2 years. Number electoral votes 13, Congressmen 11, voters 380,376. United States Army, lunatics, idiots, paupers, and convicts excluded from voting.

SALARIES OF STATE OFFICERS.—Governor, $4,000; Lieutenant Governor, $5 a day; Secretary of State, $2,000; Treasurer, $2,500; Attorney-General, $2,000; Adjutant-General, 2,000; Land Commissioner, 2,500; Railroad Commissioner, $3,000; Chief-Justice, $3,500; two Associate Justices, $3,500; Senators and Representatives, $5 a day and mileage; three District-Judges, 3,500; Collectors Internal Revenue, $2,500 to $2,750; seventeen Deputy Collectors, $300 to $1,850.

GEOGRAPHICAL, ETC.—Extreme length east and west 830 miles, extreme width 750 miles, area 167,865,600 acres, largest of the States and Territories. It has been estimated that the entire population of the globe could be seated upon chairs within the boundary of Texas, and each have four feet of el-

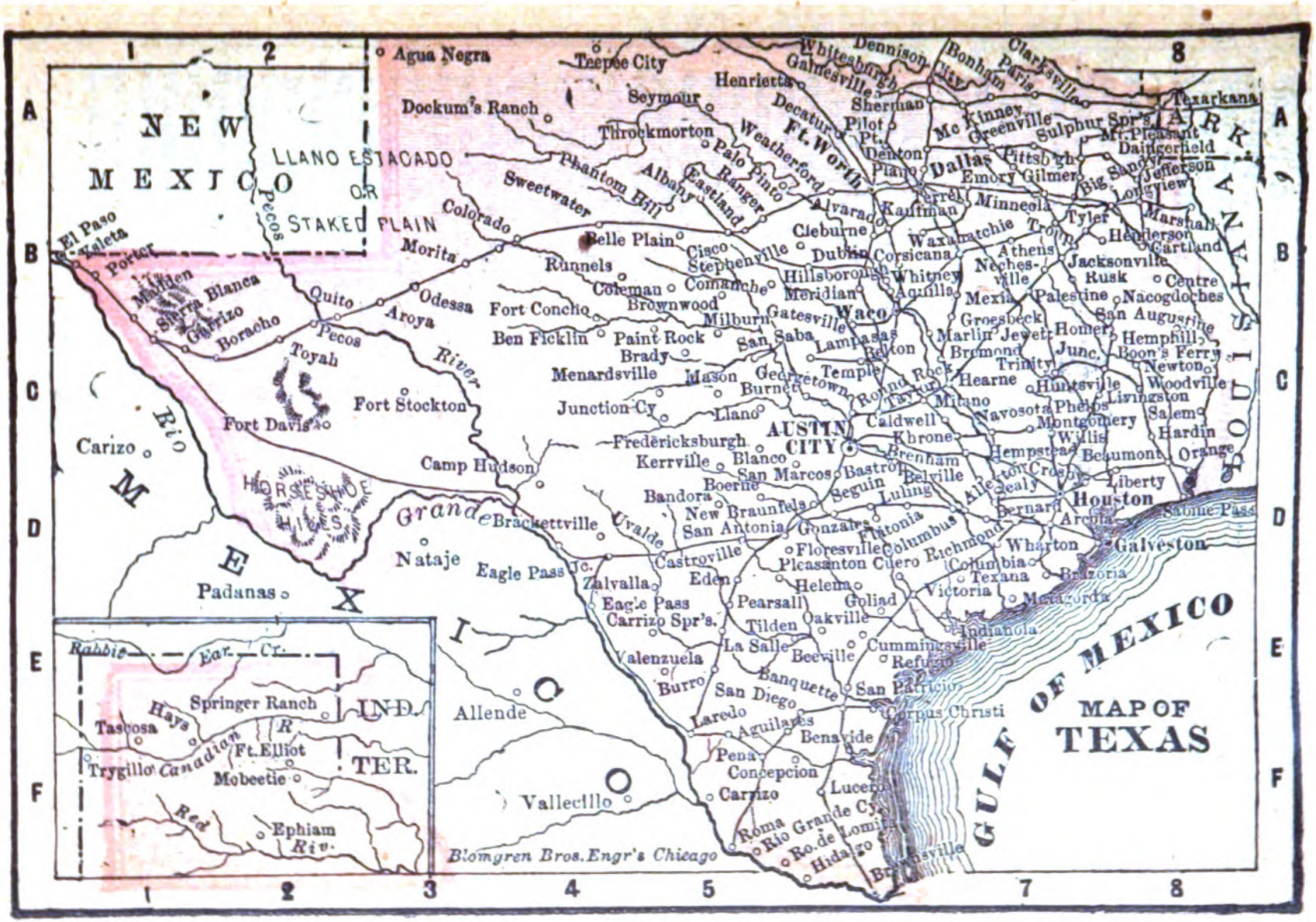
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TEXAS—(Continued).

bow room. Improved land averages $8, and unimproved $3 to $4 per acre. Cotton best crop. Other staples sugar, molasses, sweet potatoes, corn, wheat, grapes, and fruits. Dairying extensive. Cattle, sheep, goat, and hog raising on mammoth scale. Lands on Rio Grande and at south require irrigation for good results, although crops will grow to some extent without. Lands extremely fertile, except in the northwest, where water is scarce. Coast line 412 miles, Galveston Bay largest, has 13 feet of water, 35 miles inland. Rio Grande navigable 440 miles. Entire State covered with rich grasses, affording pasture the year round. All cereals, root crops, vegetables, fruit, and stocks flourish. Cotton picking July to December, corn planting middle of February, grain harvest May, corn harvest July. Uncultivated and timber land seven-eighths of area, timber area one-fourth. Ranks first in cattle and cotton, second in sugar, sheep, mules, and horses. Coal area 6,000 square miles, quality good. Iron ore and salt deposits extensive. Other minerals found, but extent unknown. The staked plain of Texas—Llano Estacado—forms part of the western plateau of the State. The name is given it from the great number of bare yucca stems seen there resembling stakes. This plain extends from the head waters of the Colorado, Brazos, and Red Rivers on the east, to the Red Pecos in New Mexico on the west, and from the valley of the Canadian on the north to the Pecos on the south. Its surface is gently undulating, but owing to lack of water there is almost a total absence of vegetation. The yucca is the only plant that grows there, and this but scantily; there are no trees, and in the summer the feeble crop of grass dries up. This is undoubtedly true of a very large part of the territory called the "staked plain," but other parts have been settled and irrigated, and are becoming quite fertile. The general level of the plain is from 3,000 to 4 000 feet above the sea.

COLLECTION AND EXEMPTION LAWS.—Exemptions—All furniture, implements of husbandry, tools, apparatus, or library belonging to trade or profession, teams, stock, etc.; homestead, 200 acres, in one or more parcels, with improvements; in city or village, lot or lots, $5,000 at time of designation, without reference to present value of improvements. Limitation of Actions—Open accounts, except as between merchants, 2 years; contracts in writing, 4 years; to recover land against one in possession under title, 3 years; in possession without title, 10 years; judgments, courts of record, 10 years. Revivor—Acknowledgment of justice of claim in writing. Redemption—None for lands sold except for taxes, then 2 years. Justices' Jurisdiction—$200. Witness—Party in interest may be. Stay of Execution—3 months on justice's judgments only. Married Women—All property of wife a marriage, and all acquired thereafter by gift, devise, or descent, remains her separate property, but subject to the husband's management. Interest—Legal, 8 per cent.; by contract, 12. Usury forfeits all interest.

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MAP OF TEXAS
NEW MEXICO
LLANO ESTACADO OR STAKED PLAIN
Pecos
Rio Grande
MEXICO
GULF OF MEXICO
LOUISIANA
ARKANSAS
IND. TER.
Agua Negra
Teepee City
Dockum's Ranch
Seymour
Throckmorton
Henrietta
Whitesboro
Gainesville
Dennison
Bonham
Paris
Clarksville
Texarkana
Sherman
Decatur
Pilot Pt.
Denton
Ft. Worth
Weatherford
Palo Pinto
Ranger
Eastland
Albany
Phantom Hill
Sweetwater
Colorado
Dallas
Pittsburg
Greenville
Mc Kinney
Sulphur Spr's
Mt. Pleasant
Daingerfield
Jefferson
Longview
Big Sandy
Emory
Gilmer
Ferris
Kaufman
Alvarado
Cleburne
Belle Plain
Morita
Runnels
Coleman
Brownwood
Stephenville
Cisco
Dublin
Comanche
Hillsboro
Meridian
Whitney
Aquilla
Waxahatchie
Corsicana
Athens
Neches-ville
Tyler
Troup
Rusk
Jacksonville
Henderson
Marshall
Cartland
Centre
Nacogdoches
Mexia
Palestine
Groesbeck
Waco
Milburn
Gatesville
Ben Ficklin
Paint Rock
San Saba
Lampasas
Belton
Marlin
Jewett
Homer
San Augustine
Hemphill
Boon's Ferry
Newton
Woodville
Junc.
Brymond
Trinity
Hearne
Round Rock
Georgetown
Burnet
Temple
Taylor
Huntsville
Livingston
Menardsville
Mason
Brady
Junction Cy
Llano
Fort Concho
Fort Stockton
Fort Davis
Toyah
Pecos
Quito
Odessa
Aroya
Porter
Maiden
Sierra Blanca
Carrizo
Borracho
El Paso
Zaleta
Milano
Navasota
Phelps
Salem
Montgomery
Willis
Hardin
Orange
Beaumont
Hempstead
Brenham
Caldwell
Khrone
AUSTIN CITY
Fredericksburg
Kerrville
Blanco
San Marcos
Bastrop
Belville
Seguin
Luling
Boerne
Bandora
New Braunfels
San Antonia
Gonzales
Flatonia
Columbus
Houston
Bernard
Arcola
Sabine Pass
Galveston
Liberty
Alleton
Sealy
Crosby
Floresville
Pleasanton
Cuero
Richmond
Wharton
Columbia
Texana
Brazoria
Victoria
Matagorda
Indianola
Camp Hudson
Uvalde
Castroville
Eden
Helena
Goliad
Eagle Pass
Carrizo Spr's.
Pearsall
Oakville
Tilden
La Salle
Beeville
Cummingsville
Refugio
Valenzuela
Burro
Banquette
San Patricio
San Diego
Laredo
Aguilares
Corpus Christi
Benavide
Pena
Concepcion
Carrizo
Lucero
Roma
Rio Grande Cy.
Ro. de Lomita
Hidalgo
Brownsville
Nataje
Eagle Pass Jc.
Zalvalla
Padanas
Allende
Vallecillo
HORSESHOE HILLS
Rabbie Ear Cr.
Springer Ranch
Tascosa
Hays
Canadian R.
Ft. Elliot
Trygillo
Mobeetie
Red Riv.
Ephiam
Blomgren Bros. Engr's Chicago

TEXAS—(Continued).

CHIEF CITIES.—Brownsville, El Paso, Indianapolis, and Galveston are ports of entry. Houston, important railroad center; pop., 27,411; Galveston, metropolis, has best harbor, and is chief shipping point; pop., 29,118. Austin, the capital, pop., 15,324. San Antonio, oldest town, pop., 38,681. Dallas, pop., 38,140.

POPULATION.—Census of 1890.—2,235,523.

UTAH.

Settled 1848 at Salt Lake by Mormons from Illinois, under the leadership of Brigham Young. March, 1849. State of "Deseret" organized. Congress refused to receive constitution adopted. Utah Territory organized September, 1850. Federal officers driven from Territory 1856. Troubles with Government till 1858. Number counties 24, miles railroad 1,134. School system fair, school age 6-18 years, number colleges 1. Area 84,900 square miles, very nearly same as Idaho.

CLIMATE.—Mild and healthy. Warmer west of Wahsatch Mountains. Spring opens in April. Cold weather begins late in November. In mountains winters severe and snows heavy. Temperature at Salt Lake averages winter 35 deg., summer 75 deg. Summers dry and hot in south-west. Rainfall averages 16 inches at south and 17 at north, chiefly in October and April.

ELECTIONS.—Territorial elections annual, first Monday in August. Number Senators 12, Representatives 24, sessions of Legislature biennial, in odd-numbered years, meeting second Monday in January, holds 60 days. Terms of Senators and Representatives 3 years each. Voting population 32,773, native white 15,795, foreign white 18,283, colored 695.

SALARIES OF TERRITORIAL OFFICERS.—Governor, $2,600; Secretary, 1,800; Treasurer, $600; Auditor, $1,500; Superintendent Public Instructions, $1,500; Librarian, $250; Chief-Justice, $3,000; two Associate Justices, $3,000; Senators and Representatives, $4 a day, mileage 20 cents; District Attorney, $250 and fees; eleven United States Commissioners, fees; Collector Internal Revenue, $2,500; two Deputy Collectors, $1,600 to $1,800.

GEOGRAPHICAL, ETC.—Average length 350 miles, width 260 miles, 52,601,600 acres. In north-west a large area of desert land. Soil in valleys very productive. Yield fine crops of cereals and vegetables. South-east portion elevated plateaux, western portion disconnected ridges. Surface rugged and broken, with some rich valleys. Traversed by Wahsatch, Uintah, Roan, Little, Sierra Lasal, Sierra Abajo, San Juan, Sierra Panoches, and Tushar mountains. Forests sufficient for home purposes. Gold, copper, and silver in Wahsatch Mountains. Silver predominates. Coal in valley of Weber River. Salt found in large deposits and the lake supply exhaustible. Territory ranks third in silver.

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UTAH—(Continued).

GREAT SALT LAKE.—Great Salt Lake is a remarkable body of water, in some respects the most remarkable in the world. Like the Dead Sea and the Aral Sea, in Asia. It has no outlet. Its extent is given variously by different authors. One explanation of this may be the generally conceded fact that the rainfall of the region between the Rocky Mountains and the Sierra Nevada is increasing, and the average level of Salt Lake seems to be steadily rising, so whereas one authority states the length of the lake as about ninety miles and the breadth as from twenty to thirty-five miles, another says it is seventy-five miles long and forty-five broad. Its area is about 3,200 square miles. It is about 4,200 feet above sea level, and still rising, the mean depth at welve feet. Its maximum depth is variously given at sixty feet and seventy-eight feet. It contains numerous rocky islands, the longest of which, Antelope, is fifteen miles long. Some of thes lands are used as sheep pastures. The Bear, the Weber, and the Jordan Rivers empty into this lake, and are for the most part absorbed by the sandy plain, or evaporated by the dry air of the Great Fremont Basin. Only the Bear River is navigable, and that near its mouth. A line of steamers plies between Corinne, on the north shore, and Black Rock, on the south. Its waters contain about 20 per cent. of common salt; some salt is manufactured from this natural brine, and there is no doubt that in time this industry will develop here into great importance. Unlike the Dead Sea, this lake abounds with animal life, insects, shrimps, etc.

LEADING INDUSTRIES.—Mining, stock-raising and agriculture.

COLLECTION AND EXEMPTION LAWS.—Exemptions—Office furniture, $100; household furniture, farming implements, certain cattle, team, etc., also seed, grain, etc., $100; tools, instruments, and libraries of professional men; home, tools, etc., of miner, $400; horse or team, etc., when used for livelihood; homestead to head of family, $1,000, and the further sum of $250 for each member of the family. Limitation of Actions—Open accounts and contracts not in writing, 2 years; contracts or obligations founded on writing, 4 years; judgments, 5 years; recovery of lands, 7 years. Revivor—Acknowledgment of promise in writing. Redemption of lands sold under execution or mortgage, 6 months, and 60 days from last redemption. Justices' Jurisdiction—$200. Witness—Party in interest may be. Stay of Execution—Court may stay for a limited time. Married Women—All property of wife acquired at any time, held, managed, and controlled as if unmarried. Interest—Legal, 10 per cent.; by agreement, any rate. Usury—No law.

CHIEF CITIES.—Salt Lake City (capital), pop., 44,771; Ogden, pop., 18,269.

POPULATION.—Census of 1890.—207,905.

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VERMONT.

First settled by Massachusetts emigrants near Brattleboro 1724. First State to join original 13. Called the "Green Mountain State." Active in war of 1812. Union soldiers furnished, 33,288. Colleges 2, school age 5-20. Area, 9,564 square miles, a little larger than New Hampshire. Number counties 14. Miles railroad 944. First railroad built from Bellows Falls to Burlington 1840.

CLIMATE.—Temperature ranges from 15 deg. below to 95 deg. above, but changes not sudden. Winter averages 18 deg. to 33 deg. Summer averages 66 deg. to 75 deg. Summers short. Frosts early in fall and late in spring. Snow lies 80 to 140 days. Health excellent. Death rate very low, less than 1¼ in the 100.

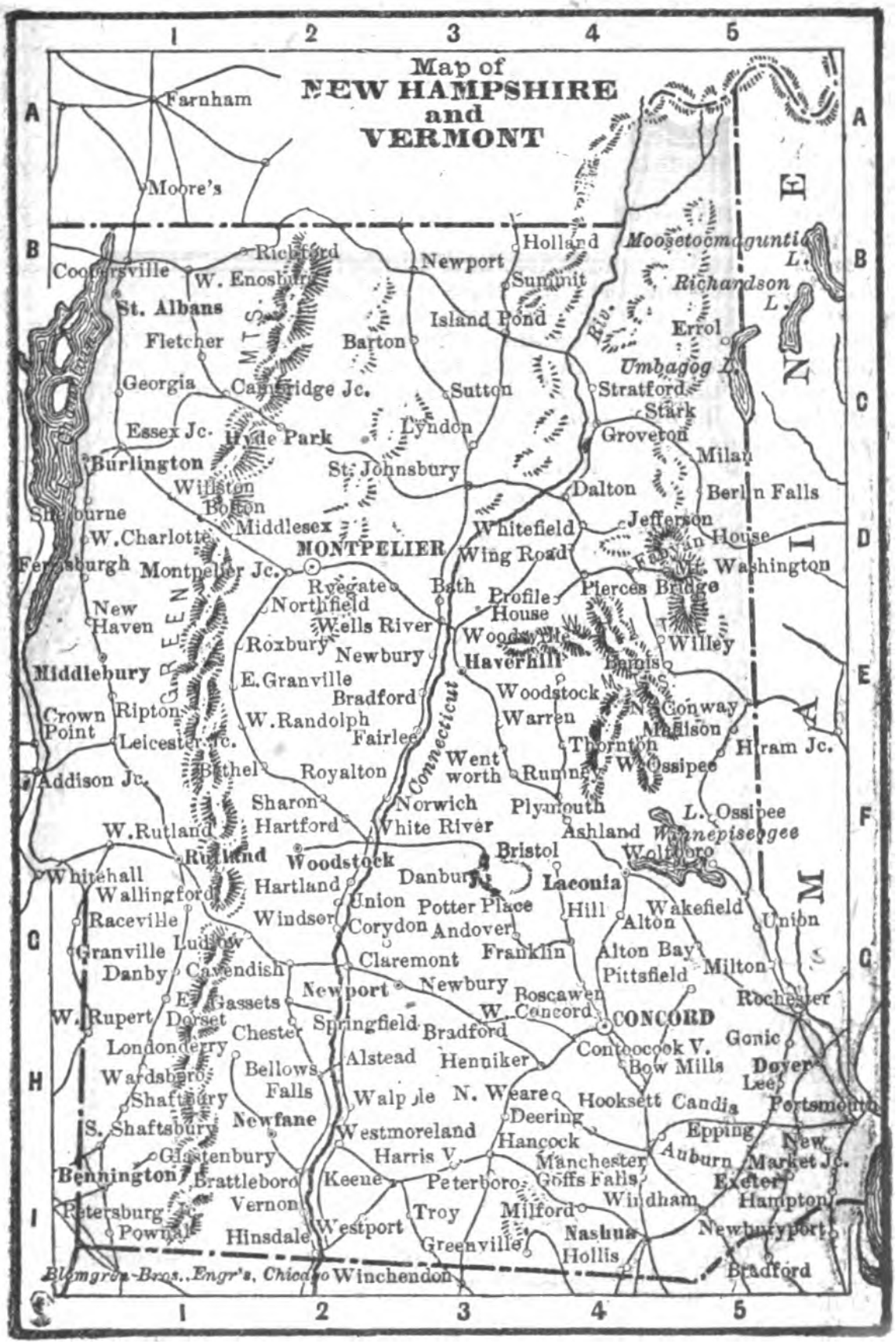
PRESIDENTIAL ELECTION RESULTS.—1828, Loose Constructionist (Rep.) maj. 16,579; 1832, Loose Constructionist (Rep.) maj. 3,282; 1836, Whig (Rep.) maj. 6,954; 1840, Whig (Rep.) maj. 14,117; 1844, Whig (Rep.) maj. 4,775; 1848, Whig (Rep.) plur. 9,285; 1852, Whig (Rep.) maj. 508; 1856, Rep. maj. 28,447; 1860, Rep. maj. 24,772; 1864, Rep. maj. 29,098; 1868, Rep. maj. 32,122; 1872, Rep. maj. 29,961; 1876, Rep. maj. 23,838; 1880, Rep. maj. 26,036; 1884, Rep. plur. 22,183; 1888, Rep. plur. 28,404.

State elections biennial, first Tuesday in September. Number Senators 30, Representatives 240. Sessions of Legislature biennial, in even-numbered years, meeting first Wednesday in October. Terms of Senators and Representatives, 2 years each. Number electoral votes 4. Congressmen 2. Number voters 95,651. Bribers excluded from voting.

SALARIES OF STATE OFFICERS.—Governor, $1,000; Lieutenant Governor, $6 a day; Secretary of State, $1,700; Treasurer, $1,700; Auditor, $2,000; Inspector of Finances, $500; Railroad Commissioner, $500; Adjutant General, $750; Superintendent of Public Instruction, $1,400; Chief-Justice, $2,500; six Associate Justices, $2,500; Senators and Representatives, $3 a day; District Judge, $3,500; Collector of Internal Revenue, $2,650; Collector of Customs, $1,000 and fees.

GEOGRAPHICAL, ETC.—Length north and south 149 miles, width 34 to 52 miles, 5,847, 40 acres. The surface is generally hilly. Highest Point (Green Mountains) about 4,600 feet. Green Mountains run north and south through the State, and are 3,000 to 4,600 feet high. Soil rocky, but good in narrow strips on streams. Potatoes best crop. Corn, wheat, oats, hay, hops, and buckwheat yield moderately if well attended. Dairying profitable. All east of mountains, drained by the Connecticut, the only navigable river. Small streams abundant. Forests remain to considerable extent, but are cut over or culled. Cleared land averages $17.50 and forest land $18 per acre. Rainfall greatest at south and east, where it averages 43 inches; in other sections the average is 35 inches.

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VERMONT—(Continued).

Snows heavy. Manganese, copper, iron, gold, black, white, red, and variegated marble and slate are found, the marbles in great abundance. State ranks first in quarries, fourth in copper.

INDUSTRIES.—Very varied, numbering 2,900. Principal ones, agriculture, dairying, manufacture of flour, furniture, leather, tin, iron, and copper ware, and lumber, mining, quarrying, and finishing marbles and stones, and maple sugar making.

COLLECTION AND EXEMPTION LAWS.—Exemptions—Necessary furniture, tools, cattle, etc.; professional library and instruments, $200; team used for work, $200; homestead to head of family, $500. Limitations of Actions—Contract, obligation, or liability not under seal, 6 years; instruments under seal, and judgment of court of record, 8 years; recovery of land, 15 years. Revivor—New promise in writing. Redemption—Lands sold on execution, 6 months; under foreclosure, 1 year, unless value of property less than incumbrance, then in discretion of court; for taxes, 1 year. Justices' Jurisdiction—$200. Witness—Party in interest may be. Stay of Execution—No general law, but court may allow. Married Women—Wife's separate property, acquired at any time, not liable for husband's debts, except created for her and family, and then chargeable only upon annual products of her separate estate. Interest—Legal, 6 per cent. Usury forfeits excess.

PRINCIPAL CITIES.—Burlington, pop., census of 1890, 14,566; Montpelier (capital); Rutland, pop., 11,770; Brattleboro and Bellows Falls are important and thriving towns, and seats of large industries.

POPULATION.—Census of 1890.—332,422.

VIRGINIA.

Named in honor of Elizabeth, the Virgin Queen. One of the thirteen original States. Called the "Old Dominion" and "The Mother of Presidents." First English settlement in America, 1607. Slavery introduced 1619. Seceded May, 1861; re-admitted January, 1870. Capital of Confederacy moved to Richmond 1861. Scene of gigantic energies of the war. Bull Run, the Wilderness, Cold Harbor, Fredericksburg, Port Republic, and many other famous battles were fought on Virginia soil. Lee surrendered at Appomattox April 9, 1865, ending the war. Active in Revolution and subsequent steps toward founding the Union, Virginia won the title of "First of the States." British burnt Norfolk 1779, and Richmond 1781. Yorktown surrendered October, 1781, practically vanquishing England. Number colleges 7, schools 4,502, school age 5-21, school system fair. Number of counties 100.

CLIMATE.—Varies, is genial and healthful, cool in mountains, and warm in lowlands in summer. Winters are seldom severe. Winter averages 44, summer 78 degs. Rainfall, including snow, averages 44 inches, being heaviest on the coast.

VIRGINIA—(Continued).

PRESIDENTIAL ELECTION RESULTS.—1824, Dem. maj. 2,032; 1828, Dem. maj. 14,651; 1832, Dem. maj. 22,158; 1836, Dem. maj. 6,893; 1840, Dem. maj. 1,392; 1844, Dem. maj. 5,893; 1848, Dem. maj. 1,453; 1852, Dem. maj. 15,286; 1856, Dem. maj. 29,105; 1860, Constitutional Union plur. 358; 1872, Rep. maj. 1,772; 1876, Dem. maj. 44,112; 1880, Regular Dem. maj. 12,810; 1884, Dem plur. 6,315; 1888, Dem. plur. 1,539.

State, Congressional, and Presidential elections Tuesday after first Monday in November. Sessions of Legislature biennial, in odd-numbered years, meeting first Wednesday in December; holds 90 days. Term of Senators 90 days, Representatives 2 years. Number electoral votes 12, Congressmen 10. Lunatics, idiots, convicts, duelists, United States Army and non-taxpayers of capitation tax excluded from voting.

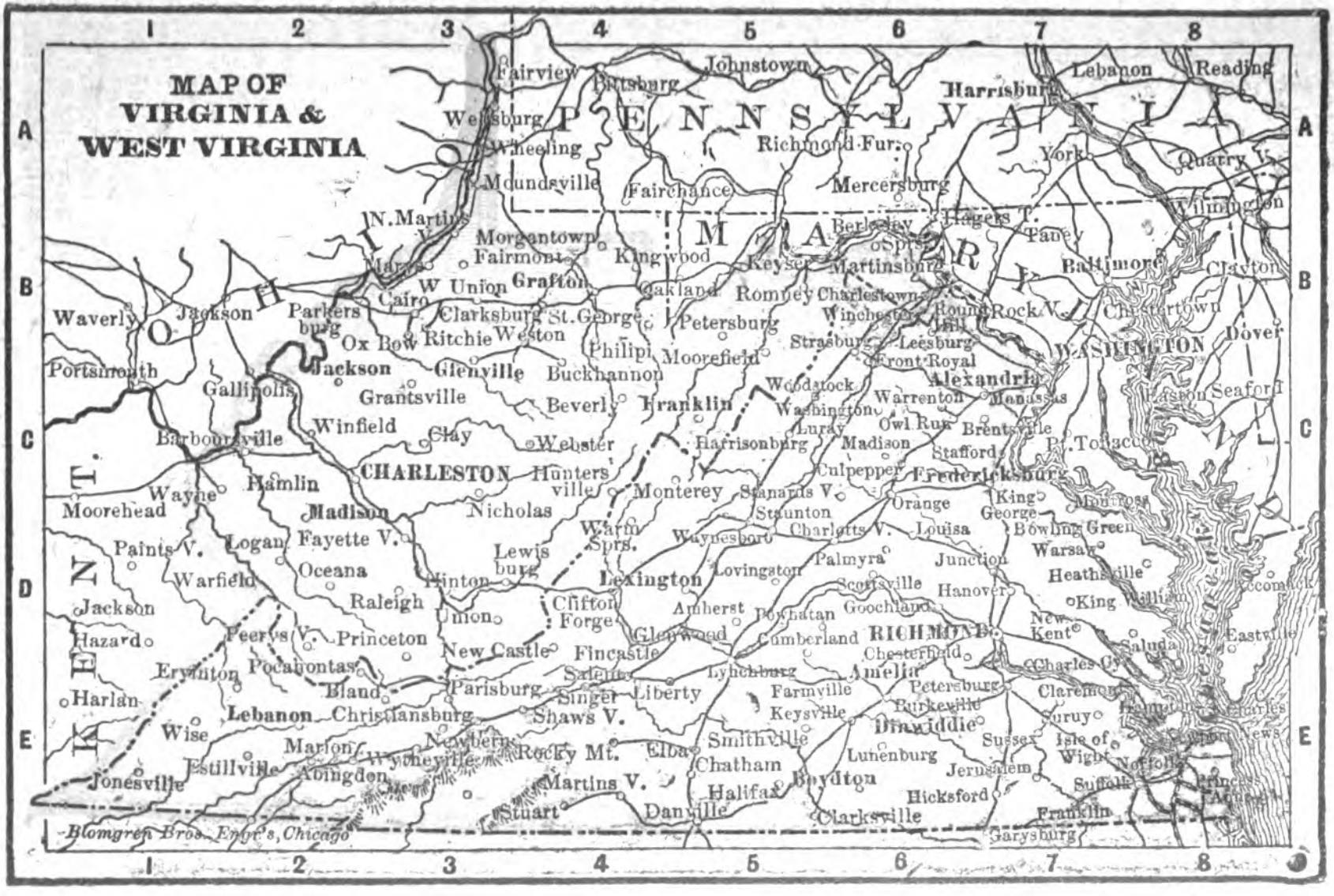
SALARIES OF STATE OFFICERS.—Governor, $5,000; Lieutenant Governor, $900; Secretary of State, $2,000; Treasurer, $2,000; Auditor, $3,000; Second Auditor, $2,000; Attorney General, $2,500; Superintendent of Public Instruction, $2,500; Adjutant General, $600; Commissioner of Agriculture, $1,500; Superintendent of Land Office, $1,300; President Supreme Court, $3,250; four Judges Supreme Court, $3,000; two District Judges $3,500; Senators and Representatives, $540 per year; five Collectors of Internal Revenue, $3,000 to $4,500.

GEOGRAPHICAL, ETC.—Greatest length E. and W. 445 miles, greatest width 190 miles, area 40,125 square miles 25,680,000 acres. Coast line, 130 miles; tidal frontage, 1,566 miles. Cleared land averages $10, and woodland $6 to $7 per acre. The opportunities for homes and enterprise are inviting. All cereals, tobacco, peanuts (State ranks first in this crop and second in tobacco), fruits, grapes, and vegetables are extensively raised. Stock thrives. The State is rich in iron, gold, salt, coal, marble, slate, zinc, lead, stone, timber, and other natural resources as yet little developed. Much good farming land is untilled.

INDUSTRIES.—Half population engaged in agriculture, balance in quarrying, ship-building, lumbering, the trades, iron-working, meat packing, tanning.

COLLECTION AND EXEMPTION LAWS.—Exemptions—Pictures, library, etc., $100; necessary furniture, certain cattle, house, etc.; a mechanic's tools, $100; also to head of family, called homestead exemption, real or personal property, $2,000. Limitations of Actions—For articles charged in store account, 2 years; contracts not under seal, 5 years; contracts under seal, 20 years; recovery of lands, 15 years. Revivor—New promise in writing; part payment not sufficient. Redemption—No statutory provisions; right exists in mortgagor as at common law; under tax sales, 2 years. Justices' Jurisdiction—See Stay of Execution. Witness—Party in interest may be. Stay of Execution—Only on justice's judgment, between $10 and $20, 40 days; between $20 and $30, 60 days; over $30, 90 days. Married Women—Recent statutes not judicially con-

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MAP OF
VIRGINIA &
WEST VIRGINIA
Fairview
Pittsburg
Johnstown
Harrisburg
Lebanon
Reading
Wellsburg
Wheeling
PENNSYLVANIA
Richmond Fur.
York
Quarry V.
Moundsville
Fairchance
Mercersburg
Wilmington
N. Martins V.
Morgantown
Berkeley Spgs.
Hagers T.
Tane
Fairmont
Kingwood
Keyser
Martinsburg
Baltimore
Clayton
Grafton
Oakland
Romney
Charlestown
Rock V.
Chestertown
Waverly
Jackson
Parkersburg
Cairo
Clarksburg
St. George
Petersburg
Winchester
Round Hill
Ox Bow
Ritchie
Weston
Philipi
Moorefield
Strasburg
Leesburg
WASHINGTON
Dover
Portsmouth
Jackson
Glenville
Buckhannon
Front Royal
Alexandria
Gallipolis
Grantsville
Beverly
Franklin
Woodstock
Warrenton
Manassas
Easton
Seaford
Winfield
Clay
Webster
Harrisonburg
Madison
Brentsville
Barboursville
Stafford
Pt. Tobacco
Hamlin
CHARLESTON
Hunters ville
Monterey
Culpepper
Fredericksburg
Wayne
Moorehead
Madison
Nicholas
Staunton
Orange
King George
Montross
Paints V.
Logan
Fayette V.
Warm Spgs.
Waynesboro
Charlotts V.
Louisa
Bowling Green
Lewis burg
Palmyra
Junction
Warsaw
Oceana
Lexington
Lovingston
Heathsville
Warfield
Hinton
Scottsville
Hanover
Jackson
Raleigh
Union
Clifton Forge
Amherst
Powhatan
Goochland
King William
Hazard
Peerys V.
Princeton
Glenwood
Cumberland
RICHMOND
New Kent
Saluda
Eastville
Pocahontas
New Castle
Fincastle
Chesterfield
Charles Cy
Erynton
Salem
Lynchburg
Amelia
Peterseburg
Harlan
Bland
Parisburg
Singer
Liberty
Farmville
Claremont
Lebanon
Christiansburg
Shaws V.
Keysville
Burkeville
Surry
Wise
Marion
Newberry
Rocky Mt.
Elba
Smithville
Dinwiddie
Sussex
Isle of Wight
Estillville
Wytheville
Chatham
Lunenburg
Jerusalem
Norfolk
Jonesville
Abingdon
Martins V.
Halifax
Boydton
Suffolk
Princess Anne
Stuart
Danville
Hicksford
Clarksville
Franklin
Garysburg
Blomgren Bros. Engr's, Chicago

VIRGINIA—(Continued).

strued, hence law uncertain; by act of April 4, 1877, property of women married since that date—or if married before, acquired since that date, shall be her separate estate, subject, however, to the curtesy of the husband. Interest—Legal, 6 per cent. Usury forfeits all interest.

CHIEF CITIES.—Richmond (capital), pop. 63,600; pop. of Norfolk, 21,966; Petersburg, 21,656. Hampton Roads one of best harbors on coast. Seven ports of entry.

POPULATION.—Census of 1890.—1,655,980. In 1860 there were 490,865 slaves in the state of Virginia.

WASHINGTON.

Named for George Washington. First settlement of white Americans at Tumwater, 1845. Preceded, however, by Hudson Bay Co.'s trading posts. Organized as Territory 1853. Admitted as State at same time as North and South Dakota and Montana. Indian wars 1855 and 1858. Gold discovered 1855. Island San Juan in dispute between United States and England 1859. Rights of the Hudson Bay and Puget Sound Co.'s purchased. Number colleges 2, school age 4-21 years, school endowment reserved large. Number counties 23, miles railroad 675.

CLIMATE.—On coast dry season April to November, rest of year rainy. Rainfall averages at north 96 inches, for entire section 54 inches. Eastern section dry, rainfall 10 inches. Winters mild, little snow or ice. Summer cool, with sea breezes. Temperature averages, winter 39 deg., summer 61 deg., ranges 30 to 90 deg.

ELECTIONS.—All elections Tuesday after first Monday in November. Number Senators 12, Representatives 24, sessions of Legislature biennial in odd-numbered years, meeting first Monday in October. Terms of Senators and Representatives 2 years each. Voting population 27,670, native white 15,858, foreign white 8,393, colored 3,419.

SALARIES OF STATE OFFICERS.—Governor, $2,600; Secretary, $1,800; Treasurer, $1,200; Auditor, $1,200; Superintendent of Public Instruction, $1,000; Librarian, $400; Chief-Justice, $3,000; three Associate Justices, $3,000; Senators and Representatives, $4 a day and 20c. mileage; Surveyor General, $2,500; Chief Clerk, $1,800; Chief Draftsman, $1,700; Collector of Customs, $1,000 and fees; Collector of Internal Revenue, $2,250; three Deputy Collectors of Internal Revenue, $1,200 to $1,600.

GEOGRAPHICAL, ETC.—Extreme length east and west 341 miles, width 242 miles, area 66,880 square miles, 42,803,000 acres. Coast line 200 miles. Lumber resources unsurpassed. Copper, cinnabar, lead, and other minerals are found. Coal on Bellingham Bay and at Seattle, area of coal-bearing strata 20,000 square miles. Gold-bearing quartz and silver lodes in Cascade and coast ranges. Grazing region entire section east of Cascades, covered with inexhaustible supply of bunch

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WASHINGTON—(Continued.)

grass. Stock raising and dairying growing industries. Cereals flourish, but corn not successful. Wheat, oats, hops, fruit of temperate climate, except peaches, are staple. Columbia River current overcomes tide at the mouth, and water in the bar drinkable. Columbia River navigable 175 miles. Excellent harbors in Puget Sound, Admiralty Inlet and Hood's Canal. Scenery, especially on Columbia, grand. First Legislature assembled at Olympia February, 1854. Puget Sound has 1,800 miles of sh re line, and all along this line, miles and miles farther than the eye can reach, is one vast and almost unbroken forest of enormous trees. The forests are so vast that, although the sawmills have been ripping 500,000,000 feet of lumber out of them every year for the past ten years, the spaces made by these inroads seem no more than garden patches. An official estimate in 1889 places the amount of standing timber in that area at $500,000,000,000 feet, or a thousand years' supply, even at the enormous rate the timber is now being felled and sawed. The timber belt of Washington Territory covers an area equal to that of the States of Vermont, Massachusetts, Connecticut, and New Hampshire.

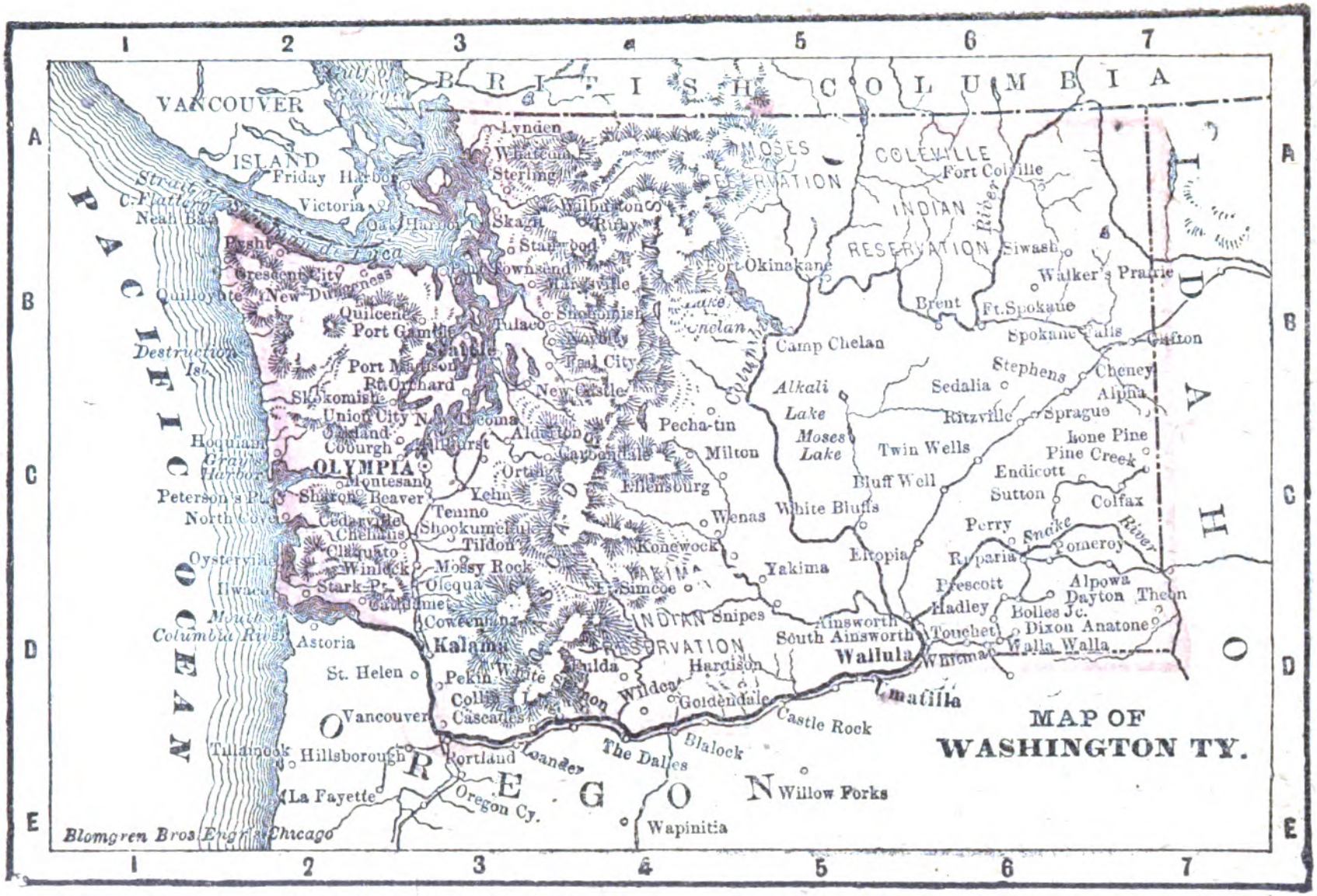
LEADING INDUSTRIES.—Agriculture, lumbering, grazing, mining, etc.

COLLECTION AND EXEMPTION LAWS.—Exemptions—To each householder, household goods, coin value, $1,500; also certain cattle to farmer, team, utensils, etc., $750; to professional men, office furniture, also libraries and instruments, $500; boatmen, boats, $250; draymen, team; homestead to head of family, while occupied by family, and entered in office of auditor as such, $1,000. Limitation of Action—Contracts not in writing, 3 years; contracts in writing, or liability arising out of a written agreement, or a judgment or decree of any court, 6 years; recovery of real property, 20 years. Revivor—Part payment or new promise in writing. Redemption—Lands sold on execution, 6 months. Justices' Jurisdiction—$100. Witness—Party in interest may be. Stay of Execution—In superior court, under $500, 30 days; between $500 and $1,500, 60 days; over $1,500, 90 days. In district court, under $300, 2 months; between $300 and $1,000, 5 months; over $1,000, 6 months. Married Women—Property of wife acquired before marriage, and afterward by gift, devise, or descent, her separate property; same with husband; property otherwise acquired during coverture held in common; all, however, subject to control of husband; to avoid liability for husband's debts, wife must record inventory in her separate estate, duly executed. Interest—Legal, 10 per cent.; any rate by agreement in writing. Usury—No law.

CHIEF CITIES.—Olympia (capital), Walla Walla, pop. 7,239; Seattle, pop. 43,914.

POPULATION.—Census of 1890.—349,390.

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WEST VIRGINIA.

Composed of northern and western counties of the original State of Virginia. Called "Pan Handle State." History up to 1861 same as that of Virginia. Denounced passage of secession ordinance April 22, 1861. F. H. Pierrepont elected Governor June 20, 1861. Admitted as a State June 20, 1863, and Wheeling made the capital. Capital changed to Charleston 1870. Moved again to Wheeling 1875, and to Charleston again in 1884. Flourishing free school system; school age 6-21. Union soldiers furnished 32,068. State advanced rapidly in wealth. Area, 24,780 square miles.

CLIMATE.—Moderate. Average temperature, winter 30 deg., summer 70 deg. Average rainfall 42 to 45 inches. Health is excellent. Elevation reduces heat, which in the valleys averages 76 to 78 deg.

PRESIDENTIAL ELECTION RESULTS.—1864, Rep. maj. 12,714; 1868, Rep. maj. 8,869; 1872. Rep. maj. 2,264; 1876, Dem. maj. 12,384; 1880, Dem. maj. 2,069; 1884, Dem. plur. 4,221; 1888, Dem. plur, 839.

Governor and State officers elected quadrennially, and Legislature every two years, on second Tuesday in October. Number Senators 26, Representatives 65. Sessions biennial, in odd-numbered years, holding 45 days. Terms of Senators 4 years, of Representatives 2 years. Number electoral votes 6, Congressmen 4, number voters 169,161, native white 123,569, colored 6,384. Insane, paupers, and convicts not voting.

SALARIES OF STATE OFFICERS.—Governor, $2,700; Secretary of State, $1,000 and fees; Treasurer, $1,400; Auditor, $2,000 and fees; Superintendent of Free Schools, $1,500; Attorney-General, $1,000; Presiding Judge Supreme Court, $2,250; Associate Judges, $2,250; Senators and Representatives, $4 per day, mileage 10 cents; District-Judge, $3,500; two Collectors Internal Revenue, $2,875.

GEOGRAPHICAL, ETC.—Length north and south, 241 miles, greatest width 158 miles, 15,772,800 acres. Surface mountainous with fertile valleys, the Alleghenys principal range. Some high peaks. Scenery fine and much visited by tourists. Staple products include minerals, sheep, hogs, tobacco, wheat, corn, dairy products, fruit, wine, lumber. Petroleum extensively produced. The State ranks fifth in salt and coal, seventh in buckwheat, iron, and steel. Cleared land averages $22.50. Much of the State is virgin forest densely clothed with oak, walnut, poplar, ash, and other timber trees. Mineral springs abound. The soil, where not mountainous, is excellent. Mineral wealth, including coal, oil, iron, salt, is prodigious. Western part hilly, but gradually descends from 2,500 feet above the sea toward the Ohio River, where the elevation is 800 to 900 feet. Number counties 54, miles railroad 1,026.

COLLECTION AND EXEMPTION LAWS.—Exemptions—Parent or infant children of deceased parents may set apart personal

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WEST VIRGINIA—(Continued).

estate, $200; mechanic or laborer, tools, $200; homestead as against debts created since August 22, 1872. $1,000, provided it was recorded as such before the debt was contracted. Limitation of Actions.—Store account, 3 years; accounts concerning trade between merchants, 5 years; contracts not in writing, or in writing and not under seal, 5 years; contracts under seal, 20 years, except that contracts executed after April 1, 1869, whether under seal or not, 10 years; to recover land, 10 years. Revivor—Acknowledgment of debt, or promise in writing to pay. Redemption—None for land sold under execution or mortgage; for taxes, 1 year. Justices' Jurisdiction—$100, exclusive of interest. Witness—Party in interest may be. Stay of Execution—Justice's judgments, $10 to over $50, 1 to 4 months. Married Women—Property of wife acquired at any time and from any source other than her husband, held to her sole and separate use; provided that the husband must join in conveyance of realty. Interest—Legal, 6 per cent. Usury forfeits excess.

CHIEF INDUSTRIES.—Sixty per cent. of laborers engaged in agriculture, balance in mining, iron making, lumbering, manufacturing, etc.

CHIEF CITIES.—Charleston (capital), pop. 7,257; Wheeling, pop. 35,052; Parkersburg, pop. 9,389; Martinsburg, pop. 7,207.

POPULATION.—Census of 1890.—762,794. In 1860 there were 18,371 slaves in the state of West Virginia. (For Map of West Virginia, see page 502.)

WISCONSIN.

From river of same name; an Indian word signifying "Wildrushing River." Settled first by French at Green Bay, 1669. Formed part of north-west territory. Included in Indiana territory 1800. Became part of Michigan territory 1805. Wisconsin territory organized 1836. Present boundaries fixed, 1838. Madison made capital 1838. Admitted as State May 1848. Seventeenth State to join Union.

CLIMATE.—Temperature averages winter 20 deg., summer 71 deg., ranges from 32 deg. below zero to 95 deg.

PRESIDENTIAL ELECTION RESULTS.—1848, Dem. plur. 1,254; 1852, Dem. maj. 2,604; 1856, Rep. maj. 12,668; 1860, Rep. maj. 20,040; 1864, Rep. maj. 17,574; 1868, Rep. maj. 24,150; 1872, Rep. maj. 17,586; 1876, Rep. maj. 5,205; 1880, Rep. maj. 21,783; 1884, Rep. plur. 14,693; 1888, Rep. plur. 21,271.

ELECTIONS.—All elections Tuesday after first Monday in Nov. Number Senators, 33; Representatives, 100; sessions biennial, in odd-numbered years, meeting second Wednesday in Jan.; terms of Senators 4 years, of Representatives 2 years. Number electoral votes 11, number Congressmen 9, number voters 340,482; insane, idiots, convicts, bribers, betters, and duelists excluded from voting.

SALARIES OF STATE OFFICERS.—Governor, $5,000; Secretary of State, $5,000; Treasurer, $5,000; Attorney General, $3,000;

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WISCONSIN—(Continued).

Railroad Commissioner, $3,000; Chief-Justice, $5,000; four Associate Justices, $5,000: two District Judges, $3,500; Senators and Representatives, $500 per year, mileage 10c.; Pension Agent, $4,000; Indian Agent, $1,500; four Collectors Internal Revenue, $4,500 to $2,750; twenty-three Deputy Collectors, $1,800 to $300; Collector of Customs, $1 000 and fees.

GEOGRAPHICAL, ETC.—Number Union soldiers furnished, 91,327; number counties, 66; number colleges, 7; number public schools, 6.588; school age, 4-20 years. Milwaukee River frozen over an average of 105 days in year. Rainfall 31 inches, including snow. Snows heavy, especially at north; spring late, summers short, falls pleasant. Extreme length north and south 298 miles, width 260 miles, area 54,450 square miles. acres 34.848,000. Much of State prairie, but enormous stretches of magnificent pine and hardwood timbers remain untouched. Soil excellent, and adapted to farming, dairying, and stock raising. Fruits grow and berries are a fine crop. Cranberries largely raised. Wheat the best crop—flax, buckwheat, hay, corn, oats, staples. Ranks second in hops, third in barley and potatoes, fourth in rye and buckwheat, fifth in oats and agricultural implements. Improved land averages $18, and unimproved $10 per acre. Much government and railroad land yet untaken. Extensive lead mines in Grant, Lafayette, and Iowa Counties; native copper in the north, in Crawford, and Iowa Counties. Iron ores in Dodge, Sauk, Jackson, and Ashland Counties. Besides the great lakes Michigan and Superior, the State contains Green Bay, Winnebago, Geneva, Devil's Lake, and innumerable other lakes in the central and northern sections of the State, of unsurpassed beauty, making the State a favorite place of summer resort. First Territorial Legislature at Belmont, Sept. 1, 1836.

WISCONSIN'S RECOGNITION OF HER SOLDIERS.—It is a well-known fact that the Badger State has provided for her living old soldiers; but not content with this recognition, Senator L. E. Pond introduced a bill in February last to provide for the construction of a Soldiers' Memorial Hall, and making a contingent appropriation therefor. According to the provisions of the bill, the Governor, Treasurer, and Attorney General of the State, together with two persons selected by the Council of Administration of the Department of Wisconsin, G. A. R., with two surviving soldiers of Wisconsin, not members of the G. A. R., to be appointed by the Governor, besides two persons to be selected by the State Historical Society, are constituted a Board of Commissioners to erect a suitable building at the State capital to be known as "The Wisconsin Memorial Hall." A part of this building is to be set aside for the permanent free exhibition of relics of the late war, together with portraits, busts, etc. of the State's veterans, while the State Historical Society will occupy another portion of the building. There is little doubt but that the bill will become a law.

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WISCONSIN—(Continued).

LEADING INDUSTRIES.—Lumbering, farming, mining, manufacturing, brewing, pork-packing, dairying, etc.

COLLECTION AND EXEMPTION LAWS.—Exemptions—Library, household furniture, etc., $200; fire-arms, $50; necessary team, cattle, and utensils; 1 year's provisions; tools or stock in trade of mechanic, miner, or other person, $200; library and instruments of professional man, $200; printing material, presses, etc., $1,500; homestead in country, 40 acres, or in town-plot ¼ of an acre. Limitation of Actions—On contracts not under seal, 6 years; judgments of courts within the State on sealed instruments, cause accruing within the State, 20 years; foreign judgments and specialties, cause accruing without the state, 10 years; recovery of bonds, 20 years. Revivor—Part payment or new promise in writing; if by one joint debtor, it revives only as to him. Redemption—Of lands sold under execution, 2 years; mortgage, 1 year; taxes, 3 years. Justices' Jurisdiction—$200. Witness—Party in interest may be. Stay of Execution—Only on justice's judgments; $10 to over $50, exclusive of costs, 1 to 4 months. Married Women—Property of wife acquired at any time, from any source other than her husband, held to her sole separate use and disposal. Interest—Legal, 7 per cent.; by contract, in writing, 10. Usury forfeits all interest.

CHIEF CITIES.—Milwaukee, port of entry, great pork-packing and beer-brewing center, grain and wheat market; pop. 204,150. Madison, capital, pop. 13,392. Eau Claire, pop. 17,438; Fond du Lac, pop. 11,942; Oshkosh, 22,752; La Crosse, 25,053.

POPULATION.—Census of 1890.—1,686,880.

WYOMING.

First settlement Ft. Laramie, 1867. Organized as a Territory from 1868. Good school system started, school age 7-21. Number counties 9. Miles of railroad 616.

CLIMATE.—Cold, severe in mountains, milder in valleys. Healthful, air pure, dry and bracing. July warmest month. January coldest, latter averages 10 deg. Rainfall, 15 inches. Temperature averages, summer 66 deg., winter 18 deg., ranges from 31 deg. below to 80 deg. above.

All elections Tuesday after first Monday in November, number Senators 12. Representatives 24, sessions biennial, in even-numbered years, meeting second Tuesday in January, hold 60 days, terms of Senators and Representatives 2 years each; voters 10,180, native white 6,042, foreign white 3,199, colored 939.

SALARIES OF TERRITORIAL OFFICERS.—Governor, $2,500; Secretary, $1,800; Treasurer, $800 and commission; Auditor, $1,000; Superintendent of Public Institutions, $400; Librarian, $400; Chief-Justice, $3,000; two Associate-Justices, $3,000; Sen-

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WYOMING—(Continued).

ators and Representatives, $4 a day and 20c. mileage; Collector of Internal Revenue, $2,000; two Deputy Collectors of Internal Revenue, $1,400 to $1,500; Surveyor General, $2,500; Chief Clerk, $2,000; Chief Draftsman, $1,800.

GEOGRAPHICAL, ETC.—Length 350 miles, width 275 miles, area 97,575 square miles, acres 62,438,000. Surface traversed by Rocky Mountains, forming the continental divide, and is high and mountainous, varying in elevation from 4,800 to 12,000 feet. Mountains, covered with forests of considerable extent, contain precious and base minerals in great deposits. Along the streams and in the valleys are tracts of arable lands which may be made to produce prolifically with irrigation. Soil, where water can be had, is good, and chiefly suited to grazing. Half the Territory grazing land. At the north-west is the Yellowstone National Park, 3,600 square miles in area, and one of the greatest natural wonders of the continent. It varies from 6,000 to over 12,000 feet in elevation, and its scenery is one vast panorama. Coal abundant and of good quality at Evanstown, Carbon, Rock Springs, and other points; these deposits extensively worked, and furnish nearly all the coal used by the railroads and by settlements hundreds of miles east and west. Copper, lead, plumbago, and petroleum found, gold in the Sweetwater country and near Laramie City, valuable deposits of soda in valley of the Sweetwater. Wheat, rye, oats, and barley flourish, frost too frequent for corn. Water plentiful, game and fur bearing animals numerous, iron ore abundant, mainly red hematite.

LEADING INDUSTRIES.—Grazing, mining, and agriculture, but little is done in manufactring.

COLLECTION AND EXEMPTION LAWS.—Exemptions—House hold furniture, provisions, etc.; tools, team, implements or stock in trade of mechanic, miner or other person, kept for his trade or business, $300; library and instruments of professional man, $300; homestead actually occupied as such by head of family, in country, 160 acres, in town, lot or lots in value, $1,500. Limitation of Actions—On contracts not in writing, 4 years; upon specialty or agreement in writing, 5 years; on all foreign judgments or contracts made or incurred before debtor becomes resident, within one year after he establishes residence in territory; recovery of land, 21 years. Revivor—Part payment or acknowledgment in writing. Redemption—Under mortgage, 6 months. Justices' Jurisdiction $100. Witness—Neither interest nor crime disqualifies. Stay of Execution—Stay law repealed, except as to justice's judgments. Married Women—Vote, hold office, and control separate property as though unmarried. Interest—Legal, 12 per cent., any rate by agreement in writing. No usury law.

CHIEF CITIES.—Cheyenne (capital), pop., 11,693; Laramie City, pop. 6,395.

POPULATION.—Census of 1890.—60,705.

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