attributing such an age as 80,000 years to the relics of our race, whether discovered in the diluvial deposits of France or any other part of the world. We have examined drawings of the old flint arrow-heads of the pre-historic European races, and find that they correspond in similitude to the flint arrow-heads of the living aborigines of the American continent—particularly those inhabiting the regions in the Straits of Magellan.

SOME FACTS CONCERNING REPTILES.

Of old, when the waters that covered the earth had subsided, there were, according to tradition and the limited discoveries of geologists, left stranded amid the ooze and mud certain monsters or reptiles which were hideous and repulsive in form. These are said to have been *chelonians* or those belonging to the tortoise family; *saurians* or lizards and *ophidians* or serpents. Reptiles do not undergo any change of nature and are always air-breathers, although cold-blooded; they have neither mammæ nor breasts for suckling their young, nor yet hair or feathers. By the two former peculiarities they are distinguished from fishes and batrachians, and by the two latter from mammals or those which do not suckle their young, and from birds. Reptiles breathe air by lungs, like birds and mammals, but the pulmonary circulation is incomplete, only a part of the blood being sent to the lungs; while from the ventricles of the heart a mixed arterial and venous blood is sent to the other organs. The number of species of reptiles is set down at 2,000, or less than that of mammals or birds; most of them are terrestrial, but some, it is said, can sustain themselves in the air. Some reptiles live habitually in the water, swimming by means of flattened fins (as the turtles) or by a thin tail, as in crocodiles; others dwell in subterranean burrows.

Every degree of speed is found among reptiles, and while some are fitted for running over dry sand, others are better adapted to climbing trees or ascending smooth surfaces. The means of defense with which nature has provided reptiles are many, and, although their appearance is sufficient to terrify most animals, yet they are furnished with other safeguards, which render an attack upon them, to say the least, unpleasant. The crocodile and turtle are sufficiently protected against ordinary assaults; the agility of the lizard serves him well, for he darts into his hole at the expense, possibly, of his tail, which is soon reproduced. The great boas can prevail over every foe but man, and the poisonous fangs of other serpents and the bristling spines of the horned lizard are amply sufficient to guard them from the attacks of predaceous and other ill-disposed members of the animal kingdom. Reptiles are very useful to man in various ways; some fulfill the law of their being by catching insects, while still others serve as food, or supply material useful in the arts. The muscles of reptiles are red, though paler than in mammals and birds; they preserve their irritability for a long time after death. Tortoises have been known to live eighteen days after their brains have been removed. Life seems in a marked degree independent of the brain, as they vegetate rather than live; and being comparatively insensible to pain, they grow slowly, live long, and are very tenacious of life. The sense of touch is dull, whether exercised by the skin, toes, lips, tongue or tail; taste must also be dull, as the food of reptiles is swallowed without mastication. Reptiles eat and drink comparatively little, and are able to go a long time without food; most of them are oviparous, their eggs being hatched by the heat of the sun. The young when born are able to provide for themselves, and are generally indifferent to the mother, who has neither the joys nor the sorrows of maternity.

THE REACTION.

As was natural under the circumstances, immediately upon the restoration of law and order in this city, benevolent citizens, pitying the abject condition to which the colored population had been reduced, set about raising a fund to relieve their immediate wants, and to see those who were unable to help themselves properly provided for. All classes of our citizens have vied with each other in this act of charity, and men of all political creeds (among them Hon. Thurlow Weed who generously gave $500), have nobly responded to the call made upon their generosity. Eminent merchants of this city have made speeches, voted money, and adopted resolutions promising relief and protection to the colored people, who stand in sore need of it. To this material aid, may be added the offers of assistance made by the first lawyers in New York to the outraged and despoiled negroes. The city and county are as liable for damages inflicted on the colored people of this metropolis, as they are for all other losses suffered by our citizens during the late riot, which amount in the aggregate to $447,100. It is the intention of the lawyers aforesaid to prosecute the claims of any colored person who may desire it, without delay, and without charge. The Produce Exchange have also taken prompt and creditable action in the matter. The sums now subscribed already amount to many thousands of dollars, and there is no question but that the money will be judiciously applied. This energetic and philanthropic action of the merchants and business men of the city, goes very far to redeem the stain cast upon our good name by the infamous acts of the rioters, and the miserable politicians who were concerned in the late demonstration. They will now see, and let them learn a lesson from it if they can, that the majority of the citizens of this metropolis, so far from siding with them in their acts of rapine and murder, instinctively loathe them, and hasten to relieve the sufferings of their poor victims by all the means in their power. The wildest savage that ever existed in Abyssinia would scorn to descend to the depths of depravity exhibited in this city during the late riot towards a helpless people, whose only offence was that their faces were not so white as those of the black-hearted assassins who attacked and murdered so many in our public thoroughfares. The relief extended toward the colored population has also been bestowed upon the families of those policemen and soldiers who died in the performance of their duty. To the bravery of these men we unquestionably owe our present security; and we are glad to learn that nearly $20,000 have been collected for this most worthy object. The daily press is full of accounts of the courage and efficiency of the Metropolitan Police force; and the high state of discipline which distinguishes it, with the appearance of the men, individually and as a body, amply bear out the encomiums lavished upon them.

INTERNATIONAL COMPETITION OF STEAM FIRE ENGINES.

A series of important trials with steam fire engines took place at the Crystal Palace, near London, on the first three days of the present month. The engines were divided into classes, consisting of machines not exceeding 60 cwt. (6,720lb) in weight, and over 30 cwt.; and smaller engines not exceeding 30 cwt. (3,360lb) in weight. The premiums consisted of £250, and £100 for the first and second best engines of each class. The conduct of the competition and awarding of the prizes, were under the management of a number of noblemen and gentlemen, the Duke of Sutherland being chairman; and some of the ablest engineers and practical mechanics in England were on the committee, among whom we notice Messrs. Fairbairn, Nasmyth, Maudsley, Crampton, McConnel, and Appold.

The contest was open to the steam fire engines of all nations. Six English, and three American, engines were entered. Shand, Mason, & Co., entered one of each class; as also did Messrs Merryweather & Sons. Easton, Amos, & Son, entered a large engine; and W. Roberts, one of 37 cwt., which had to compete with the large ones, though about one-third lighter. The American engines were the "Victoria" (large class), and the "Alexandra" (small class), built by the Amoskeag Manufacturing Company, at Manchester, N. H.; and the "Manhattan" (large class), built at New York—belonging to Messrs. Lee & Larned. This fire engine unfortunately met with an accident, from being overturned on the day prior to the trials, by which it was partially disabled, and was unable to compete on fair terms with its antagonists.

Two of the principal objects to be ascertained by the trials were—the quantity of water discharged in a given time—and the distance it could be thrown by each engine. A set of targets and tanks were prepared for the purpose. These targets consisted of canvas hoods having openings six feet in diameter, with a conduit attached to each, through which the water was conducted into a gaged tank standing below, and from which the quantity delivered within the opening of the target could be read by means of a graduated index. The committee were also to take into consideration the general efficiency of the engines: such as rapidity in raising the steam; the quantity of water delivered in a given time; also the simplicity and apparent durability of the mechanism.

On the first day, five engines of the first class competed; making two trials, and elevating the water into a tank 80 feet in height, through 60 feet of hose. They were to commence when the steam was raised to 100lb pressure. Shand, Mason, & Co's. and Merryweather's, were the most successful in filling the tanks in the shortest space of time after the fires were kindled. The "Alexandra" was the American machine which competed on this occasion. Easton, Amos, & Son's engine did well on the first trial; but the former was injured and it was withdrawn. Three engines of the second class competed, in ten trials, on the first day, viz: one of Messrs. Shand, Mason, & Co's, one of Merryweather's, and the "Victoria"—American. The engine of the first company filled the tank first on both occasions.

At the second day's trial the ordeal was that each engine should work for two hours without stopping, drawing its supply of water 18 feet, and forcing it through 500 feet of hose, laid up a steep incline to the top of the water cascades of the Crystal Palace. It is stated that the "Victoria" was unable to accomplish this achievement; and that Messrs. Shand & Mason's, and Merryweather's went through with the trial.

On the third day, the engines competed in throwing vertical streams. The "Victoria," it is stated, was not in proper order, and only threw a stream to a height of between 60 and 100 feet; while Shand's engine threw a steady stream to an elevation of 190, Merryweather's 170, and Roberts' 140 feet. A great victory is claimed by the English papers for the English engines; but the committee had not reported nor the prizes been awarded when the steamer which brought this news of the trial left Liverpool. In all probability, their report will modify the florid account given by the London *Times*.

RECENT AMERICAN PATENTS.

The following are some of the most important improvements for which Letters Patent were issued from the United States Patent Office last week. The claims may be found in the official list:—

Gold and Silver Amalgamator and Pulverizer.—The object of this invention is to obtain a device of simple construction, which will cause a thorough incorporation of the quicksilver with the pulp containing the metal, so as to insure a perfect amalgamation of the former with the latter. To this end the invention consists in the employment of a pan provided with a bottom, having on its inner or upper surface a series of curved plates, so shaped and disposed as to form curved grooves which extend from its center to its periphery, and using in connection with the bottom, thus provided with plates, a rotary muller having similar plates on its under or face side, but placed in a reverse position; said muller also being provided at its edge with spiral flanges and hung upon its shaft by an universal joint. There are also attached to the iuner side of the pan, spiral flanges, similar to those on the edge of the muller, but having a reverse position thereto. The invention also consists in the employment of curved plates which are placed in the pan just above the muller, and arranged in such a manner as to be capable of being adjusted higher or lower. By means of the rotary muller and the bottom of the pan, the pulp is made to pass in a continuous current, or flow over the top and underneath the muller so as to insure a perfect or thorough amalgamation of the metal contained in the ore with the quicksilver, while the curved plates are designed to prevent the pulp or ore being thrown out from the pan by the centrifugal force generated by the rotation of the muller. Zenas Wheeler, of San Francisco, Cal., is the inventor of this improvement.

Corn-cutting Machine.—This invention relates to a new and improved machine for cutting up standing corn stalks on the field, and consists in the employment of a rotary cutter wheel fitted within a swinging frame which is provided with an adjustable weight, in combination with a supplemental swinging frame which is connected to the swinging cutter frame, both of the swinging frames being suspended within a frame mounted on wheels. The invention also consists in the employment of gathering-hooks in connection with springs; and further, in the employment of a windlass attached to the main frame of the machine, for the purpose of raising the swinging frames, and elevating the rotary cutter above the surface of the ground when said cutter is not required for use; as, for instance, in drawing the machine from place to place, in turning the same, &c. G. W. Cole, of Canton, Ill., is the inventor of this improvement.

Hemp Machine.—This machine relates to an improvement in that class of hemp machines which are principally used for the purpose of dressing the leaves of the *agave Americana*, and other plants of a similar nature. The invention consists in the employment of a cone drum carrying a series of combs and working within or under a cone cap, in such a manner that by the gradually increasing speed of the surface of the cone, from the small to the large end of the same, the leaves are caused to roll over the entire surface of the several combs, and the fiber is completely cleaned and discharged from the machine without difficulty; the invention consists, further, in the employment of combs with teeth of gradually increasing fineness, from the small toward the large end of the cone pulley, for the purpose of producing the best possible action of said combs on the fiber; and the invention consists finally, in giving to the feed rollers an oblique position in relation to the main shaft of the drum, in such a manner that, by the action of said rollers, the leaves are forced from one end of the drum toward the other, and the fibers are prevented from being retained in the same teeth of the combs, from beginning to end of the combing operation. George Ehrsam, of 76 Elm street, New York, is the inventor of this improvement.

Machine for cutting and boring Rock.—Heretofore the boring of rock has been generally accomplished by the use of a chisel, punch, or boring bar operated by percussion. This invention consists in a boring tool composed of a series of diamonds attached to an annular or tubular stock or crown of steel or other metal, to which a rotary and a direct forward motion are given, and which is thereby caused to cut or bore an annular groove or hole, leaving a central core or kernel which is easily detached by the subsequent operation of a gad or wedge, the quantity of matter required to be removed by such boring tool being very small in proportion to the cavity which is formed after the withdrawal of the said kernel or core. The advantage of this boring tool is, that it may be operated with a small amount of power, is expeditious in its action, and its wear is almost imperceptible in operating upon the hardest substances. J. R. Leschot, of Paris, France, is the inventor of this implement.

Wagon pole Check-arrester.—Almost every person has noticed the annoyance and distress experienced by horses when drawing a wagon over rough and uneven roads, occasioned by the incessant twitching and jerking of the pole laterally; this occurs, especially, when the wheels suddenly descend into gullies, or strike abruptly against stones or ridges in the road—the sudden vibrations of the pole jerking the horses first in one direction, then in another, galling their necks, and sometimes producing strain almost sufficient to throw them off their feet. This invention seems well adapted for obviating such difficulties. It consists in applying a spring to each hold-back chain or strap, which is arranged in such a manner that the chains or straps may perform their usual functions, and still be capable of yielding sufficiently to prevent, or ease, in a great measure, the violent jerking of the draught pole. The invention is simple, and easily attached to any harness, and we have heard it recommended in high terms by those who have used it. James McNamee, of Easton, Pa., is the inventor of this device.

Punching Machine.—This invention consists in the combination of two punches with the same driving mechanism, in such manner that they may be adjusted at different distances apart, to provide for the punching of plates of various widths at opposite edges simultaneously. It also consists in the employment, in combination with two such punches, of an intermittently moving carriage, so arranged as to present the plate to be punched to both punches, in such manner as to cause the punching of the holes in both edges of the plate at the required distance apart. It also consists in certain means of moving the plate carriage in different curves, for the purpose of punching the holes in curved lines, to suit the curvature of the edges of the plates required in making a boiler in conical sections. And it further consists in certain means of producing a variable feed of the carriage. H. W. Bill, of Cuyahoga Falls, Ohio, is the inventor of this improvement.

ISSUED FROM THE UNITED STATES PATENT OFFICE

FOR THE WEEK ENDING JULY 14, 1863.

Reported Officially for the Scientific American.

*** Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

39,206.—Screw-driver.—J. A. Ayres, Hartford, Conn.:

I claim, first, A screw-driver, formed or composed of a shank, B, slotted longitudinally and provided with a set screw, C, and a detached or removable bit or turn-screw, D, substantially as set forth.

Second, Having the bit or turn-screw, D, provided with two prongs, b b, formed by slotting the bit or turn-screw longitudinally with a lateral projection, c, or an equivalent device or arrangement, so that the prongs will be thrown out of line with each other by screwing up the set screw, C, made to bind in the slot, f, of the screw, substantially as herein described.

Third, The reversible bit or turn-screw, D, provided at one end with the two elastic or yielding prongs, b b, and at the other end with the ordinary turn-screw, a, so that either may be used as desired.

[This invention consists in the employment of a bit or turn-screw and a shank, constructed and arranged in such a manner that the bit or turn-screw may be readily and firmly secured in the shank, and the former rendered capable of being firmly secured or held in the slot of the screw, so that the latter may be made to enter the wood, and screwed into it without the application of the hands to the screw. The bit is so constructed and arranged as to be reversible, one end being formed in the ordinary way, or like a common screw-driver or turn-screw, and the other end being constructed in a novel way so as to bind in the slot of the screw.]

39,207.—Sewing Machine.—C. W. Baldwin, Boston, Mass.:

I claim the vibrating bars or levers, N and O, as operated by the eccentrics, F and G, by means of the bands, H and I, the rods, J and K, and the studs, L and M, or their equivalents, in combination with each other and with the loops or lower needle, operated as above described and for the purpose herein set forth.

39,208.—Bottle-stopper.—Chas. F. Baxter, Boston. Mass. Ante-dated Jan. 16, 1863:

I claim, first, an elastic stopper, having a hollow or cavity opening into the end entering the bottle, substantially as shown and described.

Second, I claim the combination of a stopper having said cavity opening into the end entering the bottle, b, and shoulder or enlargement, c, substantially as shown and described.

Third, I also claim the combination of a stopper having said cavity in the end described, and shoulder or enlargement, with a bottle having a corresponding groove, d, substantially as shown and described.

39,209.—Punching Machine.—H. W. Bill, Cuyahoga Falls, Ohio:

I claim, first, The combination of two punches with the same driving mechanism, in such manner that they may be adjusted at different distances apart, to provide for the punching of plates of various widths at opposite edges or in two lines simultaneously, substantially as herein described.

Second, The employment, in combination with two punches adjustable at different distances apart, of an intermittently-moving carriage, so arranged as to present the plate to both punches in such manner as to cause the punching of the holes in both edges of the plate, or in two rows at a desired distance apart, substantially as herein specified.

Third, The employment, in combination with two punches, arranged as described, for guiding the movement of the plate carriage in straight or curved lines, as may be described, of a variable system of guide rollers operating in combination with a straight or curved rack, or a straight or curved groove or its equivalent, on or in the carriage, substantially as herein set forth.

Fourth, The employment for producing a variable feed movement of the plate carriage, of a rack with radiating teeth, as shown in figure 6, and a laterally movable pawl, operating in combination with such rack, substantially as herein specified.

39,210.—Apparatus for tempering Umbrella Ribs.—A. S. Black, New York City:

I claim, first, constructing the tempering die with a square hole, corresponding in size to the wire to be tempered, in order that the wire may be straightened in all directions, and the flattened portions of the wire be brought on line with each other, as and for the purposes specified.

Second, I claim constructing the tempering die with grooves, in one of the half pieces coming opposite the flat surface of the other half piece, whereby the tempering dies are more easily made and kept in order, as set forth.

Third, I claim the tempering dies, constructed substantially as specified, and inclosed in a suitable casing in combination with gas burners, applied substantially as shown, whereby the temperature of the said tempering dies is easily regulated and maintained with uniformity, as set forth.

39,211.—Skid for discharging and loading Vessels.—Robert Bragg, San Francisco, Cal.:

I claim the construction and application of the circular arc, B, as attached to the skid, A, operating substantially as described and for the purposes set forth herein.

39,212.—Washing Machine.—A. G. Brown, Lima, Ohio:

I claim the combination of a stationary washing tub with a reciprocating washing board under the arrangement, and for operation substantially as herein set forth.

39,213.—Manufacture of Alkaline Carbonates.—Lasslo Chandor, New York City:

I claim, first, The formation of the carbonates of potash and soda by the transformation of the sulphurets of potassium and sodium into bicarbonates of the same bases, by the process and substantially in the manner described.

Second, The manufacture of the sulphuret of sodium by the decomposition of the sulphuret of barium, substantially in the manner described.

Third, The manufacture or production, by the process described, of the sulphate and carbonate of baryta.

Fourth, The use of lime for the purpose and in the process described.

39,214.—Corn-stalk Cutter.—G. W. Cole, Canton, Ill.:

I claim, first, The combination of the two swinging or adjustable frames, E F, attached to the frame, A, and to each other, as shown, and provided respectively with the cylinder of cutters, H, and the foot-board, G, arranged substantially as and for the purpose herein set forth.

Second, The adjustable bar or weight, I, applied to the frame, E, substantially as shown and used in connection with the curved rod, J, staple, f', and pin, h, or an equivalent fastening, for the purpose herein set forth.

Third, The adjustable hooks, N N, in combination with the springs, O O, arranged substantially as and for the purpose set forth.

Fourth, The windlass, L, applied to the frame, A, in combination with the frames, E F, for the purpose specified.

39,215.—Machine for loading Hay.—Gorden Constable, Canonsville, N. Y.:

I claim the sliding endless rakes, E E, in the framing, A, in combination with the pinions, d*, on the axle, D, of the wheels, B, all arranged to operate substantially as described.

I also claim the roller, L, fitted between the lower ends of the rack bars, l l, arranged substantially as shown, when said roller is used in combination with the endless rakes, Q A', and the wagon, J, for the purpose specified.

I further claim placing the rake, Q, in a vertically adjustable frame, P, arranged as shown, to admit of the adjustment of said rake relatively with the ground, as set forth, and also for the purpose of rendering it operative, as described.

[The object of this invention is to obtain a machine by which hay may be raked up from the field, and deposited upon a wagon as the latter is drawn along, all the working parts being operated from the traction wheels of the machine.]

39,216.—Projectile for Rifled Ordnance.—H. E. Dimick, St. Louis, Mo.:

I claim the construction and shape of the steel and wrought-iron front, in combination with the lead and cast-iron portion, as arranged with the bands, N and P, for the purpose of giving the projectile perfect rotation, and making it more certain in its action, as herein described.

39,217.—Buckle.—Frank Douglas, Norwich, Conn.:

I claim the swinging frame, A, in combination with the stationary loop, e, socket, B, and tongue, D, substantially as herein specified.

39,218.—Defensive Armor for Marine and other Batteries.—J. B. Eads, St. Louis, Mo.:

I claim the employment of the angle-iron bars, g, in combination with the armor plates, E, and dowel pins, f, constructed and arranged as herein described and represented, for securing the armor of war-vessels, and making a system of breaking joints, substantially as herein set forth and represented.

39,219.—Hemp Machine.—George Ehrsam, New York City:

First, I claim the employment or use of a conical drum, A, carrying a series of combs, F, and working within or under a cone cap, G, in the manner and for the purpose substantially as herein shown and described.

Second, Discharging the clean fibers over the large end of the cone drum, A, through the open side of the cap, G, in the manner and for the purpose substantially as specified.

Third, Making the teeth of the combs, F, of gradually-increasing fineness, from one toward the other end of the drum, as and for the purpose set forth.

Fourth, Giving to the feed rollers an oblique position in relation to the main shaft of the drum, substantially as and for the purpose specified.

39,220.—Machine for dressing Chair Backs.—S. L. Fitts, Ashburnham, Mass.:

I claim, first, The reciprocating segment bed, E, placed on the adjustable way, B B, and operated substantially as shown, in combination with the pressure rollers, M M, and the rotary cutter, N, all arranged as and for the purpose specified.

Second, The arrangement and combination of the shaft, X, provided with the cams, Y Y, the arm, W, pawl, V, ratchet, U, the levers, P A', cam, T, socket, R, with pin, Q, the spring, i, on the journal of the cutter, N, and pins, l l, at the side of the bed, E, all arranged as and for the purpose herein set forth.

[This invention consists in the employment of a reciprocating segment carriage placed on an adjustable bed, in connection with a rotary and vibrating cutter head and pressure rollers, all arranged to effect the desired end.]

39,221.—Beehive.—W. A. Flanders, Shelby, Ohio:

I claim, first, The semicircular comb frames, A, in combination with a semicircular case, B, arranged as and for the purpose specified.

Second, I claim the sand board, E, which forms a partition between the comb frames and honey boxes above, constructed as and for the purpose set forth.

Third, I claim the moth traps, F, in combination with the adjustable bottom board, G, arranged and operating in the manner and for the object described.

Fourth, I claim the adjustable front entrance, H, in combination with the moth box, I, arranged and operating as specified.

39,222.—Adding Machine.—G. B. Fowler, Chicago, Ill.:

I claim the arrangement of the apertures, b, in the under side of the platform or bed, A, to operate in combination with the figures on the underside of the slides, B, and with said slides, strips, C, and caps, D D', in the manner and for the purpose herein shown and described.

[An engraving and full description of this invention will be published in the SCIENTIFIC AMERICAN in a few weeks.]

39,223.—Lock and Bolt.—E. O. Brink and C. E. McDonald, Indianapolis, Ind.:

We claim, first, The bolt, F, when the same is constructed and operated substantially as set forth.

Second, The knob, S S, when the same is constructed and operated substantially as set forth.

Third, The annular plate, E, and the bent wire, b b', when the same are constructed and operated substantially as set forth, or any other substantially the same.

Fourth, The escutcheon tube, 18, when the same is constructed as afore said, combined with the said key, No. 12, and the said spring, k k, otherwise substantially as set forth.

Fifth, The said key, No. 12, when the same is constructed and operated in manner and for the purpose as aforesaid, or any other substantially the same.

Sixth, The said cylindrical slide, No. 10, with its springs, h and k k, when the same are constructed and operated substantially as set forth.

Seventh, The shank, A A', of the said knob, S S, when the same is constructed and applied substantially as set forth.

Eighth, The said file-faced tumbler, 11', when the same is constructed and operated substantially as set forth.

Ninth, The slot, z z, of the said escutcheon tube, when constructed and applied substantially as set forth.

Tenth, The lock, as a whole, when the same is constructed and operated substantially as set forth, or any other substantially the same.

39,224.—Carriage Spring.—C. B. Galentine, Brooklyn Center, Ohio:

I claim the application of a self-adjusting triangular brace to land carriages, in such a manner as to retain the parts of the springs and their attachments in their proper relations, and thus to secure the parts from undue strain or breaking by the motions of the carriage.