

SCIENCE AND HEALTH.

The American Public Health Association, a body the objects of which are sufficiently indicated by its name, recently held its second annual meeting in this city. A number of interesting and valuable papers by eminent physicians and others were read, of the more important of which we give abstracts herewith.

Dr. Nathan Allen, speaking upon the laws of longevity, pointed out that a mind well cultivated and balanced, cheerful disposition, temperate and regular habits, are great promoters of long life. Hence longevity is found among civilized nations more than among savages. The prerequisites of prolonged life may be classed under the heads of constitution, inheritance, and obedience to laws. It was finally considered that physiology in its practical application is yet in its infancy; and when it is thoroughly understood in the family and the schoolhouse, the duration of life will be greatly increased.

THE HOUSEKEEPER'S RESPONSIBILITY

formed the subject of some excellent remarks by Dr. Edward James, of Dorchester, Mass., in which he said that man is more affected by the kind of food he eats than the lower animals, because he is of a more sensitive disposition. All measures of his life ought to depend on his digestion, and the methods of his housekeeper. The stomach is originally sound. It can digest and convert all proper food necessary for the support of the animal body, if it is suitably selected and prepared. If, after our meal, the stomach complains, we have headache, or are languid, nervous, depressed, have pains of neuralgia or indigestion, or our energies are overborne, it must be referred to the way in which we have treated the stomach by putting unsuitable burdens upon it. A large portion of these ills are due probably to our own fault, and to our love of what we call really good eating; but the cook and housekeeper are, more likely, to blame.

Dr. Hamlyn, of Bangor, referring to

DIET,

considered that, in the selection of meat for food, there is too little care. Flesh contains the elements of vicious poison. Butcher's meat contains but a small portion of nutriment, as shown by French physicians. It is now exposed to the air before serving it for the table. The exposure deprives it of a portion of its nutriment. Animals should be stalled and fed before being offered for food; but so far from that being the case, they are brought here by long travel in cars, worn and harassed. The meat should be prepared at the pastures of the cattle; and if necessary, the law of the nation should secure such a consummation.

THE SANITARY RELATION OF HEALTH AND ARCHITECTURE

was considered by Mr. Carl Pfeiffer as of great importance, inasmuch as the architect furnishes the human body, by means of its dwelling place, its house, with the proper medicine wherewith to regulate its intercourse with what is its chief food and necessity—air. As this chief food exceeds in amount three thousand times that of all other kinds, so in proportion is the science of building a proper house of pre-eminent importance to the science of hygiene. One of the first principles of architecture is that the material of buildings should be dry and porous. The furniture can chill and produce rheumatic affections if it is damp or has been long in an unheated room. Cold bedrooms are breeders of disease unless they have ventilation besides their cold. People sleep in airtight cold rooms and believe they are doing a wondrous thing for their health, particularly if they have the bedroom aired in the morning. All night long the air stays unmoved and becomes slowly poisoned, while the evaporation of the body settles upon the walls and makes the room more and more airtight.

Referring to the

REFUSE OF CITIES,

Dr. C. A. Leas, of Baltimore, recommended great care and regularity in removing the ashes and garbage from the various sections. He urged that carts should be employed in this service, and that ashes and vegetable matter should be kept in separate receptacles, and emptied at regular and stated times.

Dr. Storer, of Boston, read a paper on the same subject, recommending a change in the method of disposing of the offal of slaughter houses. The most effectual way was to build chambers or ovens four or five feet square, where the gases and steam may be burned. Public health demanded that the offal and dead animals of a city should not be permitted to accumulate.

Dr. Russell's report on

YELLOW FEVER IN LOUISIANA

was read by Dr. White, of New Orleans. It was reported that the cases at Shreveport and Memphis were not more malignant than those found in New Orleans, and that the sprinkling of carbolic acid and hygienic measures are almost sure to moderate the disease. It is a strange fact that no single colored person took the yellow fever, and they rarely ever take it unless it is fiercely epidemic.

"For use in this city we have dead oil, and for streets carbolic acid. In applying these disinfectants, we applied 70 per cent of carbolic acid, and a chloride of zinc and iron, precipitated from scrap tin, which we used through water carts by a hose attachment, by which three men, going as fast as a horse could walk, could sprinkle each gutter; and by this means we have sprinkled 150 miles a week. No complaint of the smell of carbolic acid ever came to us. We were able, with dead oil and zinc solution, to disinfect about 120 outbuildings a day."

Dr. White said: In New Orleans they sprinkled carbolic acid on the velvets and silks in houses, as disinfectants, as it could not destroy colors.

General Francis A. Walker, superintendent of the United States census, followed in an interesting paper on

THE STATISTICS OF MORTALITY,

in which the proportion of deaths among all classes was shown, as follows:

	Share of population.	Share of deaths.
Colored.....	126 in 1,000	137 in 1,000
Irish.....	48 in 1,000	55 in 1,000
German.....	44 in 1,000	38 in 1,000
English and Welsh....	16 in 1,000	15 in 1,000

The large proportion of deaths from accidental causes among the latter class may be perhaps attributed to the fact that so large a number of the Welsh population are miners. From the severity of our climate, all foreign elements tend somewhat to consumption when on our shores. In the South the native colored furnish a less mortality from consumption than the average, while in the North it is much greater than the average.

Dr. Lewis W. Leeds then read a paper on

THE SANITARY ELEMENTS IN DWELLINGS.

He thought it was a mistake to overheat all the fresh air as fast as it was admitted to our hospitals and public and private buildings. He had come to the conclusion that all artificially warmed air was injurious to animal life. Nature's method of warming was a warm floor, heated by the obstruction of the sun's rays, while the air above is cold.

A report upon the

HABITS OF YELLOW FEVER

was then read by J. M. Toner, M. D., of Washington. One question was whether elevation had had anything to do in the escape from yellow fever. Its favorite places were between the 45th and 100th degrees of longitude, and the 35th north and 35th south degrees of latitude. The strata of air in which yellow fever exists is heavier and lower than the surrounding air. From the facts gathered together, it would seem clear that this disease in the United States never exists above 500 feet. If it can be shown that the existence of yellow fever depends entirely upon the elevation, a great deal will have been done in the investigation.

ATMOSPHERIC ELECTRICITY AND OZONE

was the title of a paper read by Dr. George M. Beard of this city. He said that it has been shown that there are two daily tides of positive atmospheric electricity. In the morning between 6 and 9 o'clock, the atmospheric tide is at its height, falling somewhat between 2 and 5 P. M., rising again between 6 and 9 P. M., and falling to a minimum between 2 and 5 A. M. Similar variations are noticeable in the months, the tide of atmospheric electricity being highest through the months of January and February, gradually subsiding in the months of March, April, May, June, July, and August, when it is at its minimum, and gradually rising again through September, October, November, and December. It has been stated that there is a relation between ozone and intermittent and remittent fevers; that rheumatism is prevalent when ozone is deficient; and that when ozone is in excess, diphtheria, scarlet fever, small pox, measles, scarlatina, and other cutaneous affections become prevalent.

Comparative researches regarding atmospheric electricity, if conducted to a large extent under government supervision, would help to explain the extraordinary stimulative character of the climate of California, to explain the fact that sun-strokes are almost unknown on the Pacific coast, and perhaps elucidate some of the unknown causes of other wondrous effects of our climate.

Professor Chandler, in the course of remarks on

THE SANITARY CHEMISTRY OF WATER,

observed that the organic matter which is dangerous in water is sewage, and many diseases, especially cases of typhoid fever, have been developed by the presence of these impurities in water. Actual experiment shows that water which remains overnight in lead pipes in New York contains 1-10 of a grain of lead to the gallon. It seems to be well established now that rivers possess the power of self-purification, and the drainage of a great city can be received within an ordinary river without destruction of its wholesomeness. The Croton water brought to this city every day contains 22½ tons of mineral matter. To poison the Croton water for one day it would require 3½ tons of strychnin, and there is not, probably, a ton of strychnin in the world. It would take 114 tons of arsenic to serve the same purpose. So it may be seen that threats of poisoning the Croton supply during the war were ridiculous.

President White, of Cornell University, delivered an interesting address on

GENERAL SANITARY TOPICS

and proper education in hygiene. He said: "I would have simple text books in physiology introduced in our common schools; but, better still, I would have short courses of lectures by competent physicians. It thus becomes a study of living man by living man. Physiology should be taught throughout a college course. The science of sanitary engineering is not so large that the main elements could not be given. I have great respect for the old curriculum, but the substitution of sanitary studies will well replace some of the now well worn classics."

THE GERM THEORY OF DISEASE IN ITS RELATION TO HYGIENE was the subject of an able discourse by President Barnard, in which the view was taken that the laws of health and disease were as well defined as those of the mathematics, and the only obstacle was the difficulty attending their discovery. No living organism enjoyed an existence prolonged to an indefinite length, and life began in the germ and ended in dissolution and disintegration. In the human race life was often shortened by ignorance, and in many cases by accident. After discussing the germ theory, the speaker concluded by

saying that drugs were already falling into disrepute, and he hoped to see the time when, through medical science, infectious diseases would be extirpated, and men would live out the time that Heaven intended they should.

SOAP SOLUBLE IN SEA WATER (M. Main).—Oil or fat, 46 parts; resin, 10 parts; fish glue, 40 parts; soda or potash, 1 part; oxalate of potash, 1 part. The oil and resin are saponified as usual, but with an excess of alkali, the glue previously rendered gelatinous by solution in oxalate of potash with constant stirring to 50° or 60°.

ANOTHER newspaper concern is to attempt the passage of the Atlantic by balloon. This time it is the *Evening Herald* of Philadelphia. It is to be a hot air balloon, and is now in process of construction.

Recent American and Foreign Patents.

Improved Hydraulic Brake.

John F. Taylor, Charleston, S. C.—This invention consists in means whereby steam, water and air may be conjointly applied to operate car brakes with great certainty, efficiency and economy. Two steam cylinders and two water cylinders have an outlet tube, so connected with the rams that the introduction of steam in one cylinder results in the expulsion of water from the other. The steam valves and valves of the water outlet tube are connected by intermediate mechanism and operated by one and the same lever. The piston rod of the hydraulic engine is connected with brake bars. Provision is made for readily applying the brakes, in case of rupture or breakage of the connecting pipes.

Improved Apparatus for Cleansing Dyed Wool, etc.

James E. Ackroyd, Chester, Pa.—This invention consists of a trough attached to a tank for holding the wool and the scouring and cleansing mixture, having one side curved from bottom to top, and provided on the inside with fixed blocks or wire netting. Above there is a curved track, on which a carriage having blades projecting down to the curved bottoms is arranged to run forward and backward to force the wool up the sides of the tank and over the blocks. The latter are inclined on the sides against which the wool is forced, and the arms of the truck are hinged so as to swing up and pass over any portion of the wool that may be under the points in going back, so as not to tear and injure the fiber.

Improved Mop Holder.

Elton M. Naramore, Underhill, Vt.—This invention consists of a lateral head piece, attached to a mop stick, between which and a wire clamp the mop is tightly held. The wire clamp is provided with coiled springs, which swing sidewise on pivots of the head piece, with upward extending parts hooked to the sides of the handle.

Improved Wheel for Vehicles.

Michael B. White, McLean County, Ill.—The spoke is provided with a round, shouldered tenon, which enters a hole in the felly. The thimble fitting on said tenon is reduced and screw-threaded for one half its length, and on such reduced portion a nut is screwed, and also a jam nut. The thimbles applied to the spoke tenon with its larger end abutting against the shoulder thereof, and has ribs which take into notches on the spoke, for the purpose of preventing the thimble from turning. When the tyre requires to be tightened, or the felly adjusted, a wrench is applied to the larger nut, and it is turned or screwed back toward the felly until the distance between the spoke shoulder and the felly has been sufficiently increased to produce the desired effect.

Improved Pitman Rod.

Samuel N. Wate, Jr., Danville, Pa., assignor to himself and Peter J. Adams, of same place.—This invention consists in improving the pitman rod connection for which letters patent were granted to the same inventor, Nov. 19, 1873. The forward end of a screw, to which is attached a milled nut, rests against a block which is inserted in the inner end of the inner brass. The body of the screw passes through a washer, and its other end is inserted in the rod. This end of the screw is flat, to prevent the screw from turning when the nut is screwed down against the rod. Bolts, which pass through slotted holes in the straps, fit tight in the rod and brass, and are moved with the latter as they are pushed outward; but the hole through the long strap for one bolt, and the hole for the other in the short strap, are so arranged that, when the screw and nut push out the rod, block, and brass, the straps are drawn in just as much as the screw and nut push the rod and blocks apart, so that all the wear and lost motion is taken up without changing the length of the rod. The two cross bars described in the former patent are taken out, and the two bolts mentioned substituted.

Improved Jig Saw.

Marvin E. Weller, Fort Plain, N. Y.—In the front of the frame is a vertical dovetail groove, in which a corresponding tongue on the adjusting plate fits to control said plate in adjusting it up and down and to hold it. For the latter purpose, an eccentric cam is arranged, provided with a weighted arm, which, when it falls, causes the eccentric to bear the tongue against the walls of the groove with sufficient force to bind it fast. There is suitable mechanism in order to lift the weighted lever and unfasten the plate by the hand used for adjusting said plate, and at or just before the time of adjusting it. Thus only one hand is employed for these two purposes, and the other is free to do other things necessary to be done at the same time. The upper cross head carries a couple of gripping jaws pivoted near their lower ends, and curved, outward and then backward, nearly together at their upper ends to provide room for a ball between them, to which a spring is connected. The upper end of the saw, having a slight head upset on it, is placed between the said jaws at the lower ends, and the spring is hitched to the ball, so as to pull it upward between the upper ends of the jaws, which forces the lower ends to gripe the saw and hold it with great force. The lower cross head has two sliding jaws between two inclined plates, and a double spring connected with said jaws, and extending down to an eccentric lever. The saw, also having a small head upset on the lower end, is placed between the jaws at their upper ends, and they are forced up by the two levers between the inclined plates, and thereby forced hard against the saw. These modes of fastening the saw are very simple, and allow of changing the saws with but very little labor and loss of time.

Improved Life Preserver.

George and Charles Palmer, Morris Run, Pa.—This invention consists in making a cape weatherproof, water repellent and inflatable, so that, while it affords the usual protection for sailors and seafaring people, it is also a life preserver.

Improved Bee Hive.

John M. Shook, Normal, Ill.—The feature of novelty in this hive is the arrangement of the honey frames on the comb frames proper, so that both may be supported by the same hinges, and removed from the hive together.

Improved Car Brake.

James B. Felton, Mt. Pleasant, Md.—This invention relates to that class of brakes which are operated by steam from the locomotive. It consists in the mode of providing the cord with a take-up mechanism by means of a tube and pulley frame, jointed so as to fold up when the trucks come close together, and to unfold as they separate, thereby maintaining a constant tautness in the cord which connects the power with the brake mechanism, and preventing the brakes from being applied unintentionally.

Arms of the Law.

It is doubtful whether any similar weapon of offense, unless it be the sand club or slung shot, is more liable to cause severe injury or even death by a single well directed and heavy blow than the ordinary policeman's "locust." For the preservation of order and peace, it is manifestly necessary to provide men with suitable weapons. A recent invention of Messrs. Simon Beery, of Ohio, and J. W. McDonald, of Texas, for which a patent has lately been granted, is an elastic baton, of gutta-percha, India rubber or similar flexible material, which appears to be an improvement over the heavy wooden "billy."

Improved Wheel Cultivator.

James F. Matchet and Perry W. Smith, Paris, Mo.—The axles at the inner ends of the hubs of the wheels are bent forward at right angles, and after projecting a short distance are bent upward at right angles. The bow is made double, and the parts of its ends are horizontal, parallel with each other, and at such a distance apart as to receive the coupling between them. The ends of the double bow have holes formed through them to receive and work upon the upright parts of the axles. The middle parts of the bow are at such a distance apart as to receive the tongue between them and allow the said tongue and bow to work freely upon each other and upon the bolt that pivots them to each other. The intermediate parts of the double bow are close together, and are rigidly connected. To the rear end of the tongue is pivoted a cross bar, the ends of which are pivoted to arms the lower and forward ends of which are rigidly attached to the upper ends of the upright parts of the axle. The invention consists in the parts above mentioned all pivoted together and moving freely upon each other, in combination with the bent sectional axles.

Improved Manufacture of Iron and Steel.

Edgar Peckham, Antwerp, N. Y.—The object of this invention is to produce a thorough separation of the impure cinder from the metal, and in this manner purify the iron or steel. This method consists in drawing off and removing from the fire or furnace the impure cinder arising from the ore or pig iron as fast, or nearly as fast, as it is made, and supplying its place (by the use of a flux) with a pure cinder. If the impure cinder arising from the ore or pig iron should be thick, and not liquid enough to separate thoroughly from the metal (as is often the case with cinder arising from ores or pig iron containing silica), enough flux is added to it to make it liquid, so it will separate from the metal, when it is drawn off, and its place supplied with a pure cinder by adding more flux, and in this manner the impurities are separated from the iron or steel. Lime, flint, spar, or lean hematite or specular ore, or any other substance that will produce a liquid cinder free from impurities used as a flux, depending somewhat upon the character of the ore or pig iron employed.

Improved Tag Fastener.

John M. Goodridge, Norfolk, Va.—The improvement consists in the manner of attaching a hook to the card or label by means of a cross bar. The hook is made of flat sheet metal, and its upper part is in the form of the letter T reversed. The cross of the T is attached to the card. At the end of the vertical part is a double barb, which securely holds the hook in place when it is once attached.

Improved Churn.

Joseph L. Britt and Troy R. Britt, of Raleigh, N. C.—This invention consists of a peculiar and simple arrangement of supports for the dashers and operating mechanism, the said supports are mounted on the churn top, so that the dasher and driving gear are all removed when the cover is taken off, to afford unobstructed access to the churn case.

Improved Edge-Protecting Welt for Boots and Shoes.

John Green, Brooklyn, assignor to himself and Joseph Bach, New York city.—This invention is a welt for the protection of the shoe upper, formed of a long narrow strip of leather or other material rabbeted on the upper side to receive the upper, and bent or molded to conform to the shape or outline of the sole.

Improved Belt Clamp.

Eleazer Ainsworth, Wilmington, Del.—Each clamp consists of a lower base piece and a top piece, which are connected by suitable thumb screws. Both pieces are grooved at their inner sides, taking hold of the belt-like jaws to prevent its slipping. The top piece is rounded off at one side and straight at the other, so that it may be swung open on one screw, and be quickly attached to the belt. The hole for the other thumb screw in same piece is slotted for opening and closing the same on the belt. The ends of under piece are provided with recesses, and at their outer edges at the off-side of the belt ends with lugs. Rods extend longitudinally in recesses and connect the clamps, having right and left hand screw threads, with nuts working thereon. A ratchet is placed centrally on the rods for turning the same. After the clamps are applied, the rods connect them, as the lugs serve to retain the nuts in fixed position. Each turn of the ratchet produces then the gradual approach of clamps, and, consequently, the tightening of the belt for lacing, etc.

Improved Refrigerator.

William M. Baker, Fortville, Ind.—This invention relates to certain improvements upon the refrigerators patented by the same inventor December 21, 1872, and May 6, 1873; and consists mainly in providing, by a compact arrangement of the ice chamber, in combination with the cold water and air chambers, a larger space for the provision chambers, and a complete and uniform ventilation of the same.

Improved Copy Holder.

Walter R. Carter, Brooklyn, N. Y.—This invention consists of a couple of long thin bars, supported horizontally side by side in a stand of any suitable kind and material for holding written or printed papers to be copied between them, to expose the line directly above the edge of one of the bars which serves as a guide to the copyist, the paper being drawn up, as each line is copied, to expose the next.

Improved Refrigerator and Cooler.

Canada D. Hicks, Bowling Green, Ohio.—This invention consists in an outer box provided with doors in front, and at each end of its top, and is lined with galvanized iron. In the middle part of the case is placed a box also made of galvanized iron, and which is so supported as to leave a space between it and the lining upon its top, bottom, back, and sides. The inner box is designed to receive things to be cooled or preserved. In the spaces at the ends of the outer box are placed vessels to receive liquids to be cooled, and which are made of such a shape and size as to leave spaces between them and the lining and the box for ice. Pipes lead into the vessels through the bottom of the case, and are designed to extend to the casks or other receptacles in which the beer or other liquid is kept, so that the said liquid may be forced into the said vessels by force pumps.

Improved Picket Fence.

Robert H. McGinty, Moulton, Texas.—This fence is composed of two kinds of posts. Those forming the greater number rest upon the ground. The others are arranged at intervals, and are longer than the posts first mentioned. The distinguishing features of the fence are the zigzag base and straight top. The posts (both long and short) are arranged in panels which brace alternately in each direction, but the tops of some of the posts are brought to a line of wire. The wires are bound together between the posts by links which are so applied that the wires are drawn tightly against the sides of the posts, thus binding all of them together, and rendering the fence strong and substantial. A fence is thus made of short timber of the most durable kind, one well calculated to resist the currents of water as well as wind.

Improved Cosmetic Bottle.

Mary H. Huntington, Watertown, N. Y.—This invention consists of a cup on the top of the bottle or on the stopper, so arranged that some of the contents of the bottle will flow into it when the bottle is laid on one side, and be held conveniently to be taken up by a sponge, brush, or other article for use, and the remainder will flow back into the bottle again when it is placed upright. The object is to avoid the use of a separate cup and the waste attending it, as in the present mode of using cosmetics.

Improved Reel for Harvesters.

John Werner, Jr., Prairie Du Sac, Wis.—The journals of the reel revolve in bearings, which slide upon bars in which several holes are formed to receive pins or bolts, so that the bearings may be moved to adjust the reel forward and back. To the bars also are pivoted the upper ends of connecting rods, the lower ends of which are pivoted to the outer arms of bent levers, which are pivoted at their angles, and in a reversed position, with respect to each other, to a bar of the frame. To the inner arms of the bent levers are pivoted the ends of another connecting rod. By this arrangement the two bars will be made to move exactly together, so that the reel will always be raised and lowered squarely. The reel may also be raised and lowered by operating a suitable lever and held securely in any position into which it may be adjusted.

Improved Bolt and Rod Cutter.

Lewis M. Smith, Stryker, O.—This invention consists of a main cutter or lever or bar, to which is attached an eccentric lever, which bears on the revolving wheel of a sliding cutter acting on the bolts or rods. The opening of the cutters is produced by the action of the eccentric lever on a curved lever having its fulcrum on the main cutter piece, and acting also on the sliding cutter.

Improved Car Coupling.

Oscar Taylor, Grand Rapids, Wis.—The bumper head is made in two parts, upper and lower, divided horizontally and in the direction of their length. The upper part near its inner end has a rounded projection which fits and is pivoted in a corresponding recess in the lower part. At the forward end of both parts are shoulders. Between these enters the coupling bar, the end of which has corresponding projections which engage with said shoulders. To the inclined inner surface of the lower part is attached a spring which is held down against said inclined surface by projections of the upper part, an I which, when said upper part is raised in uncoupling the cars, raises the shoulder of the coupling bar. The upper part is raised to uncouple the cars by a cord attached to its forward end, and which leads up to the platform or top of the car, or to both places.

Improved Scaffold Pole Clamp.

Henry Haering and Herman Alles, New York city.—For fastening the horizontal poles to the vertical poles of scaffolds, it is proposed to have a short lever pivoted at the middle in a yoke next to its bottom end, so that the lower end, which is curved to fit the side of a round pole, will embrace a horizontal pole and press it tight against the side of the vertical pole. The yoke embraces the vertical pole and is powerfully drawn against it by an eccentric lever pivoted in the bars at the open end on the side of the vertical pole opposite the lever. By this means the upper end of the lever is forced against the vertical pole above the yoke, so that points upon said extremity, as well as upon the face of the eccentric lever, will be driven into the pole and prevent the clamp from slipping down. The eccentric lever is fastened with a binding chain pressed around the pole and attached to it. The lever, which clamps the horizontal pole, is detachably connected to the yoke, so that the yoke and the eccentric lever may be used without the clamping lever for a splice clamp for clamping two poles together lengthwise, according to a method heretofore patented by same inventors.

Improved Piano Action.

Frederick L. Trayer, Maysville, Ky.—This invention consists of a combined repeating and back check attachment to the French grand action, by which it is designed to render said action equal to the most perfect repeating action. The attachment consists of a notched arm on the hammer rod and an adjustable headed screw on the jack, so contrived that, as the hammer drops from the string, it is caught by the head of the screw in the notch of the arm and held in check about a quarter of an inch from the string, to allow it to vibrate. The rebound is prevented by the heel of the arm below the notch bearing against the head of the rod. The arrangement of the jack, hammer butt, notched arm, and adjusting rod is such that, after the hammer is caught this way, the key being allowed to rise slowly, the jack will again fall into its notch as soon as the key has risen an eighth of an inch, so that a repetition can be made at any rise of the key above that amount.

Improved Children's Carriage.

John G. Kamphaus, Pittsburgh, Pa.—This invention relates to the construction of carriages for children; and consists in the mode of connecting the axle with the bolster, by means of which concussion and jolting are avoided.

Inventions Patented in England by Americans.

[Compiled from the Commissioners of Patents' Journal.]

From October 14 to October 27, 1873, inclusive.

BESSEMER CONVERTER.—J. E. Sherman (of Bucksport, Me.), Norbiton, Eng.
BOOT TACKS.—L. R. Blake, Brooklyn, N. Y.
DRIVING BOOT TACKS.—L. R. Blake, Brooklyn, N. Y.
FRICTION BEARING.—T. A. Weston, Ridgewood, N. J.
IRON MANUFACTURE.—J. E. Sherman (of Bucksport, Me.), Norbiton, Eng.
LIFT AND FORCE PUMP.—W. D. Baxter, New York city.
LOCK WASHER.—K. M. Loomis (of New York city), London, England.
LOOM.—G. Merrill, New York city.
PASSENGER REGISTER.—J. T. Parlour (of Brooklyn, N. Y.), London, Eng.
RAISING MACHINERY.—T. A. Weston, Ridgewood, N. J.
ROTARY ENGINE.—J. B. Bennett, Brooklyn, N. Y.

Value of Patents, AND HOW TO OBTAIN THEM. Practical Hints to Inventors.

PROBABLY no investment of a small sum of money brings a greater return than the expense incurred in obtaining a patent even when the invention is but a small one. Larger inventions are found to pay correspondingly well. The names of Blanchard, Morse, Bigelow, Colt, Ericsson, Howe, McCormick, Roe, and others, who have amassed immense fortunes from their inventions, are well known. And there are thousands of others who have realized large sums from their patents.

More than FIFTY THOUSAND inventors have availed themselves of the services of MUNN & Co. during the TWENTY-SIX years they have acted as solicitors and Publishers of the SCIENTIFIC AMERICAN. They stand at the head in this class of business; and their large corps of assistants, mostly selected from the ranks of the Patent Office: men capable of rendering the best service to the inventor, from the experience practically obtained while examiners in the Patent Office: enables MUNN & Co. to do everything appertaining to patents BETTER and CHEAPER than any other reliable agency.

HOW TO OBTAIN Patents
This is the closing inquiry in nearly every letter, describing some invention which comes to this office. A positive answer can only be had by presenting a complete application for a patent to the Commissioner of Patents. An application consists of a Model, Drawing, Petition, Oath, and full Specification. Various official rules and formalities must also be observed. The efforts of the inventor to do all this business himself are generally without success. After great perplexity and delay, he is usually glad to seek the aid of persons experienced in patent business, and have all the work done over again. The best plan is to solicit proper advice at the beginning. If the parties consulted are honorable men, the inventor may safely confide his ideas to them, they will advise whether the improvement is probably patentable, and will give him all the directions needful to protect his rights.

How Can I Best Secure my Invention?
This is an inquiry which one inventor naturally asks another, who has had some experience in obtaining patents. His answer generally is as follows—and correct:

Construct a neat model, not over a foot in any dimension—smaller if possible—and send by express, prepaid, addressed to MUNN & Co., 37 Park Row New York, together with a description of its operation and merits. On receipt thereof, they will examine the invention carefully, and advise you as to its patentability, free of charge. Or, if you have not time, or the means

at hand, to construct a model, make as good a pen and ink sketch of the improvement as possible and send by mail. An answer as to the prospect of a patent will be received, usually, by return of mail. It is sometimes best to have a search made at the Patent Office. Such a measure often saves the cost of an application for a patent.

Preliminary Examination.

In order to have such search, make out a written description of the invention, in your own words, and a pencil, or pen and ink, sketch. Send these with the fee of \$5, by mail, addressed to MUNN & Co., 37 Park Row, and in due time you will receive an acknowledgment thereof, followed by a written report in regard to the patentability of your improvement. This special search is made with great care, among the models and patents at Washington, to ascertain whether the improvement presented is patentable.

Rejected Cases.

Rejected cases, or defective papers, remodeled for parties who have made applications for themselves, or through other agents. Terms moderate. Address MUNN & Co., stating particulars.

To Make an Application for a Patent.

The applicant for a patent should furnish a model of his invention if susceptible of one, although sometimes it may be dispensed with; or, if the invention be a chemical production, he must furnish samples of the ingredients of which his composition consists. These should be securely packed, the inventor's name marked on them, and sent by express, prepaid. Small models, from a distance, can often be sent cheaper by mail. The safest way to remit money is by a draft, or postal order, on New York, payable to the order of MUNN & Co. Persons who live in remote parts of the country can usually purchase drafts from their merchants on their New York correspondents.

Caveats.

Persons desiring to file a caveat can have the papers prepared in the shortest time, by sending a sketch and description of the invention. The Government fee for a caveat is \$10. A pamphlet of advice regarding applications for patents and caveats is furnished gratis, on application by mail. Address MUNN & Co., 37 Park Row, New York.

Reissues.

A reissue is granted to the original patentee, his heirs, or the assignees of the entire interest, when, by reason of an insufficient or defective specification, the original patent is invalid, provided the error has arisen from inadvertence, accident, or mistake, without any fraudulent or deceptive intention.

A patentee may, at his option, have in his reissue a separate patent for each distinct part of the invention comprehended in his original application by paying the required fee in each case, and complying with the other requirements of the law, as in original applications. Address MUNN & Co., 37 Park Row, for full particulars.

Design Patents.

Foreign designers and manufacturers, who send goods to this country may secure patents here upon their new patterns, and thus prevent others from fabricating or selling the same goods in this market.

A patent for a design may be granted to any person, whether citizen or alien, for any new and original design for a manufacture, bust, statue, alto relievo, or bas relief; any new and original design for the printing of woolen, silk, cotton, or other fabrics; any new and original impression, ornament, pattern, print, or picture, to be printed, painted, cast, or otherwise placed on or worked into any article of manufacture.

Design patents are equally as important to citizens as to foreigners. For full particulars send for pamphlet to MUNN & Co., 37 Park Row, New York.

Foreign Patents.

The population of Great Britain is 31,000,000; of France, 37,000,000; Belgium, 5,000,000; Austria, 36,000,000; Prussia, 40,000,000; and Russia, 70,000,000. Patents may be secured by American citizens in all of these countries. Now is the time, while business is dull at home, to take advantage of these immense foreign fields. Mechanical improvements of all kinds are always in demand in Europe. There will never be a better time than the present to take patents abroad. We have reliable business connections with the principal capitals of Europe. A large share of all the patents secured in foreign countries by Americans are obtained through our Agency. Address MUNN & Co., 37 Park Row, New York. Circulars with full information of foreign patents, furnished free.

Value of Extended Patents.

Did patentees realize the fact that their inventions are likely to be more productive of profit during the seven years of extension than the first full term for which their patents were granted, we think more would avail themselves of the extension privilege. Patents granted prior to 1861 may be extended for seven years, for the benefit of the inventor, or of his heirs in case of the decease of the former, by due application to the Patent Office, ninety days before the termination of the patent. The extended time inures to the benefit of the inventor, the assignees under the first term having no rights under the extension, except by special agreement. The Government fee for an extension is \$100, and it is necessary that good professional service be obtained to conduct the business before the Patent Office. Full information as to extensions may be had by addressing MUNN & Co., 37 Park Row.

Trademarks.

Any person or firm domiciled in the United States, or any firm or corporation residing in any foreign country where similar privileges are extended to citizens of the United States, may register their designs and obtain protection. This is very important to manufacturers in this country, and equally so to foreigners. For full particulars address MUNN & Co., 37 Park Row, New York.

Canadian Patents.

On the first of September, 1872, the new patent law of Canada went into force, and patents are now granted to citizens of the United States on the same favorable terms as to citizens of the Dominion.

In order to apply for a patent in Canada, the applicant must furnish a model, specification and duplicate drawings, substantially the same as in applying for an American patent.

The patent may be taken out either for five years (government fee \$30) or for ten years (government fee \$40) or for fifteen years (government fee \$60). The five and ten year patents may be extended to the term of fifteen years. The formalities for extension are simple and not expensive.

American inventions, even if already patented in this country, can be patented in Canada provided the American patent is not more than one year old.

All persons who desire to take out patents in Canada are requested to communicate with MUNN & Co., 37 Park Row, N. Y., who will give prompt attention to the business and furnish full instruction.

Copies of Patents.

Persons desiring any patent issued from 1836 to November 26, 1867, can be supplied with official copies at a reasonable cost, the price depending upon the extent of drawings and length of specification.

Any patent issued since November 27, 1867, at which time the Patent Office commenced printing the drawings and specifications, may be had by remitting to this office \$1.

A copy of the claims of any patent issued since 1836 will be furnished for \$1.

When ordering copies, please to remit for the same as above, and state name of patentee, title of invention, and date of patent. Address MUNN & Co., Patent Solicitors, 37 Park Row, New York city.

MUNN & Co. will be happy to see inventors in person, at their office, or to advise them by letter. In all cases, they may expect an honest opinion. For such consultations, opinions, and advice, no charge is made. Write plainly do not use pencil, or pale ink; be brief.

All business committed to our care, and all consultations are kept secret and strictly confidential.

In all matters pertaining to patents, such as conducting interferences, procuring extensions, drawing assignments, examinations into the validity of patents, etc., special care and attention is given. For information, and for pamphlets of instruction and advice

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