

AMERICAN INVENTIONS OF THE NINETEENTH CENTURY

THE dead nineteenth century has been a marvellous one, as far as inventions are concerned, and, what is more remarkable still, the United States, the youngest of nations, heads the list both as to number of inventions and their scope and ingenuity. No other country can compare with the United States in this respect; in fact, France, England and Canada united just about equal the number of patents obtained in America during the nineteenth century.

In one hundred years, 650,123 patents were granted in the United States. France comes next, with 308,558; England next, with 278,129; Belgium, with 154,156; Germany, 128,114; Austria-Hungary, 82,933; Canada, 65,510; Italy, 49,990; and Spain, 22,314. From the birth of the Patent Office in 1790 until 1836, 9,957 patents were granted. In the latter year, 109 patents were issued. In 1890, when high-water mark was reached, 26,292 patents were issued. As far as States are concerned, Connecticut is the most prolific, while Thomas A. Edison heads the list of individual patentees, with 727 patents issued and more pending. Besides, there are about forty other inventors each of whom has more than one hundred patents to his credit.

"MANY INVENTIONS"

But leaving the number of patents aside, the quality of the inventions is as remarkable as their quantity. The steamboat owes its origin to American ingenuity. It was Robert Fulton, its inventor, who went to the great Napoleon, offering to put it within his power to conquer England with a fleet of steam-propelled vessels. The Corsican laughed at the ridiculous idea and—Britain eventually conquered the scowling of Fulton.

Morse annihilated space with his American-invented telegraph. Field united two continents by cable. Edison reproduced sound. He enabled telegraph operators to send four different messages on the same telegraph-wire at the same time. Bell enabled human beings miles apart to converse with each other. The first steamer to cross the Atlantic was the American *Savannah*. McCormick invented the reaper, making it possible for harvesting to be done with great speed, where formerly it was carried on in the most primitive manner. Americans first made watches by machinery. Smith and Wesson invented the magazine firearm. Sleeping cars were first constructed in this country; being the invention of Woodruff. Iron floor beams were first used in frame construction, in the building of Cooper Institute, New York City. Howe invented the sewing machine. Otis constructed the first passenger elevator. The first barbed wire fence was erected in the United States. Ericsson invented the iron-clad battleship. And so on, in endless numbers almost.

STEAM POWER

Perhaps the most important of all inventions has been the application of steam to moving machinery. Steam is the primary power which moves our engines, runs our presses, does our work—is our servant. While the invention of the modern steam engine itself dates back to 1784, when James Watt obtained his patent, yet the steam engine of to-day is of much more recent origin. The cut-off valve, which saves two-thirds of the steam, the various gauges, the numerous rotary engines—in fact, most of the principal improvements to the engine of James Watt—are of American origin.

The steam fire-engine, such as every city in America possesses, is American, having been invented in 1841 by a Mr. Hodges. The great locomotives which draw our trains up to 112 miles an hour are all built on American lines. The total steam horse-power of the world is estimated at about 65,000,000, of which the United States can lay just claim to almost one-third.

ELECTRICAL PROGRESS

Next to steam, electricity has made the most wonderful progress. At the end of the eighteenth century practically nothing was known of this subtle fluid. A hundred years later, marvellous things can be recorded. What steam fails to do for us electricity does. It rings our bells, propels our cars, raises our elevators, transmits our messages, reproduces our voices, plays our pianos, lights our streets and homes, cauterizes our wounds and performs a thousand other functions. All these marvels owe their origin to the discovery of the electro-magnet, an indispensable adjunct to all electric contrivances, by Professor Joseph Henry of Princeton. N. J. Samuel F. B. Morse, utilizing Henry's invention, discovered the telegraph and the system of signalling which bears his name. Joseph B. Stearns of Boston discovered the duplex system of telegraphing and Edison the quadruplex. Royal C. House, another American, invented the

printing telegraph, now used in every broker's office in the shape of the famous "ticker." Still another invention of American origin is the fire-alarm system, discovered by Channing and Farmer of Boston. Burglar alarms, district messenger calls, railroad signals and hotel annunciators are also American by birth.

ELECTRICAL PROPULSION, LIGHTING, AND THE TELEPHONE

As far as dynamos are concerned, the first patent in this line was granted by the United States to Saxton, a citizen. Since then, Edison, Tesla, Westinghouse and others have proven to the world that American inventors are unrivalled in the construction of new electrical contrivances.

The greatest step forward in electricity has, however, been in the propulsion of cars. Here, again, the American played the way, for Professor Henry, the inventor of the electro-magnet, also constructed the first practical motor. Dr. Page, another American, built the first electric locomotive, which, in 1851, drew a train from Washington to Badensburg at the rate of 19 miles an hour. To-day, there are in the United States about 20,000 miles of electrical railways.

In electric lighting, too, America stands first. The greatest searchlight in the world is near Pasadena, Cal. It is of 3,000,000 candle-power and can be seen for a distance of 150 miles. The first incandescent lamp we can also claim, being the invention of a Mr. Starr. Moses G. Farmer lighted his home at Salem, Mass., with electricity in 1859, being the first in the world to put electricity to such a use. Since then, electric lighting has been so developed and has become so popular, that to-day there are about 500,000 arc lights and 25,000,000 incandescent lights in active use in the United States.

The telephone dates to 1874, when both Professor Bell and Elisha Gray applied to the Patent Office for protection. After much legal wrangling, the prize went to Bell. To-day there are 772,989 miles of telephone wire in use, connecting 465,180 stations and giving direct employment to 19,668 persons. In 1899, the Bell Telephone Company answered 1,231,000,000 calls.

THE PRINTING PRESS

Next to steam and electricity must rank printing and all its kindred industries, from the production of books to the development of the newspaper and magazine. Printing presses, or rather improvements which have made possible the modern paper, are all due to American ingenuity. The Washington hand-press, still in use in most printing offices, was invented by George Rust in 1829. R. H. Hoe was the greatest worker in this line of endeavor, however, for he it was who invented the web press, which feeds endless strips of paper into the press. From a few hundred an hour, these machines have advanced until they can now turn out 96,000 eight-page papers in an hour, completely cut and properly folded.

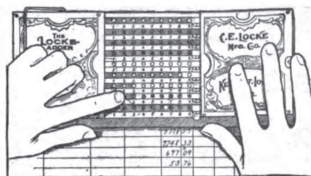
TYPESETTING MACHINES

With increased rapidity in printing came a demand for an increase in the quickness of setting type. Here America once more distinguished itself, for it was Mergenthaler of Baltimore who invented the wonderful machine for setting type which bears his name. Hand in hand with the linotype, as this machine is called, came the discovery that wood, ground into pulp, could be converted cheaply into paper. As a result, paper has increased in quality and quantity and has materially decreased in cost.

United with the art of printing is the use of the typewriter. The first practicable typewriter—there had been half a dozen impracticable ones—was that of A. E. Beach, an American, who obtained his patent in 1847. Since then, thousands of other patents have so improved the typewriting machine that Mr. Beach would not recognize his invention, were he alive to see it.

THE SEWING MACHINE

Sewing machines have also played a prominent part in the inventive life of this country. In 1826 one Lye obtained a patent for such a contrivance, but it proved too cumbersome and was abandoned. The first practicable machine was that of Elias Howe, patented in 1846. From this has grown the complicated machine of to-day, which has decimated the cost of clothing, of shoes—of everything that was formerly sewn by hand and is now stitched by machinery. It is estimated that Howe's primitive machine has grown into an industry which produces about 850,000 machines a year and gives employment to more than 100,000 persons in this country alone.



The Locke Adder.

Superior to all Adding Machines. Fastest, cheapest, most simple, practical and durable. No practice necessary, no business complete without it. Adds, subtracts, multiplies, divides. Saves time, labor and money, and Quickly Pays for Itself. Ensures accuracy, releases from mental and nervous strain. Computes all columns simultaneously. Capacity 999,999,999. Sold on 30 days' trial. Price \$5.00, charges prepaid. Write for FREE descriptive booklet. C. E. LOCKE MFG. CO., 24 Walnut Street, KENNETT, IOWA.

Send ten cents to-day for three mos. trial subscription to

THE AMERICAN BOY

22 to 40 page (beautifully illustrated) practical magazine for Boys. Departments: Short Stories, Successful Boys, What Boys are doing, Talks on Business for Boys, Boys as money-makers and money-savers, The boy in the office, store, factory, home, church and school, Games and Sport, The Boy's Library, The Boy Journalist, Printer, Collector—(stamps, coins, curios, etc.).

W. H. C. SPRAGUE, Editor. Photographs, Mechanics, Artisan, Orator and Debater, Turning Points in a Boy's Life, American History by Months, Boys in the Animal Kingdom, Sciences, Travel. Represents the Order of the American Boy, the biggest and best organization of boys in America, teaching patriotism, good government and good morals. Interesting, instructive, pure, elevating, inspiring, just the thing for your boy. 90,000 subscribers in its first year. \$1.00 a year. FRANKLIN PUBLISHING CO., 209 Majestic Bldg., Detroit, Mich.

IT'S SUMMER NOW IN JAMAICA

A SPECIAL TRIP (ABOUT TWO WEEKS) TO JAMAICA AND ALL POINTS ON THE CARIBBEAN SEA BY THE COMMODIOUS STEAMERS OF THE

ATLAS LINE

LEAVES NEW YORK EVERY SATURDAY. SEND FOR ILLUSTRATED BOOKLET X FREE. P. M. FORWOOD & KELLOCK AGTS. 17 STATE ST. NEW YORK.

RICH FURS

EVENING WRAPS, TAILOR-MADE GOWNS OF SUPERIOR QUALITY, EXCLUSIVE MODELS TO SELECT FROM. A SPECIAL DEPARTMENT FOR REMODELING FUR GARMENTS.

Kenney

8 WEST 33D STREET, OPPOSITE WALDORF-ASTORIA.

The California Limited

New features this season—Daily service and extension to San Francisco.

Drawing-Room Pullmans, Buffet Smoking Car (with barber shop), Harvey Dining Car, Observation Car (with ladies' parlor).

Wide-vestibuled, electric lighted and luxuriously equipped.

From Chicago to Los Angeles and San Francisco Daily.

Santa Fe Route.

For illustrated pamphlets, address General Passenger Office, The Atchison, Topeka & Santa Fe Railway, CHICAGO.

"I've got a FREE SCHOLARSHIP."

Technical Education BY MAIL.

TO introduce the high standard of the AMERICAN SCHOOL OF CORRESPONDENCE, the Trustees have voted to award a limited number of FREE SCHOLARSHIPS in Mechanical, Electrical, or Steam Engineering.

Including a complete course in Mechanical Drawing. An excellent opportunity for private instruction in Mathematics, Mechanical Drawing or the Sciences under the direction of able instructors. Application blank on request. Mention this paper.

AMERICAN SCHOOL OF CORRESPONDENCE (Chartered by the Commonwealth of Massachusetts) Boston, Mass., U. S. A.



NO ORDERS EXPECTED

during the holiday season, but we have found it good business policy to advertise in all seasons, for through our advertising we find investors who desire to secure the unusual profits realized by investments in legitimate working mines, and by continuous advertising they find us.

The New Year's Dividends

disbursed by our house as financial agents for the several mining companies we represent and whose stock we have recommended to our customers, required the drawing and mailing of over 1,500 separate drafts and money orders, distributed in every State of the Union, and we have never yet had a single dissatisfied investor or customer.

Our Combination Order Plan

divides the investment among several companies, dividend payers and first issues, at the ground-floor inaugural prices, thus obviating risk of loss and insuring regular interest, maximum profits and security of principal to the investor.

If interested in large and unusual profits—regular interest and security of principal—send for our Booklets of paying mine combination order blank, latest Reports and full particulars, that will give you interesting and profitable information on your investments for the coming year.

DOUGLAS, LACEY & CO., BANKERS & BROKERS MINING STOCK EXCLUSIVELY 66 Broadway—17 New St., New York.

BRANCHES: CLEVELAND: "The Cuyahoga" Building. PHILADELPHIA: "The Bets" Building. BOSTON: "The International Trust Co." Building.



POULTRY PAPER, illustrated, 20 pages, 25 cents per year. 4 months' trial 10 cents. Sample Free. 64-page practical poultry book free to yearly subscribers. Book alone 10 cents. CATALOGUE of poultry books free. Poultry Advocate, Syracuse, N. Y.

Paralysis Locomotor Ataxia conquered at last. Doctors puzzled, Specialists baffled, thought incurable, by Dr. Chase's Blood and Nerve Food. Write me about your case. Advice and cure free. DR. CHASE, 224 N. 10th St., PHILADELPHIA, PA.

Free Earn this handsome BROCADED DRESS SKIRT.

This is a very stylish and handsome black skirt, with a full train & three quarter yard wrap. It is made in a handsome variety of all over lace and brocade, some BRILLIANTLY, a desirable and stylish material for dress skirts. Hand with a patent black cord, and a beautiful brocade band. It is made to fit any one from 28 to 36 inches. We will send it free to any one for sending in one of our Ladies Gold-plated Dress Pins for this, a set, (each pin set with a diamond jewel) and your name & address & we will send you the beautiful BROCADED SKIRT for your trouble. We trust you will like it. Write for a GOLD GOLD.

LADIES. If you have superfluous HAIR ON THE FACE send for new information how to remove it easily and effectually without chemicals or instruments. Correspondence confidential in plain sealed envelope. Mrs. M. N. PERRY, C.J., Box 93, Oak Park, Ills.

Large Expense on horses stopped at once

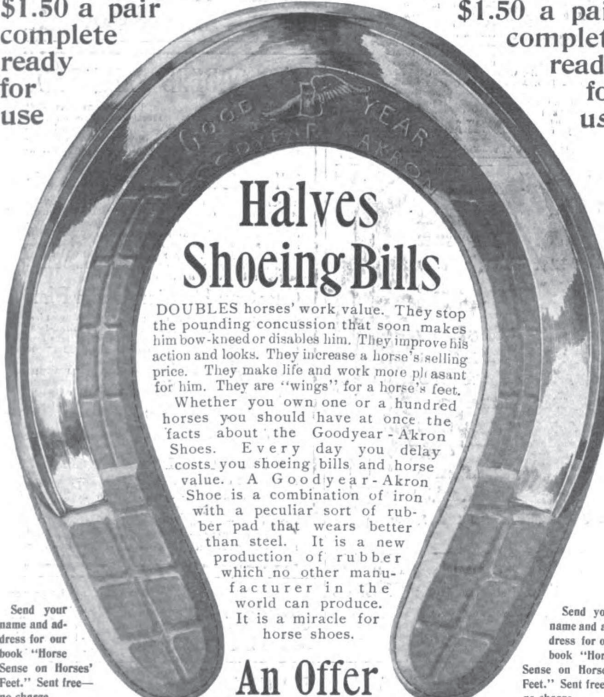
and slipping completely and surely prevented—giving your horse a free, confident, firm footing on any kind of icy or slippery road,

by the Goodyear-Akron perfect

Rubber Shoe

\$1.50 a pair
complete
ready
for
use

\$1.50 a pair
complete
ready
for
use



Halves Shoeing Bills

DOUBLES horses' work value. They stop the pounding concussion that soon makes him bow-kneed or disables him. They improve his action and looks. They increase a horse's selling price. They make life and work more pleasant for him. They are "wings" for a horse's feet.

Whether you own one or a hundred horses you should have at once the facts about the Goodyear-Akron Shoes. Every day you delay costs you shoeing bills and horse value. A Goodyear-Akron Shoe is a combination of iron with a peculiar sort of rubber pad that wears better than steel. It is a new production of rubber which no other manufacturer in the world can produce. It is a miracle for horse shoes.

An Offer

Send your name and address for our book "Horse Sense on Horses' Feet." Sent free—no charge.

Send your name and address for our book "Horse Sense on Horses' Feet." Sent free—no charge.

Set your horse's hoof on a piece of paper, draw outline of hoof with pencil, mail to us and we will send you prepaid a pair for either front or hind feet, complete ready for use, on receipt of \$1.50. Put them on and try them, and if afterwards they are not considered simply a boon to both horse and driver, and almost a half saving in shoeing bills, and a thing you wish never to be without, we will refund your \$1.50 in full.

Certainly this is a proposal which speaks for itself, and it is made by
The Goodyear Tire & Rubber Co., 10 Ann St., Akron, Ohio.



Yachts and Launches

Wood or steel constructed. Gasoline or steam. We build everything from a 20 foot boat to a 150 foot steam yacht and guarantee superiority. Gasoline Engines, 2 to 60 H. P.

Our 20 ft. Family Launch \$375

Length, 20 ft., Beam, 5 1/2 ft. Power, 2 1/2 Horse Power, Capacity, 10 people.



Send to cents for Catalogue **Michigan Yacht & Power Company,**
Foot of Baldwin Avenue, DETROIT, MICH.

ARTIFICIAL LEGS AND THE PHONOGRAPH

Artificial legs are truly American in their origin, for the first patent in this line was that granted to B. F. Palmer in 1846. The modern ones are so perfect that any one fortunate to possess one can even ride a bicycle. And that brings to memory the "wheel"—first patented in this country in 1819 by W. K. Clarkson. Even the pneumatic tire is of American origin, having been patented in 1847 by R. W. Thompson.

Edison, of course, invented the phonograph, the original voice and sound reproducer. Before his discovery in 1877, attempts had been made to reproduce the human voice, but without success. It was not until the American wizard evolved his machine that a triumph was achieved. He, too, is responsible for the numerous moving-picture machines now in existence, for his vitascope was the original, having been patented in 1893.

"TALKING MACHINES"

The phonograph, itself the mother of a big family of little or auxiliary inventions, is far in advance to-day of the halting but in itself wonderful machine of the Wizard of 1877. So far the public has toyed with the phonograph and the moving picture. They have been largely, indeed entirely, as far as the bulk of those enjoying them are concerned, the toys of our later days, but time, doubtless, will prove their scientific and more useful value. Films for use in making moving pictures are now preserved in many libraries, and a complete set of kinetoscopic views of the Queen's Longest Reign procession are preserved in London for the benefit and enlightenment of future generations. In the same way voices from many bodies that are now but scattered atoms on the earth's crust are still preserved for years yet to come.

The practical uses to which the phonograph may be put are increasing daily. The latest is to employ it as a teacher of languages. Schools and families unable to afford the services of a teacher from whom the correct accent can be acquired find an excellent substitute in the phonograph into which a highly paid professor of languages has dictated the lessons in his most academic accent. The machine is also used as a substitute for the stenographer in the dictation of letters, and even actual correspondence is carried on by its means.

SOME OTHER INVENTIONS

Gas, too, belongs, to a degree, to American inventiveness, for in 1805 David Melville of Newport, R. I., lighted his house with gas made in his home-made apparatus. Even the method of making what is known now as Bessemer steel owes its discovery to an American, William Kelly, who obtained a patent on the process in 1857. Nearly all the principal improvements in the spinning industry are due to the brain power of the American inventor—from Whitney's cotton-gin to the more complicated spinning machines.

Not least among modern inventions is the stem-winding watch, first patented by A. L. Dennison of Boston in 1848. The first practical reaper was also American, having been patented by Hussey in 1833 and a year later by McCormick. Since then all sorts of agricultural machines have been devised, each one more remarkable than its predecessors and nearly all American in origin.

This list could be lengthened out indefinitely, for American ingenuity is seemingly endless. There remains but to state that America's share in the inventions of the world during the nineteenth century is fully commensurate with her position among nations—first. And, as some one reported to Queen Victoria, when America won the America's Cup—"There is no second."

EDGAR MELS.

A PRIVILEGE

Thrown Away Entirely.

It is curious to observe how hard it is for some people to give up coffee drinking after they have become, at least half satisfied, that it is the cause of their ill health, but it becomes an easy task to give it up when one takes Postum Food Coffee in its place, providing, of course, that Postum is made according to directions, for then it has the rich, beautiful color, and a satisfying taste, while the rapid improvement in health clinches the argument.

A young lady at Cambridgeport, Mass., says: "When it was shown to me plainly that my ill health and excessive nervousness was largely due to the coffee habit, I realized that I must give it up, but it was next to impossible to do so. However, I made the trial and took Postum Food Coffee, with the mental reservation of the 'privilege,' as I termed it, of drinking coffee once a week.

"Little did I dream what a true friend Postum was destined to become to me. The old stomach trouble left, the nervousness vanished, and good, natural, healthy sleep came to my relief. In less than six months I felt like another person. I was so well and happy.

"The 'reserve privilege' in regard to using regular coffee was thrown to the winds. I have not the slightest desire for it; in fact, I very much prefer my Postum to any coffee."



Columbia Desk Calendar
SIXTEENTH EDITION. 1901. SIXTEENTH EDITION.

A convenient memorandum pad with separate page for each day of the year. Enclosed by handsome steel frame. May be hung up or placed at any desired angle on the desk. The 1901 Edition has colored cover of new design and improved binding. Now ready.

Sent to any address on receipt of 5 two-cent stamps.


COLUMBIA SALES DEPARTMENT,
HARTFORD, CONN.



HOME STUDY FOR BUSINESS
We teach Book-keeping, Business Forms, Penmanship, Com'l Law, Letter Writing, Arithmetic, Short-hand, English & Civil Service branches thoroughly by MAIL at your own HOME. Success guaranteed. We give a useful Money-making Education. Salaried positions obtained by our students. National reputation, established 40 years. It will pay you. Try it. Catalog free. Trial lesson, 10 cents. RYANT & STRATTON
488 College Bldg., Buffalo, N. Y.



SALESMEN and Agents Wanted
Big Wages—Our Famous Puritan Water Still, a wonderful invention—costs a little—saves 25,000 already sold. Demand enormous. Everybody buys. Over the kitchen stove it furnishes plenty of distilled, aerated drinking water, pure, delicious and safe. Only method. Distilled Water cures Dyspepsia, Stomach, Bowel, Kidney, Bladder and Heart Troubles; prevents fevers and sickness. Write for Booklet, New Plan, Terms, etc. FREE
Harrison Bldg. Co.,
114 Harrison Bldg., Cincinnati, O.



STUDY LAW AT HOME
Able professors; latest and best text books; prepares for bar in any State. One student writes: "Have learned more law in three weeks under your instruction than I learned in four months in a law office." Ninth year. Write for full particulars.
CHICAGO CORRESPONDENCE SCHOOL OF LAW
525 Kemper Block, Chicago.




"IF IT'S RED TOP RYE IT'S RIGHT"

The New Year's here—so No care can be, Our hopes are high, Your health we see In RED TOP RYE.

FERDINAND WESTHEIMER & SONS,
Chicoutimi, Q. Distillers—Louisville, Ky., St. Joseph, Mo.



EVERY BOY HIS OWN TOY MAKER.
Tells how to make all kinds of Toys, brass Engines, Photo Cameras, Windmills, Microscopes, Electric Telegraphs, Telephones, Magic Lanterns, Kalliope Harps, Boats, from a rowboat to a schooner; also Kites, Balloons, Masks, Wagons, Toy Houses, Bow and Arrow, Pop guns, Slings, Stills, Fishing Tackle, Rabbit and Bird Traps, and many others. All is made so plain that a boy can easily make them. 2nd handsome illus. This great book by mail 10c, \$1 for 25c. C. E. C. DePuy, Pub., Syracuse, N. Y.



30 DAY'S FREE TRIAL ISN'T THIS FAIR?
You get the Hantam Hamper, full of eggs and test it thoroughly. If satisfied you pay us \$5 for it. If often babies 50 chicks from 10 eggs. Send 4 cents for Catalogue No. 27
Buckeye Incubator Co.,
Springfield, Ohio.