

Reaping Machines.

We present an abstract of a paper read before the British Association for the Advancement of Science, which recently met in England. The author of it is A. Crosskill, the favorite constructor of Bell's reapers, and perhaps the most extensive manufacturer of agricultural implements in England, it will be seen that—naturally enough—he awards the praise to Bells' Reaper. Leaving that opinion to the one side, as a historical document, the paper is valuable.

The application of machinery to reaping corn, excites at this time as much interest amongst mechanical engineers, as any subject to which their attention has of late years been directed. Upwards of 30 patents for reapers were taken out in England during the first six months of the present year, and we find amongst the patentees men of every degree, from Whitworth of Manchester, the first machine maker of the day, to country wheelwrights and blacksmiths.

A machine for reaping is mentioned by Pliny, as having been in use amongst the ancient Gauls, and we learn from Palladius that the body of the machine rested on an axle which connected two wheels. To this axle a pair of shafts were fixed, into which a steady ox was harnessed, not in the usual manner, but as a stable boy would say, with his head where his tail should be, consequently, when he walked on, instead of pulling by the shafts, he pushed by them, and drove the implement into the standing corn. The means adopted to cut and deliver it are not given with sufficient clearness to enable us to understand them; doubtless they were very primitive, but the fact of such a machine having been used by the Romans and Gauls is beyond doubt.

In 1812, the late Mr. Smith, of Deanston, brought out a reaping machine, which appeared at intervals with different modifications until the year 1835, when it worked very successfully at the meeting of the Highland Agricultural Society at Ayr. At that time, it consisted of a revolving cutter, 5 feet diameter, composed of thin steel segments bolted on an iron ring, and the gathering of the cut corn was effected by rakes, placed on an upright cylinder just above the cutter, which brought it off in a regular swath. The horses walked behind the machine, and were fastened to it by a pole or by shafts; in 1835 it was laid aside and not again brought forward.

In 1822 an attempt at reaping with a large circular cutter was made by a Mr. Mann, of Raby, in Cumberland, but unlike other inventors who had used the same form of cutter, he placed the horses before the machine, and they walked by the side of the standing corn, like the American reapers, brought to the Great Exhibition of 1851. This machine, like Smith's, was in existence for some years, but finally disappeared from public notice in 1832.

There is one more ancient reaper to which I would draw your attention on account of the great resemblance it bears to McCormick's Virginia Reaper, which attracted so much notice during the last two years. In 1822, a Mr. Ogle, of Rennington, near Alnwick, invented a reaping machine, which was worked upon wheat and barley, but as it received no encouragement only one was made. This machine was illustrated and described in the 5th Vol. of the "London Mechanics' Magazine" of 1826, and was in almost every important feature like McCormick's.

We need not be at a loss for an explanation of the failure of all these schemes, many of which possessed considerable merit. Until the last two or three years manual labor has been easily obtained in this country, and at harvest time especially a large number of Irishmen came over to England and obtained a livelihood by assisting farmers to gather in their crops.—Owing to the rapid increase of emigration, however, this temporary assistance becomes every year more and more precarious, and will in all probability entirely cease, and by a fortuitous coincidence, the demand for reaping machines thus occasioned, occurred at a time when public attention was directed to them, in consequence of the prominent position occupied in the Great Exhibition of 1851. Amongst the American contributions in the Crystal Palace,

were two reaping machines, one invented by McCormick, of Chicago, and the other by Hussey, of Baltimore, models of which I have on the table.

They are by no means the only reapers in use in the United States, the great demand in that country having called into operation numerous inventions for that purpose, but the two above mentioned are very extensively patronized. The annual sale of McCormick's machine amounts to about 1,500, and that of Hussey's from 800 to 1,000.

It will be seen in both cases that the horses draw the machines after them, and walk by the side of the uncut corn. In both also, the main wheel that carries the machine, gives a reciprocating motion to a bar which has double edged knives fixed upon it, and these knives pass between guards or fingers, against which the corn is cut. The shape of the knives and guards varies in both machines, as may be seen by the models. McCormick's cutters form an angle with the bar of from 20 to 30 degrees, and have their edges serrated. The cutting of these is very little assisted by the guards or fingers, but they have an action similar to a saw, and the slight inclination of the cutters prevents the corn from yielding as it might do from a straight knife. The cutter of the first machine brought by McCormick into the Great Exhibition, consisted of a straight serrated edge, but the knives with edges inclined both ways, are far superior to those originally used.

A reel or fan is employed to press the corn towards the cutter, and it is also useful to raise and collect that which is laid or which inclines from the machine.

The corn when cut falls upon a wooden platform, and a man riding upon the machine rakes it off at the side in sheaves or bundles.

The cutters used by Hussey, make an angle of 70 or 80 degrees with the bar, and are much more accurate than those used by his rival.—They are plain edged, and their action is to chop the corn between them, and the guards through which they pass. This form of knife is found objectionable here, from the soft and yielding nature of many of our English grasses and weeds, which, instead of being cut, bend through the guards, and in time choke up the knives. To obviate this, it has been found advisable to shorten and give them a serrated edge, similar to the improved ones used by McCormick; and it is very remarkable that both Hussey's and McCormick's cutters, which differed so widely when first brought by their respective makers into this country, have given place to a very similar knife, which is now used in both machines.

Hussey's machine has no fan or reel, but a man rides upon it in such a position, that he can, by using a rake, bring against the cutters that corn which lies away from them and requires his assistance. When cut it falls upon a platform, and after a sufficient quantity to form a sheaf has accumulated, the man pushes it off with his rake.

These two machines have been repeatedly tested, both in this country and in the United States. At the Great Exhibition of 1851, the Council Medal was awarded to McCormick.—Mr. Hussey not being in this country, and having no one to exhibit his machine in action, did not receive a similar honor.

In the September of that year, he arrived in England, and by working his machine in competition with McCormick's before practical farmers, he obtained for it a large share of public approbation. In 1852, Hussey's machine was victorious at the meeting of the Royal Agricultural Society at Lewis, and at various trials of less importance, while McCormick's carried off the prize at the Great Yorkshire Agricultural Society at Sheffield and achieved other victories.

Both machines have, however, been defeated at every trial this season, by a third candidate, which I shall now proceed to describe.

In the year 1826, the Rev. Patrick Bell, now minister of Carmylie, in Forfarshire, invented and constructed a reaping machine, and succeeded in making it work so well, that in the year 1829 the Highland Agricultural Society awarded to him the sum of £50 for his invention. During that and the following years,

above a dozen were made in and about Dundee, and some of them used by practical farmers, but the redundancy of manual labor, coupled with the difficulty of keeping in order machines of a somewhat complicated character operated so decidedly against their use, that most of them were gradually laid aside. Mr. George Bell, the brother of the inventor has, however, persevered in working the machine, and has had one in use every year since 1830, by which he has obtained great experience, and become thoroughly acquainted with the various obstacles to be encountered in the harvest field.—In 1852 when the American reapers were sent northward, Mr. Bell put his old machine into thorough repair and met Hussey's at the meeting of the Highland Society at Perth.

The judges unanimously awarded the prize to Bell's machine. This machine is different from both the Americans, and for novelty of invention, no resemblance exists between it and any other that had been made, except that the horses follow the machine, a mode of propulsion which, as we have seen, was in use at the time of the ancient Romans.

The cutting is performed by a series of shears or scissors, each moving blade being double edged and cutting both ways.

As the corn is cut, it is pressed back by the revolving reel upon the canvas, which has a rapid motion sideways, and which turns it off in a continuous swath. The canvas is inclined at a considerable angle, and the corn in falling turns partially over, so that the heads lie all one way, with great regularity.

The horses walk behind the machine, and propel it by means of a pole passing between them, to the extremity of which they are yoked; a man walks after them, and by means of this pole, guides the implement. By bevel wheels the canvas may be reversed so that the corn can be delivered on either side of the machine. The machine cuts a width of full six feet.

In acknowledging our debt of gratitude to the Americans for bringing over their machines, and directing public attention to the subject, and also for demonstrating in a manner that must have convinced the most sceptical and prejudiced, that reaping by machinery was as practicable as threshing, it must be a source of national pride to find that we had in Great Britain, an implement equal to any brought from foreign countries, and which only required an opportunity to be fully appreciated.

There is one more ingenious invention which we owe to our transatlantic brethren, namely, Atkin's automaton or self-raking reaper. This was brought over last autumn, and exhibited in motion at the Polytechnic Institution, London. The horses go before the machine, and the corn is cut and delivered on to the platform by a reel similar to McCormick's, but instead of being drawn off by a man, a rake with an action similar to the human arm, gathers up the cut corn, and deposits it on the ground in sheaves. This invention was tried at the meeting of the Royal Agricultural Society at Gloucester this year, and failed, not from any defect in the delivery, but owing to the inefficiency of the cutting apparatus, which had not been tried before it was taken into the field. Being in the hands of such men as the Messrs. Ransomes, of Ipswich, no doubt its capabilities will be developed.

Ink for Steel Pens.

Take twenty lbs. of the best Campeachy logwood, and boil it down for three hours in one gallon of water, taking care to add enough during evaporation, so as to have one gallon of liquor at the end of the boiling. Into this, dissolve 12 oz. of the chromate of potassa, and stir well. It should then be bottled up for use. It does not require gum to hold any sediment in solution—for there is none—like the common inks, made with the sulphate of iron, logwood and galls, or sumac. As there is no acid in this ink, it is the very writing fluid required for steel pens.

Gas from Rosin Oil.

A patent was granted on the 2nd of last September, to Alexis Robitaille, of Quebec, tinsmith, for a new and improved apparatus, and method of working, for obtaining and producing gas, for the purposes of illumination, from

rosin and oil, and other substances of like nature, and from the decomposition of water.

Delays of Legal Business in England.

We have received from our intelligent correspondent in London, a letter, from which we extract the following:—"Our legal officers are so slow, together with the long vacation, that we are much annoyed by the disappointment of not being able to send you the parcel by this packet as we had intended. It is no use to find fault with the clerks or officials, the evil is in the system and cannot be changed otherwise than by introducing a better one. Would you believe that for three months in the year the law offices are considered closed, the only attendants being a few overpaid clerks, who consider themselves martyrs to their country in being required to call at their offices an hour or two daily; and all this in addition to frequent holidays, varying from one to six or seven days. The Lord Chancellor is one of the Patent Commissioners, he has charge of the Great Seal, which is supposed to be always in his keeping, consequently, if my Lord goes into the country, and a patentee should have run pretty close to his time for sealing, we have to send a special messenger after him to get a seal, at an extra charge of £3 3s. Is it not abominable that the business of the country should be so clogged. Perhaps in the course of a week (please my Lord) we may be able to forward you a parcel, but do not rely upon it until you receive our assurance that it has actually gone.

A strike has taken place here against the sewing machine, which we suppose will end pretty much as such affairs generally do, to the discomfiture of the turn-outs."

From the picture presented above, we do not wonder at the story told of a couple who grew grey while waiting for the English courts to decide whether they had a right to get married. Only think of posting a messenger through the country to hunt up my Lord, who is perhaps shooting pheasants in the Highlands of Scotland, in order to obtain a seal to any public document! And by the by 'my Lord' must have a capacious pocket if he carries those seals with him, for they are as large as the crown of your hat, and as clumsy as that of a New York Dutchman in the days of Deidrich Knickerbocker. The delays are had enough in our Patent Office, but we can't hold a candle to John Bull in that line. But seriously, we do not wonder at the demand for law reform which is now made in England. The only wonder is that the people submit to it at all. Americans residing out of New York City, never would do this.

Prize for a New Invention.

Moses S. Beach, the publisher and proprietor of the "New York Sun," with his accustomed liberality to inventors, offers a prize of \$1000 to any person who will invent a feeding apparatus for his Mammoth Press that will feed in 3000 sheets per hour to every one of its eight cylinders; he also offers \$10,000 for the patent of such an invention. The offer therefore, for the invention is \$11,000, and will be open to our inventors until the 1st of January, 1855.

The circulation of the "Sun," it is stated, has become so large that an invention of this kind is demanded, as the hand-feeders cannot exceed 2000 per hour each. It is desired that an edition of 120,000 of the "Sun" should be printed in five hours.

Public Amusements.

As many of our readers are visiting the city at the present time, they would perhaps be glad to be informed of some of the places of public amusement most in accordance with their tastes. Besides the theatres, and among the less objectionable places of public resort, we would name the following:—Banvard's Georama of the Holy Land, No. 596 Broadway; Frankenstein's Panorama of Niagara, 718 Broadway; Powell's National Painting, "De Soto Discovering the Mississippi," 663 Broadway; Perham's Mirror of Niagara, Ontario, and the St. Lawrence, 539 Broadway; and at the Stuyvesant Institute, besides Signor Blitz, may be found the gallery of Egyptian Antiquities, and a portrait of Charles I., supposed to be the long lost Velasquez. At Barnum's American Museum, in addition to the other curiosities, are two beautiful specimens of living giraffes.



[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office FOR THE WEEK ENDING OCTOBER 16, 1853.

PROPELLERS—By Ebenezer Beard, of New Sharon, Me.: I claim the use of one or more flanges or rims placed circumferentially upon the blades of a screw propeller, as described.

SOFA BEDS—By E. B. Bowditch, of New Haven, Conn.: I claim the arrangement of hinging the ordinary sofa seat to the back rail of the sofa frame, in combination with the arrangement of hinging an under seat with the upholstered side down to the front rail of the sofa, so that said under seat, by lifting the ordinary seat back, can be turned out of the front of and on a level with the ordinary seat, thus forming a bed.

I also claim the arrangement of hinging the stuffed back to the top rail of the sofa, and attaching the back at the bottom to the top seat, by strips of iron, in combination with the arrangement of hinging the top seat at the back lower corner.

SHUTTLE MOTIONS FOR POWER LOOMS—By Wm. Crighton, of Fall River, Mass.: I do not claim operating the picker by a cam or a short shaft, at the side of the loom, but I claim connecting the two pickers with a rod or rigid connection, which receives motion from a single lever, and one cam, whereby both pickers are operated, as set forth.

[See notice of this invention on page 196, Vol. 8, Sci. Am.]

ATTACHING ARTIFICIAL TEETH TO THE METALLIC PLATE—By H. S. Crider & David Williams, of Lancaster, Ohio: We claim securing the artificial teeth to a plate, by the usual method and afterwards fastening said plate on the alveolar ridge of the plate having the impression of the mouth, either by riveting or the employment of soft solder, so as to prevent the application to the plate having the impression, of the intense heat required to secure the teeth, as and for the purpose set forth.

SELF-WINDING TELEGRAPH REGISTERS—By James J. Clark, of Philadelphia, Pa.: I claim the combination of the winding magnet, the break circuit wheel, and spring, with the train of wheels of an ordinary telegraph register, in the manner described.

STEERING APPARATUS—By Charles Flanders, of Boston, Mass.: I claim the combination and arrangement of the rope, the two sets of leading blocks, the sheaves in the after end of the tiller with one another, the tiller and windlass, so as to operate together and move the rudder, as specified.

OPERATING MILL SAWS—By Benj. Frazee, of Durhamville, N. Y.: I claim attaching a reciprocating saw blade to the main shaft, by means of a slotted lever and crank pin operating as set forth.

MACHINE FOR MAKING RAILROAD CHAIRS—By Robt. Griffin, of Newport, Ky., and Geo. Shield, of Cincinnati, Ohio: We claim, first, hanging the tucra of the clipping and bending levers eccentrically in boxes made capable of circular movement for the purpose of adjusting the said levers to their work with facility and accuracy, as specified.

Second, the method described of adjusting the angular set of the clipping and bending levers, by pivoting and adjustably connecting them to outer operative levers, as set forth, and whereby a varied inclination may be given to the cutting and bending of the clip to suit different thicknesses of blanks or forms of chairs required.

IMPLEMENTS FOR CUTTING CLOTH—By G. W. Griswold, of Carbondale, Pa.: I claim strutting the cloth or other material to be cut, over the two jaws of the stock, and holding it firmly in place by the clamp, whilst the knife divides it with a saw cut, as described.

[See engraving of this implement on page 372, Vol. 8, Sci. Am.]

INSTRUMENTS FOR PLOTTING—By Thos. Hinkley, of Lowell, Me.: I claim the method or means of obtaining in the machine described, a compound or resultant parallel motion, the same consisting in a combination of pinions or gears and sunken racks (or racks provided with parallel bars), as specified, two sliding and rotary shafts, as arranged, connected, and supported so as to operate together, as described.

CUTTING BOOTS—By Daniel Lynahon, of Buffalo, N. Y.: I claim the tongue which first gives to the vamp a more exact crimped turn, secondly, covers the seam from being seen, and prevents it from ripping, and, thirdly, keeps the seams permanent by receiving the strain that comes on them when drawing on the boot.

POWER LOOMS—By Wm. Mason, of Taunton, Mass.: I claim the method of operating the warp beam to let-off the warps, and ease them in the opening of the shed, by means of the weighted cord acting on the periphery of a wheel geared to the warp beam and receiving motion from an eccentric or its equivalent, as specified, in combination with the mode of regulating the delivery motion by the action of the warper on a weighted whip roller acting by a friction strap on the friction wheel of the let-off apparatus, as specified.

MACHINES FOR FIGURING CARPENTERS' SQUARES—By N. Millington & D. J. George, of Shattsbury, Vt.: We claim the combination of the revolving chase wheel, with the lateral moving anvil, by which the relative position of the square to be stamped, and the required chase, is so regulated that the line of the square to receive the impression, is brought under the chase, containing the desired figures, as set forth.

POWER LOOMS—By John Pender, of Worcester, Mass.: I claim the rest, in combination with the guides, when constructed as described.

LOOMS FOR WEAVING FANCY GOODS—By E. F. Rice, of Clinton, Mass.: I claim the application of compound levers constructed as described, to raising and depressing of harnesses or healds, as set forth.

I also claim employing a finger attached to the vibrating lever, operating, as described, in combination with the crown wheel to move the figuring chain, as specified.

I also claim forming a groove in the bars of the figuring chain for the insertion of hooks or pins, or their equivalents, as specified.

AIR BEDS—By Jno. Scott, of Philadelphia, Pa.: I claim forming a bed of an air-tight india rubber cloth sack enclosed or enveloped in a pouch-formed mattress, composed of two thicknesses of ticking or other suitable material, between which is interposed feathers, hair, cotton, or other soft substance retained by proper quilting said mattress, conforming to the shape and size of the air sack when extended with air by flexible pipes.

LIFE-PRESERVING BUCKET—By Nathan Thompson, Jr., of Williamsburgh, N. Y.: I do not claim a double vessel, as such have been employed both as refrigerators and as retainers of heat.

But I claim, first, a double vessel, the space between the outer and inner side thereof being filled with cork or its equivalent, by which it is in a great measure secured against leakage, and retains sufficient buoyancy when punctured, and serves as a reliable bucket and life-preserver.

Second, I claim attaching the handle thereto by means of the tubes, the nicks in the handle, and the bending of the ends of the tubes therein, as described.

LIFE-PRESERVING SEAT—By Nathan Thompson, Jr., of Williamsburgh, N. Y.: I do not claim a life-preserving stool or seat in general.

But I claim, first, the folding life-preserving seat, with a buoyant divided top constructed as described.

Second, the clasp, in combination with the surfaces on which it slides, constructed substantially as described, and operating to hold the stool either shut or open, as described.

IRON CAR BODIES—By Thos. E. Warren, of Troy, N. Y.: I claim the combination of the hollow sheet metal columns and panels, as described, with the through bolts, holding the top, bottom, and sides all firmly together, as set forth.

[See engraving of this excellent invention on page 388, Vol. 6, Sci. Am.]

CARPET STRETCHER—By J. W. Weatherby, of Kingsville, Ohio: I do not claim the invention of rack and wheel, or any of these parts separately of themselves, but the general construction and arrangement, to save much time and labor. I therefore claim the general construction and arrangement of the carpet stretcher, made and operated as described.

DOOR LOCKS—By Linus Yale, of Newport, N. Y.: I claim introducing and applying the key from behind instead of in front, as is usual, by means of a permanent wrench revolving key-chamber and the passage, in the manner described.

APPLICATION OF HIGH PRESSURE ENGINES TO SCREW PROPELLERS—By Harry Whitaker, of Buffalo, N. Y.: I claim the direct application of the crank outside of the hull to side screw propellers, when such application is combined with or effected by a high pressure engine, arranged also outside of the hull, as set forth.

Bonnell's Patent Flouring Process.

[Continued from page 43.]

The actual amount or proportion of bran proper, found in the wheat, necessary to make a barrel of superfine flour, is so inconsiderable that its mixture with the flour could do little good, and its rejection no hurt, if with it there was not rejected and lost a large amount of flour material, that is highly nutritious, by imperfection in the manufacturing and separation.

The only injury that would follow by finely pulverizing the bran, and incorporating the whole of it with the flour would be, the reducing its texture or color below that standard fixed by arbitrary custom as a test of its value, hence, as that custom must be complied with, the art in the manufacture consists in getting the greatest possible amount of flour and nutritive material from the wheat, and rejecting just so much of the bran as will leave the texture of the former agreeable to the standard fixed by society. To do this it must be apparent that the primary and most important desideratum in manufacturing wheat into flour, is perfect and uniform pulverization of all and every part susceptible of being made, or that it is desirable to make into flour. Could this be done, but little judgment or skill is required to separate the flour by bolting and reject the bran. But perfect pulverization cannot be attained by one process of grinding, and the reasons are obvious, when we come to examine the different constituent properties of wheat; the different proportion of these properties in each different variety; the amount varying, too, as the climate in which it is produced varies; mode of culture; time and manner of harvesting, and the different degrees of moisture and dryness found in each crop when delivered at the market or in the mill. Then there is a great difficulty in keeping the mill stones dressed, and otherwise in a proper and perfectly equal condition, besides their operation and effect is constantly subject to variation in motion, and by the atmosphere affecting both the grinding and bolting in its various changes. If the wheat was all in a proper and equal condition in other respects, being composed of about 60 to 70 per cent. of starch, which is soft, porous and tender, and from 16 to 22 per cent. of gluten, which is hard, tough, and elastic, there would still be great difficulty in producing perfect pulverization. The gluten is located in a thin layer around the outside of the starch and immediately under the outer coating of the grain, to which it adheres with great tenacity, and if we attempt to grind so "close" and fine as to divest the bran of all this valuable material, and at the same time reduce it to a proper degree of fineness to sift through the bolts, the extra friction required is liable to reduce the starch too fine, and to produce too much heat, which, affecting the oily or fatty matter in the grain, and uniting with the fine particles of flour forms a sort of paste, and not only glazes the mill stones, but fills the meshes of the bolt cloth and destroys or greatly retards the bolting. Flour ground in this manner may look well enough to pass inspection, but as the angular or gritty quality is too much destroyed, there is a want of what millers call "body" to it, and it is found inferior for bread.

If we grind "high" or coarse enough to preserve the good grinding property or conditions of the mill stones, avoid glazing, and preserve a good body to the meal, which ensures good bolting; we cannot divest the bran, feeds, or offal, of the gluten, and a portion of the

flour will be so unequally pulverized, that coarse bolt cloth must be used to ensure a "yield," and to associate with the flour that desirable nutritive property which the partially ground particles are known to contain, and which, if obtained by the use of coarse cloth, subjects the flour to be "scratched" in market, by letting through with the flour fine particles of bran, which hurts it only for inspection. If this coarse flour is sifted out, as it usually is, with No. 4, 5, 6, or 7 cloth, and returned back to the superfine bolts, which are covered with 9 and 10 cloth, it is evident but a small portion of it passes through them, and incorporates with the superfine flour, but it passes along the bolts until reaching again cloth of sufficient "mesh" to let it through, is thus returned *ad infinitum*, over-laboring and wearing out the superfine bolts, and is subsequently thrown off with the feeds or offal, or a large proportion of it, making a loss of nutriment to the flour and of profit to the manufacturer.

To obviate these difficulties I propose, by my improved process, to intercept the whole body of the offal, or that which shall be equivalent, as it leaves the tail of the superfine bolts, or at any other convenient place, and instead of passing it into the subsequent bolts, as is usual, submit it immediately and continuously to a second grinding through an auxiliary mill fitted and adapted for that purpose. By this means the starch, having been bolted out, the offal is divested of all the remaining flour material, and all the coarser particles may be pulverized to about the same degree of fineness as that previously bolted out through the superfine bolts. The offal thus ground to any degree of fineness desired, is thrown into the succeeding bolts, or flour dresser or dusters, which should be covered with fine cloth (9 or 10) or any equivalent material; when the flour is separated from the offal, and from the head of the return bolt, the best flour may be sent back or returned to the cooler or superfine bolts, to be incorporated with the superfine or other flour, or it may be packed or used as a separate article of any desired quality.

The flour material being, by the re-grinding, perfectly pulverized and reduced to the same fineness of the starch, the bolt cloth necessarily requires to be finer than that formerly used on all the bolts or dusters, except the superfine, and those used for dividing the feeds, and from the head of each bolt or duster used, the best flour produced should be sent back or returned—not to the cooler in all cases, as usual, but to the head of the next preceding bolt. The next best flour produced along the middle of each bolt should be returned to the head of the same bolt, or back to its own head. And the brown specky material sifted through near the "tail of any bolt," should be sent with the offal to the head of the next bolt or duster that succeeds it. By this means there is no coarse or partially ground flour going back to the first bolts as formerly. The labor on each bolt is uniform and equal, and the flour sent to the superfine bolt from the return bolts, having once been bolted through fine 9 or 10 cloth, will readily pass through the superfine bolts and incorporate with the flour. This bolting, dusting, sifting, and separating may be continued to any extent desired, and if the rule above indicated is carefully observed, or that which shall be equivalent, the fine particles of bran may be perfectly separated from the flour, and the perfect pulverization of the grain will ensure the greatest possible yield of a rich nutritious article of flour, possessing "good body," being ground to an equal degree of fineness and not too fine.

(To be Continued.)

Preserving Animal Substances.

MESSERS. EDITORS:—In number 45, July 23, vol. 8, Scientific American, I notice an article under the head—"To test the purity of water," which reminded me of something peculiar that I had seen myself. It has been stated that rain water was an antidote to cholera; while in England, two years since, on a visit to the distinguished Andrew Crosse, Esq., the great chemical electrician, among other experiments, he placed a putrid ox hide in a bath of electrified water, where it remained four hours; when taken out it was as pure from smell as when it was taken

from the animal. In reflecting upon this experiment afterwards, it occurred to me that if such an effect can be produced upon a dead mass, that it must inevitably produce equal effects upon the living, hence I applied Crosse's discovery to electrified baths. Referring to the assertion that the use of rain water was an antidote to cholera, I tried to examine into the causes, why. That it is the purest water will not be denied, unless it be electrified water, patented by Crosse, and illustrated in vol. 7, Scientific American. Now if rain water passes through the atmosphere in its descent, (which is always more or less charged with electricity,) and descends electrified water, which is an antiseptic, may not this be the cause why rain water, in its constant use, is an antidote to cholera? I am, very respectfully,

W. H. R.

Havana, Cuba, 15th Sept., '53.

[Although we have seen it stated a number of times, that rain water is an antidote to cholera, we have no positive testimony in proof of the alledgment. If it is an antidote, it is not owing to its antiseptic qualities, which are far inferior to those of many spring waters. Rain waters are no more electrified than well waters, because, when they fall to the earth, they are in a state of equilibrium, electrically, with the earth.

Large Ship.

The "Newburyport Herald," referring to the launch of the Great Republic, says:—

"Mr. McKay, we hear, will immediately commence the construction of a ship larger than this, which he is to build by contract.

"The theory has been started of building a ship so large, that she will pass through the ocean with comparatively little motion, ploughing directly through the waves, without rising upon them, and so high above them that the highest waves will always be below the decks. It is a daring thought, but in view of what has been accomplished already, who will venture to denounce it as absurd? There are those bold enough to predict, that a ship will yet be built that will pass through the stormy waves on the ocean with as stately a progress as a vessel of a hundred tons through a river in the same gale."

[That such a ship can be built we have no doubt at all, but it will have to draw about 60 or 60 feet of water. Such a vessel could enter very few ports in the world, because there is not a sufficient depth of water to float such a vessel. It would not be wise, we think, to build vessels of such magnitude. There is certainly a limit to the economic size of vessels, but what that is we cannot tell, nor can any other person at present; experience alone can settle this question. A ship named the Columbus, built at Quebec, in 1824, by Charles Wood, was nearly of as large tonnage as the Great Republic. It was launched with 4,000 tons of cargo on board. It was 300 feet long, 50 feet in breadth and 30 feet deep. Her speed was so very great that she took only 54 days to cross the Atlantic, anchored safely in the Downs, and in a storm was afterwards driven on the coast of France, and wrecked. There is certainly a great difference between the voyage of the Columbus, 54 days, and the Sovereign of the Seas, 14 days—so much for 29 years progress.

Guano Accumulations.

A writer in the "North British Agriculturist" states that he has examined all the Islands in the rainless latitudes of West Africa, and that all the guano that was found upon them has been removed. He states that one foot of guano accumulates on Halifax Island in Angra Pequina Bay in three years. This would amount to 1333 1/3 feet in 4000 years. This certainly overthrows all the arguments that were advanced to prove the great age of this planet by some who have calculated that the guano of the 300 feet hills in the Lobos Islands required accumulations for ages before, it is recorded our world was created.

The Great India Rubber Case.

On the 20th inst., at New Haven, Ct., Judge Ingersoll refused to grant an injunction in the case of Horace H. Day versus L. Candee & Co., of New Haven, which was argued there a few weeks ago, before the U. S. Circuit.