

Modern Methods of Business.

A great change is taking place in our times in respect to the methods of business. Company concerns are superseding individuals, and great capitalists are taking the place of small. Manufactures are being systematized and concentrated, and the forces of water and steam made to supersede and supplement, as far as possible, human and animal labor. All our small and rapid rivers are at work, and most available water powers improved to relieve and aid human toil. Great manufacturing establishments and cities are constantly springing up, and going rapidly ahead.

We take the liberty to suggest connecting with the Niagara ship canal a Niagara water-power canal, that shall be able to drive the looms and spindles, and all the other machines and implements, of a large manufacturing city. The expense would be comparatively slight, of connecting this second improvement with the first, and the two would constitute works of great magnitude and value.

The vast power of Niagara Falls is there to be utilized, and ought, after so long a period, to begin to answer its beneficent purposes. Buffalo would then be one day eclipsed by Niagara city, and the heaviest manufactures of the continent be concentrated in the vicinity of its greatest natural curiosity. Manufactures would be distributed easily to the east, but would probably go mainly to the west.

Niagara Falls are very much in the way of navigation, but they may yet furnish vast powers for work, and prove an invaluable auxiliary to human labor.

The attraction of manufacturers to the localities of great water power is seen in New England on a great scale. Every thing possible is going into cities, and manufacturers are being rapidly concentrated both in great cities and in great establishments.

Business is also being wonderfully divided up. The beautiful city of Lynn makes women's shoes. No shoes for men or boys, and no boots are made in the city. Its own supply comes from abroad. But all the makers of women's shoes have for some years been flocking into Lynn, from surrounding districts. Lawrence, Manchester, and Fall River, are largely engaged in the cotton and woolen manufactures, and their establishments are constantly multiplying and being enlarged.

In several departments of production the private methods and small establishments of past years are entirely abandoned. Clocks and watches used to be made in Europe, and the former in this country, by men with small capitals. Both are now large company concerns, with which small capitalists cannot possibly compete. Cotton, woolen, and linen goods used to be home manufactures; they are now the products of great company concerns, and the wool-grower can as little afford to manufacture his wool in small parcels by hand, as to throw it away. The manufacture of boots, shoes, and clothing are following in the same way.

Great establishments are doing immense business in these articles, and are superseding small concerns entirely by ruinous competitions. Great establishments, with ample machinery and other facilities, cheapen products till small concerns cannot afford to produce them. At the same time that products are cheapened, wages are raised by new and profitable demands. One great company prospers. Another enters the field and builds, and works along side of it. If the two prosper, a third goes into the business, and so on, till it is filled to its utmost capacity, when profits decline. Company competition operates on the same principle as that of individuals. Companies compete for the best help and the quickest sales, and thus perpetually drive labor up and products down by natural laws.

Many are troubled with this inevitable progress of affairs, and anticipate from it the oppression and injury of the poor. But this trouble may be spared. Great corporations are the friends of labor and drive it up by competition with each other. Their interest is to sell quick, and to extend and multiply their concerns as long as they can do business profitably. The public is not only thus secured from harm, but made the recipient of great benefits in the very particulars in respect to which great corporations are feared, that of enhanced prices and cheapened products.—*Utica Telegraph.*

The Opium Trade.

The *East Indian Budget*, just laid before the British Parliament by Lord Cranborne, presents some curious facts relating to the opium trade as a source of revenue. The gross revenue of the Government for the years 1864-5 amounted to £47,041,000, showing a small surplus beyond expenditures, owing to the unexpected receipts from the customs tax on opium. In this item there is a large gain over the previous year, which yielded £7,361,000, the increase being £1,277,000.

These amounts are paid wholly by the Chinese, by whom the drug is consumed. The estimated receipts for the current year are put at a still higher figure—larger than were ever before realized, with rare exceptions. The importance attached to opium as a source of revenue may be inferred from the remark of Lord Cranborne, that "it is evident that the perfection of our Indian budget, the attainment of a good balance sheet, depends upon our accurately estimating the yield of opium."

Formerly this source of relief was regarded as precarious, but it is now believed that the demand of the Chinese for opium can be depended upon as safely as English chancellors of the exchequer can rely upon the demand for gin and beer. It is thought probable that the former will continue to be as passionately fond of their favorite drug, as the latter are of their indispensable beverage. "It is on the opium revenue," we are told, "that Indian finance ministers are saved or lost."

The chief danger is that the Chinese may be enabled to satisfy their taste from some other market, should the cultivation of opium be attempted elsewhere with success. The Indian Government derives little direct profit from the vices of native subjects, with whom abstinence from intoxicating liquids is a religious duty. Nor do they show a propensity for poppy juice. They are hopelessly temperate. England can derive no profit from pandering to their vices.

MISCELLANEOUS SUMMARY.

THE indications are that the yield of coal this season from the mines will be so large as to prevent a further advance in prices, and may even cause a material reduction.

The Cape Ann (Gloucester) *Advertiser* says:—"There never before was such a scarcity of mackerel in our market at this season. At this time last year from thirty to forty sail of baymen had arrived home, and business was quite lively on the wharves. The fish speculators find it rather dull pickings at the present time, and there is quite a lively competition among them when a ship arrives. Prices are daily advancing."

THE CUNARD CONTRACT.—The Cunard mail contract expires next year, and it is anticipated that the postage of the letters will alone be sufficient to maintain the service, the shilling rate being reduced to sixpence, and all the letters being sent to New York. One half of the letters now go to Boston.—*Engineering.*

CLEANSING HAIR BRUSHES.—Soda, dissolved in cold water, is better than soap and hot water. The latter very soon softens the hairs, and the rubbing completes their destruction. Soda, having an affinity for grease, cleanses the brush with very little friction.

THE Fair of the New England and Vermont State Agricultural Societies will be held on the grounds of the Windham County Park Association, at Brattleboro, Vermont, September 4th, 5th, 6th and 7th, 1866. Premiums amounting to over \$6,000 will be offered in the various departments. Arrangements have been made with nearly all the New England railroads for the transportation of stock and articles free, and conveyance of passengers, attending and returning, for fare one way.

THE manufacture of menhaden oil has got to be a very large business, and it is estimated that about 100,000 bbls. will be secured the present season. It takes the place, to a large extent, of dark whale oil for carriers' use, etc. An establishment for the manufacture of fish oil is being erected in West Yarmouth. Schools of porgies are now, and have been this season, numerous off that place.

THE population of St. Louis, according to a recent census, is 207,000. In 1860 there were twelve manufacturing establishments in that city, with a capital of \$100,000; in 1865 there were sixty-two establishments, employing two millions and a half of capital, being more than a million and a half in excess of the capital invested in the entire State in 1860. The manufacture of india-rubber goods has also just been commenced by a well-known firm.

AN artesian well in process of sinking, at the Union Stock Yards, in Chicago, Ill., has reached a depth of 446 feet. The last ninety feet have been bored through the solid rock. There were at one time indications of oil, but these have disappeared.

A LITERARY gentleman in Washington is afflicted with what is called the "pen palsy," an affection which is supposed to be caused by the use of French copying ink, which, it is said, contains arsenic. Both his hands and feet are badly swollen, and his health is in a precarious condition.

A MAN named Jones, and his little son, were killed at Piqua, Ohio, the other day, by a stroke of lightning. Perfect photographs of the trees under which they were standing at the time were imprinted upon their bodies.

THE American Silver Steel Co. have purchased Mather's Point, in Bridgeport, Conn., and are about to erect a large rolling mill for the manufacture of bar iron and steel. The company own the celebrated "Mine Hill," in New Milford, and will make their iron and steel from the ore obtained at that hill.

ARTESIAN WELL.—The new artesian well at St. Louis, for the Insane Asylum, was commenced April 1st last, and has now been bored to a depth of over 1,000 feet. It is to be carried down 3,000 feet, unless a good supply of water is obtained at a less depth. Mr. Wm. Rumbold is the chief engineer, and Chas. W. Atkeson has charge of the work.

WE learn from Jamaica that the experiments in crushing bamboo by machinery have entirely succeeded, and by that means a much larger trade can be done in the fiber. It is intended to establish several mills to crush the bamboo in different parts of the island. Very little bamboo fiber is sent to England, the United States importing nearly all that is manufactured. The value of the bamboo grown on the island is estimated at nearly one million dollars.

BAIRD'S PUBLICATIONS.—The attention of our readers is directed to the advertisement of Henry Carey Baird, Industrial Publisher, in the present number, which will be continued in future numbers, giving a list of the most popular and useful of his scientific and industrial publications. Every week we receive inquiries for treatises on practical subjects, and are obliged to refer correspondents to Mr. Baird. The publication of this catalogue will, therefore, be of great service to our readers who desire to know where works on scientific and practical matters are to be obtained. Catalogues of his publications will be sent on application to Henry C. Baird, 406 Walnut street, Philadelphia.

COAL OIL FOR FUEL.—The London correspondent of the *New York Times* gives an account of the use of coal oil for the production of steam. It was found by experiments that American coal oil would evaporate water at the rate of one pound of oil to thirteen of water, while oil produced from English shales would evaporate eighteen pounds of water, or double the power of coal—the economy both of space and weight being very great. The fires are under the entire control of the engineer; no stokers are required, and the furnace doors are never opened nor are the plates ever burned out. The oil produced from North Carolina shales ought to be as good as the best English.

Supplement.

Our readers will observe that we have been compelled to issue a supplement with this number. This is in consequence of the large increase in our advertisements and our Patent Office business. We would recommend that these supplementary pages be as carefully preserved for filing and binding as the body of the paper. They may be found valuable hereafter for reference.

THE Pittsburgh *Republican* states that at Rising Sun, Ind., on the Ohio river, on the 14th of July, while the sky was perfectly clear so far as the eye could reach, and the sun was shining brightly, a vivid flash of lightning appeared, followed by a long and sharp peal of thunder. The electric fluid struck a church and three dwelling houses. At the same instant a little girl was killed outright, and a little boy had his clothing stripped completely off his body, not excepting his shoes, all of which had the appearance of having been cut with a sharp knife. The boy was only stunned and slightly injured in one of his legs. Another boy in the same vicinity was also struck at the same time, but was more seriously, although not fatally, injured than the boy who had his clothes torn off.

AN interesting experiment has been made on Mont Cenis, in presence of the Minister of Public Works, in France, who accompanied the chief director and several engineers. The part of the railroad already completed, which ascends by a winding inclined plane, was traveled over by a train composed of several carriages at a speed of about 11 miles an hour ascending, and 15 descending. The highest gradient was $8\frac{1}{2}$ per cent, and several curves were at an angle of only 40 degrees. The works on the Italian side are to be finished by the end of next October, so that it is expected that by next November Italy and France will be united by an unbroken line of iron.

SOME French *savant* has been writing about plants having green and white blood. When he gets through with these important researches we hope he will be able to find out whether or not the moon is made of green cheese or *Schweitzer kase*. He may be able to prove the fact that the moon is the Dutchman's heaven.

RECENTLY an eruption of an artesian well took place in a garden adjoining the church of St. Agnes, in Venice. The walls of the church were cracked in all directions. The substance vomited consisted of black ashes and a suffocating gas, the expansion of which is supposed to have caused the outbreak. The water which was thrown up reached as high as the top of the church.

THE body of an Australian native, which was found in a state of petrification, has been sent to England. This singular specimen was found in one of the limestone caverns which abound in the plains of Mosquito, in the south of Australia. The body was discovered in the natural position of a sleeping person.

FALL RIVER is growing rapidly from the great increase in manufacturing. When the mills now in process of erection are completed, it will have more spindles than Lowell, and be the first city in America in the amount of cotton and woolen goods manufactured. A large part of the machinery is moved by steam.

ON Tuesday, the 7th inst., ninety-two patents were ordered to issue to inventors whose applications were prepared at the SCIENTIFIC AMERICAN Patent Agency.

NEW INVENTIONS.

The following are some of the most prominent of the patents issued this week, with the names of the patentees:—

CHILDREN'S BED-CLOTHES RETAINER.—M. L. THOMPSON (assignor to himself and E. L. CHILDS, 189 President-street, Brooklyn, N. Y. Patented November 28th, 1865).—Much annoyance and trouble is given to mothers and nurses by children constantly getting uncovered at night, owing to their restlessness. Their feet or hands are almost constantly in motion, and it is impossible to keep children covered unless they are continually watched, and if neglected they become uncovered, and serious colds are often the result, especially in the spring and winter seasons, which often develop into some ailment fatal to the child. The object of this invention is to produce a simple means for retaining the bed-clothes in place over the child, no matter what position it may assume, and for this purpose a ring or collar of suitable construction is employed, which is to be placed around the child's neck, and to which the bed-clothes are attached.

COFFEE ROASTER.—H. B. MASSER, Sunbury, Pa.—The object of this invention is to obtain a simple, portable, and economical device for roasting coffee, one which may be manipulated with the greatest facility, both as regards the stirring of the coffee while being roasted and the removal of the same, when roasted, from the device.

FAN MILL.—CHARLES K. EHLE, Greenbush, Wis.—By means of this fan mill, which is simple in construction, strong and durable, the wheat may be easily and rapidly freed from oats, straw, and

chaff, and, at the same time, it answers every purpose for cleaning all other kinds of grain.

GRAIN CLEANER.—C. F. BAYLER, Clinton, N. J.—This invention relates to a device for clearing grain which consists in the use of a reciprocating screen operated in a novel way, whereby cockle and shrunken grain are separated from the sound grain in a thorough manner.

DEVICE FOR HOLDING STAPLES WHILE BEING DRIVEN.—ALBERT C. BETTS, Troy, N. Y.—This useful device is for holding staples and is designed to facilitate driving them, and it is more particularly applicable to the making of wire fences where the wires are secured to the posts by means of staples.

GANG PLOW.—WILLIAM BATTILL, Quincy Ill.—This invention consists in a peculiar construction and arrangement of parts whereby lightness of draught is obtained, and the plows rendered capable of being manipulated with the greatest facility, while simplicity of construction prevents any of the parts getting out of repair or working order.

PROPELLER SCREW.—WM. E. DAVIS, Jersey City, N. J.—This invention consists in an improved mode of constructing screw propellers for steamships, by forming them of separate blades of boiler iron, fastened with screw bolts on the shaft, making the propellers much stronger, lighter, and cheaper than when cast, connected in one piece, as usual. If a blade is broken, even at sea, it is easily replaced.

FORGING PISTOL AND RIFLE FRAMES.—CHARLES E. BILLINGS, Windsor, Vt.—This invention relates to the forging of pistol frames, and consists in subjecting the blanks to a series of dies of suitable shape therefor.

TWEER FOR BLAST FURNACE.—JOHN BAYLISS, New York City.—This invention consists in a novel arrangement of the air blast, whereby combustion is increased and also the amount of heat generated.

TRAVELING BAG.—NICHOLAS GROEL, Newark, Essex County, N. J.—This invention particularly relates to the traveling bag frames, and its object is to strengthen the two jaws of the frames at the points where they are hinged together.

PICKER MOTION FOR LOOMS.—HOSEA ELLIOTT, Globe Village, Mass.—This invention relates more especially to power looms, and it consists principally in throwing the shuttle independent of the cam shaft, so as to secure a uniform pick motion whatever the speed of the shaft may be.

FENCE.—WM. H. BROWN, Stockwell, Ind.—This invention consists of the combination of connecting blocks and inclined corner stakes or braces with the panels of the fence, and in the combination of long poles or rails and stakes with each other, and with the panels of the fence.

FLOUR BOLT.—J. C. BLYTHE, Perry, N. Y.—By means of this invention flour may be bolted faster and more evenly than with the bolts now in common use. It consists in combining round hoops with the arms, ribs, and cloth of a flour bolt, in such a way that a space may be left between the ribs and cloth between each pair of hoops, so that the flour may be in contact with the cloth all around the bolt.

SAW SET.—JOHN LYLE, Newark, N. J.—By means of this improvement a saw may be set much or little, without the possibility of warping the blade or setting the teeth untrue.

GANG PLOW.—SAMUEL HUTCHINSON, Griggsville, Ill.—This invention relates to an improved means for regulating the depth of the penetration of the plows, and also to a means for raising and lowering the plows and retaining them in the ground when the device is at work.

SPOKE TENONING MACHINE.—OLIVER VANORMAN, Ripon, Wis.—This invention has for its object to furnish an improved machine for thinning and tapering the tenons of carriage wheel spokes.

FRUIT GATHERER.—S. MELLINGER, JR., Mount Pleasant, Pa.—By this invention a fruit gatherer is produced, which can be used with the utmost ease and rapidity, and without injuring the fruit.

WOOD-SAWING MACHINE.—JAMES D. MATTHEWS, Bowling Green, Ohio.—With the wood-sawing machine embraced in this invention a great economy both of time and labor is effected, the machine being simple in construction and effective in operation.

SIDE SADDLE.—CLARA A. BARTLETT, Oakland, Cal.—This invention consists in so attaching one of the horns of the side saddle to its tree or frame that it can be dropped down into such a position as to allow to rider to mount or dismount with the greatest facility and ease.

WASHING MACHINE.—ALBERT JOYNER, Elton, Wis.—This invention consists in a removable fluted or grooved concave, having perforations through it for permitting the water to rise underneath the clothes which are being washed.

MACHINE FOR DRILLING ROCK.—R. A. THOMAS, Damascus, Cal.—This invention consists in an improved machine for drilling rock, being especially adapted for tunneling through slate-bed and other similar descriptions of rock.

CALORIMETER.—C. W. GOPELAND, New York City.—When the size of the boiler tubes is too large, an unnecessary amount of fuel is consumed, and it is common to insert thimbles in the ends of the tubes to reduce the draft. These thimbles prevent the convenient cleaning of the tubes, and also arrest the ashes. In the present improvement the thimble or calorimeter is made in the form of a half moon, and occupies the upper portion of the tube end, thus reducing the draft, and holding the heated gases in the upper part of the tubes, but presenting no obstruction to arrest ashes or interfere with the cleaning of the tubes. An excellent improvement.

DEVICE FOR MARKING GROUND FOR PLANTING CORN.—PRESTON MCQUAID, Wenona, Ill.—This device is for marking off ground for planting corn in check rows, and it consists of three wheels placed at a suitable distance apart, within a proper frame, and the central wheel arranged or applied in such a manner that it may rise and fall to admit of the several wheels accommodating themselves to the inequalities of the ground over which they may pass.

LOG-SETTING DEVICE FOR CIRCULAR SAW MILLS.—J. A. GRIGGS, Charleston, Ill.—By this device logs may be set to a cir-

cular saw, by the sawyer himself, without the aid of an assistant. It consists in setting the log by means of a bar or handle passing over the log and saw, and within convenient reach of the sawyer.

HYDRAULIC MAINS FOR GAS WORKS.—J. N. STANLEY, Brooklyn, N. Y.—The object of this invention is to cast the upper parts of the tubes leading to the hydraulic main with one side of the latter so as to communicate with the main below the level of the fluid therein, whereby the gas, when it escapes up through the fluid in the main, has a free, unobstructed passage in the latter above the fluid.

HOT AIR FURNACE.—HENRY WHITTINGHAM, New York City.—This inventor has three different patents on hot-air furnaces. One relates to a hot-air furnace, the combustion chamber of which is surrounded by an air chamber, to which air is admitted from below, and through which extend a series of vertical and horizontal flues, the vertical flues to conduct the cold air to the horizontal flues, where the same is heated, and whence it passes into a hot-air chamber to be distributed to the various rooms or compartments in a building.

TYPE-SETTING MACHINE.—CHARLES BAER, New York City.—This invention relates to a machine in which one type after the other, as indicated by the pressure of the hand on suitable keys, is taken from a series of radiating type cases by a receiver, which is secured to a vertical shaft, on which it revolves, and which is so arranged that its end sweeps past the inner ends of the radiating type cases. The line of types in each case is subjected to the action of a pusher, which has a tendency to force the same toward the center of the axis on which the receiver revolves, and said columns are retained by spring hooks, which catch over the edge of the first type in each type case, and which connect with the key in such a manner that by depressing the inner end of one of the keys the corresponding spring hook is raised and a type passed out of the appropriate type case into a small chamber, from which it is taken by the revolving receiver. Suitable cams on the inner ends of the type cases serve to push the type into the revolving receiver far enough to enable a spring hook to catch hold of them and retain them, and similar cams on the end of the revolving receiver retain the line of types in the type cases, while that type which, by the pressure on the key, has been allowed to detach itself, is taken off by the revolving receiver.

NECK-TIE HOLDER.—THEODORE ROSENTHAL, New York City.—This invention relates to a device intended to fasten scarfs, butterflies, and neck-ties in general, to the upper shirt button, by means of two curved spring jaws, which project from a spring or plate to which the neck-tie is secured, the curved jaws being so shaped that they can be sprung over the shank of the button, and that they clamp the same tightly, so as to prevent the neck-tie becoming disengaged spontaneously.

WASHING MACHINE.—ADOLPH T. KULHMANN, Glenhaven, Wis.—This invention relates to a washing machine which is so constructed that it soaps the clothes, boils them, washes them, and wrings them; and which, after the washing has been finished, can be used as a table.

BOX FOR COLLECTING FARES IN OMNIBUSES, ETC.—J. B. SLAWSON, New Orleans, La.—The principal object of this invention is to arrange a box for collecting fares, so that it is adapted for currency as well as for coin, that the fare deposited in the box can be seen by the driver as well as by the passengers; and furthermore, that the possibility of withdrawing from the box a portion of the fares deposited therein is absolutely prevented.

COMPOUND FOR GRINDING AND POLISHING.—N. A. BUBLE, New York City.—This invention relates to a compound which, when formed in rollers or bars, can be used with great advantage for grinding and polishing articles of metal of any desired description.

WASHING MACHINE.—WILLIAM M. DOTY, E. P. DOTY, AND ELLIS DOTY, Janesville, Wis.—This invention consists in the use of a spring wound on each of the fulcrum pins of the oscillating washboard, with its ends extending from the fulcrum pins in opposite directions, one to bear on the edge of the tub, and the other under a pin projecting from the bracket which forms the bearing for the appropriate fulcrum pin, so that in depressing the handle each spring is wound up and the pressure on each fulcrum pin is balanced, one end of the spring pressing up and the other down, and said pins are prevented from wearing out. It consists also in combining with the washboard, flanged segmental cheekpieces, which are grooved to receive the handle, and so formed that they prevent the water from splashing out over the ends of the tub; and also in the arrangement of cleats on the ends of the tub, in combination with the upper ends of the legs, which are secured to the tub, each by one screw, in such a manner that the end pieces of the tub are free to expand and contract without being liable to crack, and at the same time the legs are firmly held in position.

NEW PUBLICATIONS.

THE TURNER'S COMPANION.—Containing Instructions in Concentric, Elliptic, and Eccentric Turning, with illustrations. Henry Carey Baird, 406 Walnut street, Philadelphia.

There is much in this volume of interest to amateurs, and some of value to practical workers. The suggestion of the author, in his preface, that the foot lathe is a proper machine for the use of "the sex," we regard as timely and felicitous. There is no adequate reason why women should not use the lathe as a means of exercise, and, at the same time, an agent for the production of beautiful geometric forms, pleasing to the eye, and of practical utility. For some of the plates we have not much that is commendatory. The representation of circles in perspective, by well-defined lozenges, violates all rules of art, and the handles of tools, made in accordance with the illustrations, would be anything but "handy" and convenient. Despite these drawbacks, however, the volume will be found to be a useful adjunct to the *repertoire* of the amateur, and of value to beginners, and some of the recipes are just what is needed, furnished in a convenient form.