

extract or draw out the same, and thus cure the patient." One patentee has a thief-proof coffin, in which the corpse is secured by chaining or hooping it to a false bottom; and another a coffin made impregnable by some special application of "tapped and case-hardened screws."

If we cut short our budget of curious patents, it is only because space fails us. Two of the Lillywhites, the celebrated cricketers, have at different times patented bowling machines; in one instance for the adoption of machine bowling in actual play; in the other only for practice at batting, when a trained bowler is not at hand. If the reader will imagine something of the catapult or cross-bow kind, he may form some idea of these cricketing oddities. One patentee has a balloon for catching fish; a balloon, inflated with air and ballasted with water, is supposed to drag or trawl the fishing lines or nets. Before the Manchester and Liverpool Railway was constructed, a bright genius conceived the idea of using balloons to draw a ship overland between those towns, on a tramway of twenty feet gage! A balloon has been patented for preventing sea sickness: a platform, resting on a huge ball and socket, supports the seats for the passengers; the platform is connected by cords with a circle of small balloons; and the balloons are expected to keep the platform always horizontal—of course to the great satisfaction of the passengers. Balloons are also intended, by another patentee, to keep in motion the swings which are such a source of delight at country fairs. One of the very earliest patents was for "a fish call, very useful for the fishermen to call all kinds of fishes to their nets, spears, or hooks; and for fowlers to call several kinds of fowles or birds to their neets or snares." In one part the inventor speaks of his fish call as a "looking glass"—rather a puzzle to interpret. Acrobats are invited to use a patent shoe soled with iron, which will enable the wearer, with the aid of a powerful electromagnet, to walk head downwards along a metallic ceiling. There are patents for milking cows, for preserving the hands from chapping, and for curing the croup in fowls. Snuff-taking is made easy by "two snuff boxes, one with a slider and the other with a sweep, out of which snuff may be taken without pulling it (the box?) out of the pocket, and without spilling."

CENTENNIAL NOTES.

We continue below our notes on the various objects of interest.

THE SANDWICH ISLANDS EXHIBIT

contains a large number of very curious articles; but owing to the lack of necessary descriptive labels, the visitor is unapprised of their remarkable features. For instance, spread out in a glass case is a cape or tippet, which on close inspection seems to be made of bright yellow feathers. As few birds wear such intensely yellow plumage, it would naturally be supposed that the feathers are dyed. The reverse, however, is the case. The cloak is termed the kehele, and the plumes are obtained from the mamu or royal bird, under each of the wings of which a single yellow feather grows. Now in the cloak there are perhaps thousands of the feathers, and hence the number of birds which must have been killed to secure the requisite quantity must have been enormous. Add to this the fact that the birds themselves are becoming very rare, and the difficulty of producing the garment accounts for the circumstance that it is seldom found out of the possession of kings. The cape exhibited belongs to Queen Emma, and was loaned by her for display. It is about ten inches in breadth, and quite short, yet its value is about \$600. A relic of the days when human flesh was considered wholesome food is shown in a spittoon inlaid with human bones. Articles connected with the reign of the founder of the line of Kamehameha are religiously preserved, and Kamehameha the First's war clubs form a part of the exhibit. There is also a cane made of a lancewood spear which also belonged to the same doughty warrior. A fiber, little known here, called *olona*, may prove to be worthy of further experiment as a rival of hemp or even of flax. It is the inner bark of a shrub, which at the age of three years is of the right size for stripping. It can be shred into very fine threads, which are remarkably strong. A bird's nest is peculiar from the fact that it contains no vegetable or animal matter. It appears to be made of horse hair, but is made of what is called pele's hair, a form assumed sometimes by hot lava.

The highest point reached by vegetation is 12,000 feet, and at that elevation the silver sword plant grows, the flower of which is on exhibition. One large case contains the birds found on the islands. They are not named. One red bird, as large as an oriole and with a brilliant red plumage, is the bird that constructs the nests from pele's hair. Castor oil and candle nut oil is also exhibited; the latter is made from a nut bearing the above name.

The Oahu College sends a collection of land shells, containing between 800 and 900 varieties. They are all found on the island of Oahu and nowhere else in the world. Their habitat is under the mosses and lichens attached to the bark of trees. Many varieties are not found alive, and are believed to be extinct.

But few industrial products are exhibited, and native manufacturers appear to be of a very primitive nature. Cloth is made from the inner bark of the bread fruit tree by a kind of felting process; the fiber is steamed and then pounded with wooden mallets, on whose surface grooves are cut. A cloak made in this manner on the island of Tahiti, and ornamented with shells, is shown, and also several larger pieces of cloth or felt, quite thin and tough, and ornamented with floral designs.

From the Micronesian Islands there is an exhibit of beau-

tiful pink corals which are unsurpassed in beauty by any thing of the kind ever seen here. They attract great attention and the majority of them have been already sold. This variety of coral is said to be found nowhere else than on the reefs about these islands, where the natives, who are expert watermen, dive for them.

The full dress of a Caroline Island belle is shown, and consists simply of a cape about a foot broad, made of strips of cocoa bark and worn about the shoulders. A waterproof cloak of novel construction is also shown. At each knot of an ordinary fish net is tied a bunch of seaweed. This being spread over the shoulders, net side under, forms a perfect protection against wet.

The display of firewood is quite large, and includes many curious varieties. Of these the wood called *kou* is said to be the most valuable. It is similar in appearance and character to black walnut, but has a finer grain and is not so heavy. It can be turned into all shapes, and never cracks or checks, as is the case with most woods. A large number of jars are shown made from this wood and the black koa. These are used by the natives as receptacles for the food called *poa*, the staff of life among them, a farinaceous food made from a root called taro, something like a turnip. This is baked and made into a porridge. The natives do not like it until it begins to ferment.

It is said that the Exposition is not very rich in antiquities, save, perhaps, in the Chinese pottery and old Japan bronzes. To inspect some portions of

THE TUNIS DISPLAY

is to go back to the time of Abraham, at least so far as progress is concerned, for agricultural implements that were used by the patriarchs are but copied in the tools which the Tunisians still employ to till their ground. A plow is shown made of two strips of wood; one, the beam, is crossed by the other at a sharp angle, the lower portion of the latter serving for the plowshare. Its point is shod with iron. Such an implement might be used to stir up the ground, but neither lifts nor turns it. Hand rakes are shown heavy enough for horse rakes. The thresher consists of what an American farmer would call a stone boat or sled, the bottom of which is stuck full of sharp stones. This implement is dragged over the grain as it lies on the floor. With all these discouragements very fine crops of grain are raised; and samples of different cereals are shown, put up in bags. Among them are corn, an inferior yellow variety; barley, which is quite plump and bright; wheat, a quality which would rank as No. 3 in this country; three kinds of beans, white, flat brown, and a small black-eyed variety; caraway, fennel, coriander, and other similar seeds; oats are said to be raised abundantly, but none are exhibited.

An object which is a genuine antique is the mosaic representing a lion and its prey. This was found by Davis' party during his explorations of the site of ancient Carthage. It was found within the precincts of the Byrsa of Carthage, and in close proximity to the site of the Temple of Astarte, the Juno of the Phœnicians. In this vicinity there appears to have been a temple dedicated to Diana, and this lion seemed a part of the pavement of that temple. Every other representation on this vast pavement had relation either to the chase or to wild beasts. Through the ignorance of native workmen of how to handle such easily broken objects, every one was hopelessly destroyed, in the attempt at removal, but the lion, which remains in possession of the Bey. The boldness of the design and exquisite execution of the work assign it to the most flourishing period of Carthage, say 2,500 years ago. The mosaic is about eight by ten feet square, and represents a lion who has seized his prey, a horse or other animal with hoofs, from whose wound the blood is trickling. The stones of which it is composed are about half an inch square and are set in cement.

The principal Tunisian exhibits are of silk, and these are profusely ornamented with gold and silver embroidery. It is a custom among the wealthy to ornament the walls of dwellings with silk hangings above the wainscoting, which is usually of tiles. One of these silk hangings is shown, which is about thirty feet long and six feet broad. It is a pink silk, and is covered with ornaments in various colors sewn on. One case of Moorish costumes contains loose white silk garments called bournouses. The silk is of pearly whiteness, and is ornamented with gold embroidery. Bournouses of striped silk, in which gold bands are woven, are also shown.

One case shows the trousseau of a Moorish bride. The garments, which are numerous, are all of pure white silk, and are so thickly embroidered with pure gold and silver that they are oppressively heavy. These costumes are all offered for sale. There are also goods manufactured expressly for the Exhibition, scarves, opera cloaks, and shawls. One is made of silk, through which runs a stripe of rough cotton, the effect of which is quite odd.

SOME NEW COTTON AND WOOL MACHINERY

on exhibition in Machinery Hall is attracting considerable attention among manufacturers. A new English gin separates the seed without cutting the fibers of the cotton, by means of a vibrating knife, a roller, and a combined action of fixed and moving grids. At each elevation of the moving knife, the grid which is attached to the same lifts the cotton to the level of the fixed knife edge and to the exposed surface of the roller; and on the descent of the moving knife, the seeds which have become separated from the fibers are disentangled by the prongs of the moving grid passing between those of the fixed grid. The machine on exhibition is about the size of a common 60-saw gin which would require at least 5 horse power to run it; while this

takes but little over 1 horse power. The machines being automatic, one man can feed two of them, whereas on the saw gin he could feed but one. The out-turn of cotton is from 120 to 200 lbs. per hour, and the seeds are much more thoroughly cleaned. There can be no danger from fire, as it would be impossible for it to communicate with the ginned cotton, and it would be effectively quenched by the action of the machine. Regarding safety, it is impossible to get the fingers cut or jammed, as the grids push them aside and prevent accident.

There is also a double cylinder burr picker for the cleaning of wool. The wool is placed upon a feed apron, and, passing between two feed rollers, is carried by the main cylinders on to two burr cylinders acting independently of each other; passing over these, the wool (which is now evenly spread with the burrs on top) comes in contact with a fluted roll, termed a beater or clipper, which removes the burrs and deposits them in a receptacle below. The wool, which is now freed from burrs, is carried by a brush to a beater, which removes all fine dirt. The wool is then blown into a wool room perfectly cool. The inventor of this machine claims that he can clean 500 lbs. of fine or 1,000 lbs. of carpet wool per hour. This picker is manufactured by the Atlas Manufacturing Company, Newark, N. J.

CARRIAGE WHEELS AT THE CENTENNIAL EXHIBITION.

MATERIALS USED FOR MAKING WHEELS.

For making light wheels, hickory is, in America, employed almost universally for the spokes and felloes, and elm or gum wood for the hubs; for heavy wheels, oak is used for the spokes, oak or ash for felloes, and elm, gum wood, or locust for the hubs. Hickory is an indigenous American tree, and is found in all States east of the Mississippi river; but the supply has mainly been drawn from Indiana, Ohio, New England (where it is now very scarce), the Middle States, and also, more recently, from Virginia and Kentucky. The term second growth, as applied to this timber, has from improper use grown to be a misnomer; it really means a growth of timber that springs up, more or less sparsely, on ground that has once been cleared from the forest; but, to justly rate the true value of hickory, each individual tree must be judged on its own merits. It rarely happens that a first growth tree has any value for carriage work, and then simply because it has stood alone. What are known as hedgerow trees generally give the best quality of wood, and they are in their prime when from forty to sixty years old. Hickory is cut at all seasons of the year, but from early fall into the winter is the time generally preferred; and it is claimed that timber cut during this period is less liable to the attack of worms. The butt only of the tree should be used for best work, and for a distance of from six to sixteen feet from the ground, according to the quality of the tree and the place of its growth. The butt is generally cut into lengths suitable for spokes or felloes, and, if intended for spokes, it is then sawn or riven into proper sizes, from center outwardly, and around by the annular growths: while for felloes it is simply sawn into strips of suitable length. The heart of the tree generally contains what are known as the pin knots, or marks of the small twigs which grew from the trunk when very small, and this portion in most trees has a brownish color, which features make the heart wood less salable, although sometimes equal to the whiter wood in all other respects. Four grades of hickory may generally be found in the market, which embrace varieties from the very best down to that which is so poor that it is only adapted for very common classes of work. In countries where this timber is comparatively unknown, the impression prevails that "hickory is hickory," always possessing the same qualities and characteristics; but a more intimate acquaintance shows that there is as much difference between the different grades of hickory as between totally different kinds of timber, some resembling ivory or whale-bone for hardness and elasticity, while other pieces possess no more value for wheelmaking than common pine or deal. Prices vary very materially in accordance with the quality, the best grade being worth in the market from three to five times as much as the fourth grade—a point which foreign customers are beginning to learn through costly experience. The best proves the cheapest in the end. The seasoning of hickory for spokes is an important matter, concerning which there exists a diversity of opinions. The method employed by some of our best wheel manufacturers is as follows: After cutting the timber into spoke sizes, it is usually allowed to season in the open air about six months, after which it is placed in the dry room, with a temperature of about 90° Fah., which should not, under any circumstances, be allowed to exceed 100°; and it is kept in this dry room for from ten days to two weeks, according to the size of the pieces. It is then ready to turn and finish, after which it should again be placed in the dry room for a few weeks, before making up into wheels. It is customary with some wheel makers to subject their spoke stuff, after it is cut into spoke sizes, to a process of steaming without pressure, which occupies from one to two hours, the object being to fix the albumen in the wood, render it stiffer, hasten the seasoning, and prevent checking or splitting.

American oak is fully equal in all respects to the best English oak. Take, for example, the dog cart wheel exhibited by Messrs. Hoopes, Brother, & Darlington, and no oak from any country could be better. Oak grows in nearly all parts of the United States, the present supply being received mainly from the Atlantic seaboard, and from Ohio and Indiana. It is commonly cut in the same season as hickory—namely from September to February—from eight to sixteen feet of the trunk being employed, which is cut up in the same manner as hickory. A tree growing in a heavy

clay soil, with exposure to plenty of air and sunshine, is preferable, and the tree is in its maturity when from fifty to one hundred years old.

Elm is found in all the States east of the Mississippi, and the present supply is drawn very largely from Ohio. It is cut in the same season as hickory, but the method of seasoning differs in some respects. When required for hubs, it is usually cut in the required lengths, and a hole bored through the heart; the bark is then removed, and each block reduced to a true cylinder, with the hole for its center. From this point the practice differs in different works, but generally the blocks are then steamed for a short time, to assist in seasoning them without splitting or checking; and after this the ends are dipped, to the depth of about half an inch, in a mixture of hot linseed oil and tallow (or resin), as a further preventive of checking. They are then stored in open sheds, where they remain from two to four years to season thoroughly.

Locust is sometimes used for hubs, and possesses special value on account of its durability; but it splits easily, to prevent which it requires to be carefully banded close beside the spokes. The mode of cutting and preparing it is similar to that employed for elm.

Gum wood, known in some sections as pepperidge, is found mainly in the States along the Atlantic seaboard, growing but sparingly in the West; and south of New York State it is used considerably by carriage builders for hubs. In its qualities it is very similar to elm, being very difficult to split; but it has not the lateral strength of elm, and in driving spokes it is more liable to break between the mortises. The method of preparing it is very similar to that employed for elm, the only difference being that the blocks are not usually dipped, although this treatment would doubtless be beneficial; and its market value is about the same as that of the latter.

WHAT CONSTITUTES A GOOD WHEEL.

The excellence of a wheel depends, first, upon the quality of the material employed; second, upon the proper preparation of this material; third, upon the proper proportioning of the different parts, and fourth, upon exact and skillful workmanship in combining these parts into a perfect whole. Mr. William Thompson Casson lays down a similar standard in his article which appeared in a recent number of *London Saddlers', Harness Makers', and Carriage Builders' Gazette*, wherein he says:

"The gem of the wheel exhibits at the Centennial is an English dog cart wheel, shown by Hoopes, Brother, & Darlington; and from whatever point of view we take it, whether regarding its appearance, workmanship, or material, it is a source of admiration; the spokes and rims are oak, but it requires an experienced eye to detect whether the oak is English or American. They also show landau, brougham, and other wheels of the English pattern, as specimens of their ordinary manufacture, leaving nothing to be desired. Those of the old school of wheel makers, who yet dispute whether any steam wheels can equal those of hand make, would be convinced of the superiority of the former by a close inspection of the wheels shown by this firm; every joint and shoulder is up and close, without having one part squeezed into another, simply because every tenon, shoulder, and surface is made with mathematical precision. From personal experience learned at the bench, this really seems to be the whole secret of wheel making—to have everything tight, true, and fair."

SHAFTS, WHIPPLETREES, AND SIDE BARS.

For shafts, hickory is commonly used by American carriage builders, and answers the purpose admirably. Lancewood, however, from the West Indies, would, without doubt, be preferable; but it is difficult to obtain, and very expensive. It is much to be regretted that not a specimen of lancewood in the rough is exhibited at the Centennial; and although it is used in connection with several of the carriages exhibited, it is so disguised by paint or varnish as to give, to those unacquainted with it, little or no idea of what the timber really is. The valuable qualities by which lancewood is distinguished are great stiffness and elasticity, and remarkable strength. Some builders claim, however, that lancewood is not so safe as hickory for shaft purposes, for the reason that, when it breaks, it is liable to break off short; and to obviate this danger, some foreign builders fasten strips of whalebone under lancewood shafts, by means of round-headed screws. For whippetrees, hickory is used almost universally by American carriage builders.

Wooden side bars, now so popular in connection with light road wagons, are made of various materials, hickory being preferred by the majority of the best builders, while locust ranks next in favor; and experiments have also been made with *bois d'arc*, Chinese chopstick wood (name unknown to us), and lancewood. Lancewood would doubtless prove the best for this purpose, and come into general use, were it not for its expense, and the difficulty of obtaining it in sufficient quantities; for it possesses those qualities particularly demanded for side bars—namely, stiffness, toughness, and elasticity.—*The Hub*.

NOTES ON THE AMERICAN INSTITUTE FAIR.

ENVELOPE MACHINERY.

There is a remarkably ingenious machine at the Fair of the American Institute, which is said to make 3,000 envelopes per hour. A similar apparatus is in operation in the Government building at the Centennial, but there it is not among the machinery, and is thus out of the route usually followed by those who make mechanism an especial study. It is one of those devices which even the practised eye can

not appreciate at a glance, and when at work it goes through its multitudinous manipulating performances so quickly and yet so deftly that the observer instinctively finds himself watching the envelopes come in and the envelopes go out as if a natural phenomenon were taking place, the internal operation of which it were useless to try to fathom. The motion of the apparatus is mainly obtained through cams, and these act on rubber rollers on the extremity of the rods moved. The envelope blanks, previously cut out, are placed on a table. Beside and above the latter is a paste slab whence mucilage runs to distributing rollers, and these in turn cover movable rollers, which are thrust forward to apply the gum to the under surface of a stamp or plunger. The plunger now descends and takes against the parts of the envelope to which paste is to be applied, and then rising carries the envelope up with it. Now a carrier shoots under the envelope, takes it away from the stamp, and conducts it rearward under a square plunger which, descending, pushes the paper through a square hole, thus bending up its edges preparatory to folding. No sooner is the envelope through the orifice than four little doors or shutters clap over it and neatly fold the edges. Next it falls between arms on a long endless chain which moves very slowly rearward, the envelopes going down one way and coming up the other. This travel is long enough to enable the paste to become dry, a process facilitated by a little rotary fan under the chain, which keeps up a draft of air. Lastly, as each envelope returns to the table of the machine, fingers rise on each side, remove it from the chain, and place it on a small platform which, turning, deposits the envelope neatly on edge beside its predecessors. Then the young lady who presides over this wonderful machine quickly runs her finger over the requisite number of envelopes to form a pack, surrounds them with the usual ornamental strip of paper, and the process is ended.

There is one good feature about the American Institute Fair which occurs to us here, and that is that it offers excellent facilities for the undisturbed study of its contents. It is useless to attempt to examine intricate machinery at the Centennial, owing to the now almost constant crowd; and to post oneself in front of an object with a note book, and to ask questions of the exhibitor, or, worse yet, to try to sketch, is, especially in the latter case, to constitute oneself the center of a throng whose curiosity impels each individual member to ask questions on his own account, or else to constitute himself a critic on the efforts of the amateur pencil. Nothing delights us more, however, than to see the interest manifested by the people in machinery and invention, and in that view we can forgive the annoyance. It would not be a bad idea, though, for enterprising exhibitors to hire artists to sit and sketch their exhibits by the week, by way of advertisement. But this is wandering from the American Institute Fair, where—and here is a contrast to the Centennial—an exhibitor the other day set an engine racing for our inspection, at a most remarkable pace, and no one manifested the slightest interest in the proceeding. People passed, instinctively wagged their heads, as they always do, in time with the machine, and proceeded onwards. The engine in question, we found, presented some features not wholly new, but well worth examining.

THE BALANCE ENGINE.

It has two pistons in its single cylinder. From the front piston and through boxes near the edges of the cylinder cover extend two piston rods, each connected to a crank on the driven shaft. From the rear piston a single main piston rod passes directly through the front piston, then through the middle of the cylinder cover, and connects to a crank formed by making the inner sides, of the two cranks already mentioned, twice as long as the outer sides. That is, imagine a W with the middle angle twice as high as the side strokes, and consider a crank at each angle. The main piston rod would then be attached to the angle at the apex, and the two smaller rods to the angles at the base. The cranks, it will be observed, are set in the same plane, and not quartering, as is usually the case. The steam ports enter the cylinder at the middle and at the ends, and the stroke of each piston of course equals half the length of the cylinder. The steam enters between them and forces them apart, and then enters at the ends and carries the pistons together. Now the sum total of all is that the power is applied to the shaft just as the two hands are to the handle of an auger, and the reciprocating parts are balanced; while the engine—despite the very indifferent workmanship—runs at high speed with little vibration.

THE HARRIS STEAM PUMP

is quite new, and has a positive action. The main piston, on arriving near the end of its stroke, raises a poppet which admits steam to the valve piston and at the same time closes its communication with the exhaust. This throws the steam valve, which admits steam, to the other side of the main piston, causing it to make the return stroke. The instant the piston moves from under the poppet it drops to its seat, closing the steam and opening the exhaust on that side of the valve piston, which, together with the steam valve, remains at rest until the other poppet is raised to admit steam to the opposite side. There are no outside connecting valves, etc., and the water end is of the double acting plunger pump pattern.

AN INGENIOUS MECHANICAL MOVEMENT

will be found embodied in the Vanhorn & Cranston paper-cutting machine in the main hall. The arm which draws down the clamp to hold the paper, prior to the knife rising from beneath, is pivoted to a long hand lever, near the lower end but above the fulcrum. Hence, when the lever is pulled down, the clamp is carried downward until its further mo-

tion is prevented by the paper under it. The lever then changes to one of the first order, having its fulcrum on the clamp rod pivot, while the former fulcrum now is the pivoting point of the lever end to the carriage which supports the knife. Consequently, further forcing down of the lever lifts the carriage with great force, and the knife is caused to cut the paper. The device is very simple, and so constructed that the greatest power is applied just where it is needed.

As a whole, the fair is interesting, and visitors to the Centennial, sojourning in this city, will do well to visit it. It is especially rich in household articles, and in new designs in furniture, etc. The machinery department is not so well filled as usual; but there are many novelties which will repay careful examination. The attendance is constantly large; and on Saturday and Wednesday nights which seem to be especially favored, the building is generally crowded.

Opening of the New York Aquarium.

The New York Aquarium, located on the corner of 35th street and Broadway, this city, was recently opened to the public. The tanks contain a large number of fish, including a white whale from Labrador, several shark, a huge sting ray, and terrapin, besides an interesting collection of zoöphytes. A laboratory for naturalists, with the necessary appliances for investigation, is provided; and in the piscicultural apparatus, the process of hatching and rearing salmon may be witnessed. On the opening night, President R. B. Roosevelt, of the New York Fish Commission, made an address on the objects of pisciculture.

A Disastrous Boiler Explosion.

A terrible boiler explosion recently occurred at Zug & Co.'s mills at Pittsburgh, Pa. The boilers in the nail mill blew up, demolishing that building and half the adjacent rolling mill. Some twenty men were killed and as many wounded. No cause is as yet assigned for the casualty. The boilers were in charge of a careful engineer, and it is stated that they were inspected some five weeks ago and were then in good condition.

NEW BOOKS AND PUBLICATIONS.

THE AMERICAN LIBRARY JOURNAL. Edited by Melvil Dewey, 13 Tremont Place, Boston, Mass. New York city: F. Leyboldt, 37 Park Row.

As its name indicates, this journal is devoted to the interchange of thought and experience among librarians, and with this aim it enters a field hitherto wholly unoccupied. We have a great many large and excellent libraries in this country; and there is a constant increase going on both in the numbers of these repositories of learning as well as in their contents. To render the vast mass of information thus accumulated accessible to the reading public, to keep his own particular charge up to the latest dates in constantly adding new works, and, perhaps above all, to constitute in himself a living index of what the book makers have done, is but a rough statement of the librarian's duty; and that these ends can be accomplished better by the union of librarians, which the present journal seeks to bring about, than by individuals, it is hardly necessary to suggest. The first number of the periodical, which is issued monthly, contains a number of interesting communications and papers, among which we note some sensible practical hints to starters of libraries, and a good many ideas for the care, indexing, etc., of books. There is, beside, a useful record of new publications, not merely in this country, but throughout the world. The journal is elegantly printed, the margins are luxuriously wide, and the present number has an illustration of the new Ridgway library building in Philadelphia. The subscription price is \$5.00 per year, or 50 cents per number.

THE COMPLETE AMERICAN TRAPPER. By William H. Gibson. Illustrated by the Author. Price \$1.75. New York city: James Miller.

We are inclined to think that the author's claim that "this is the most comprehensive work on the subject ever published" is a fair one, judging from the almost endless variety of traps and other devices to effect the capture of animals and birds which he illustrates and describes. He even tells us how to trap the hippopotamus, the lion, and the tiger; and from these great beasts he descends through the scale until he reaches a daintily delicate way of catching humming birds by a few drops of birdlime on the leaves of a lily. Trap making—or, to speak generally, the pitting of human reason against brute instinct and cunning—requires a special kind of ingenuity, which not many possess; and in gathering together all the curious devices described in his volume, the author has done excellent service in helping very many people to ideas which doubtless would never occur to them. The book contains 143 engravings—mainly representative of the apparatus explained—and is written clearly and well. It will be useful not merely to hunters and trappers, but will also serve to exhibit to inventors what has already been accomplished in this particular line.

Recent American and Foreign Patents.

NEW MECHANICAL AND ENGINEERING INVENTIONS.

IMPROVED METHOD OF CONVERTING MOTION.

Hiram L. Joslin, Mankato, Minn., assignor to himself and Henry K. Lee, same place.—This consists of a reciprocating head working backward and forward among belts, and having clutches or pawls contrived to take hold of one side of the belt going one way, and the other side going the other way, so as to apply the power continuously in one direction.

IMPROVED BRICK MACHINE.

Ferdinand Michel, Dallas, Texas.—The table to receive the tempered clay is attached to the top of the frame from which it is fed into the molds. Followers enter the molds from below, and serve as bottoms to the mold when being filled. A weighted block withdraws the followers when the pressure is removed. By operating a lever, the followers may be forced up to press the brick, and to raise them out of the mold after being pressed. There are other ingenious improvements in the mechanical construction.

FEEDING APPARATUS FOR CARD-PRINTING PRESSES.

William M. Clark, Philadelphia, Pa.—As the card passes down beneath a shelf, its ends pass beneath the flanges of guide bars, projecting downward along the platen to guide the card to the place where it is to be printed. As the card reaches the place where it is to be printed, it is stopped by inwardly projecting curved points, which receive its lower edge. As the platen is drawn back, these curved points raise the card slightly as its lower edge slips from them, so as to release it, should it stick to the platen, and allow it to drop from the press. The arms which carry the points slide upon grippers so that they may be adjusted as the width of the card may require.