

## PROVIDENCE RIVER OYSTERS.

The residents or visitors in Rhode Island and Massachusetts find these bivalves are highly valued. Ask, in hotels and saloons, for the finest oysters; the answer will be: "We have Providence Rivers."

"Little Rhody," though indeed small in area, has great industries. Providence, her largest city and capital, is the center of vast interests, of commerce, manufactures, education, etc. Her communications with Newport, Bristol, Fall River, Pawtucket, and other places, in or near the State, are so many and so direct, these seem but her suburbs. The largest solid silver manufactory in the world is to be found at Providence. The largest tool shop also, employing over fifteen hundred persons. About one hundred and fifty jewelry factories are located there. The famous Corliss Steam Engine Works also. Impressed, as even the casual observer will be, by the immense proportions that these and other businesses have attained there, he may overlook the one we seek to bring to notice. Yet it really holds no second place to any. Bays, rivers, estuaries, harbors, and lakes cover a large part of the surface of the whole State of Rhode Island. Providence River, Narragansett Bay, with the waters immediately around, contain large extents of natural oyster fields.

The possibilities of oyster production in these waters are beginning to be very much talked of. They are, as yet, however, but feebly realized. The advantages there over most other places of equal extent in our country are quickly seen. These waters are well sheltered from storms. They are nowhere very deep. There is much of what is called good bottom. And many fresh water streams are continually flowing in.

Many persons are now taking up the available ground for cultivation. Yet the State laws are not very encouraging to a rapid increase of the enterprise. One can lease but not own the ground. The annual rent is ten dollars an acre. The expense of surveys, committee, and records must be paid by the person securing the ground.

From its earliest history, laws have been made in Rhode Island to regulate fish and oyster industries. It is now plain that some additional legislation is needed, if the enterprise of producing good oysters is to be fostered much in that State.

Indians were very numerous and powerful there when white men came to settle. These tribes were drawn to the region because of the abundant supplies of sea food as well as game. Geographers have recently fixed upon Rhode Island as the ancient *Vinland* said to have been discovered by the Northmen in A. D. 1000. If reliance is to be placed on the "Icelandic sagas," a critical examination of them leads to this result. Verrazano visited the Bay in 1524.

Rev. William Blackstone and his wife Sarah were the first actual settlers of this territory. They came from Boston in 1634. He had been the first white settler of Boston. Having left England to get away from "lord bishops," he went from Boston to be out of the power of "lord brethren." He made his home on the river Blackstone, six miles north of Providence. He named his place "Study Hill."

In 1636 Roger Williams, fleeing from persecutions suffered from Puritans for his religious views and courses, came to the east bank of the Seekonk River. There were with him John Smith, William Harris, Francis Wickes, and a lad named Thomas Angel. As their boat was coming to the shore an Indian from the hill greeted them with "What cheer, netop [friend]?" A tract of land near that place has ever since borne the name of "What Cheer."

This company soon moved to the western side of the river and began a settlement, which has now grown to a city of over one hundred thousand people. Williams named the place *Providence*, because of "God's merciful providence to him in his distress." He gave the same name to his son, who was the first male child born there.

An early visitor reveals the sentiments which the people cherished, and the impressions he received:

"This pleasant town doth border on the flood,  
Here's neighboring orchards, and, more back, the woods;  
Here's full supply to cheer our hungry souls,  
Sir Richard, strong, as well as wine, in bowls.  
Here men may soon any religion find,  
Which quickly brought brave Holland to my mind;  
For here, like there, one, with the greatest ease,  
May suit himself, or quit all, if he please."

When, many years later, a large church was built, a bell, weighing 2,515 lb., was hung in its tower. The following inscription was placed upon the bell, showing that the ancient sentiments of religious liberty still remained with the people:

"For freedom of conscience the town was first planted,  
Persuasion, not force, was used by the people;  
This church is the eldest, and has not recanted,  
Enjoying and granting, bell, temple, and steeple."

The visitor, who can go by boat from Providence to Newport in little more than an hour, sees a change since the time, as he himself tells us, Roger Williams, starting in early morning, rowed all day till midnight to accomplish the same journey.

Providence is built on the Providence River, and around a sort of lake called "the Cove." Into this cove two small rivers, the Woonasquatucket and Moshassuck, empty. The Seekonk River is on the east side. These several rivers divide the city so as to make numerous bridges necessary. "The Cove," a mile in circuit, is surrounded by a Park. The city has a variety of surface. There is one height of 204 feet above high water. There are thus sightly locations, many

of which are occupied by public buildings and beautiful private residences.

The first recorded act which reveals the early value of the oyster supplies is a vote taken on March 6, 1639, which declares "all the sea banks free for fishing." This was called for, because provisions were quite scarce, and some living by the shore seemed disposed to keep others away from the waters immediately upon their front.

The first movement which gave an exclusive right to private parties in the prosecution of fishing was on June 16, 1716. Then "Starve Goat Island" was granted, upon petition of the fishermen from Providence, for the purpose of curing and drying fish. This island is, to this day, the headquarters of a very busy trade in oysters and fish. It lies a short distance down the Providence River. In June, 1731, on the 14th, bounties were voted for whale and cod fisheries. These were to be five shillings for every barrel of whale oil, one penny for every pound of whalebone, and five shillings for every quintal of codfish brought in by Rhode Island vessels.

On Feb. 18, 1735, attention was directed to the preservation of oysters in the bay, for large quantities of them were being taken to be burned for lime. So eager were the people in procuring materials for lime, that they gathered the shells with the oysters still alive in them, and burned them. This, of course, threatened to cause wholesale destruction of the oyster beds. A law was passed putting a stop to it.

In the year 1766, on October 9, a law was made forbidding persons to take oysters by means of "drags." They were to use no instrument for this purpose but tongs, under penalty of ten pounds. Parents were also held liable for their children and servants. The owners of boats used by such as employ drags were made liable for double damages.

When the people voted upon the new Constitution proposed for the State after the famous Dorr rebellion, they felt its provisions concerning oyster protection were so indefinite they refused to adopt it. This one thing caused it to fail. Such things show how highly they valued their oyster privileges. Large numbers of families have in the past, and do so still, live on the shores of Providence and Seekonk rivers and the bay, seeking most of their substance by oyster and fishing. The growth of the city and the development of manufacturing have resulted in the destruction of the oyster beds in Providence River proper. In the memory of men now living, quantities of good oysters could be gathered above the bridges near the railroad depot. Mud and other deposits have made such changes that to find oysters you must go more than a mile below that point.

Increased demands and failure of natural supplies, here as elsewhere, prompted efforts toward private cultivation. Robert Pettis, one of the largest dealers in the country, was a pioneer in the movement. Though partly blind from injuries received when a boy at school, he had sagacity to see the growing value of oysters and the necessity of raising them on private grounds.

Much opposition has been encountered, and, at first, a person could secure only one acre, on a lease for a limited term. Not much modification has yet been secured. But the natural beds are still failing, and the supplies from the South are becoming more costly. These are influences which are every year more pressing, and must modify the law in the letter as they already have done in the spirit.

Over 300,000 bushels of seed shells have been planted in the Providence River this spring. Parties from Boston and elsewhere are doing much to foster the enterprise. The grounds around Starve Goat Island, Bullock's Point, Sabin's Point, India Point, and the mouth of Seekonk River are very largely taken already for private beds. The prospect is that ere many years a considerable portion of Narragansett Bay will be portioned off for the purpose of cultivating oysters.

The "seed" at first raised was brought from Fire Island, on the south side of Long Island. Much is now procured up the Seekonk River and from natural beds in the bay and around Somerset, in Massachusetts.

Fair Haven, Ct., parties have been buying shells from Providence dealers for one cent and a half a bushel. They have taken them to Connecticut waters to obtain "sets." The next season they bring the shells back covered with "seed" oysters and sell to Providence men at sixty cents a bushel. This operation naturally prompts the Providence cultivators to make arrangements to obtain "seed" nearer home. They are securing beds at Freetown, Dighton, Somerset, and other places in Massachusetts. Rhode Island law is such that no shells can be carried off the beds where they are found. All gleanings beside the live oysters must be thrown back into the water where they were found. The "culling" must, therefore, be done on the beds.

For cultivating oysters, ground is selected which is a little muddy. The oysters are removed to hard bottom after two or three years. But the first three years' growth is better if there is a little mud. Thus Providence planters think. They discard the idea that deep muddy bottoms can be prepared by covering with gravel and shells. Such deposits sink through the mud at once; but living oysters will keep on the surface and manage to grow. Something in the movements or buoyancy natural to the living bivalves seems to keep them up.

Dealers have made much use of Virginia oysters for opening in cold weather. They are able to keep them alive longer in their waters than is possible on other portions of the New England coast. At most points they will die if left in the water after January.

The months of February and March seem to be trying sea-

sons for even native oysters. Rhode Island planters think the ground goes through some change that seriously affects the oysters upon it at that time. They begin to turn black and many die.

Their beds are often injured by what is called "anchor frost." This is snowy ice that forms in the river, but because of the currents does not remain on the surface. Being carried by the streams to the bottom it catches on the beds. It kills the plants very quickly, seeming to chill them at once.

Dead sea weeds also collect on and smother the oysters. A sponge-like growth is often found, which is quite destructive also. A similar growth, of a red color, abounds and seems to feed and nourish the oysters. While the white kind kills them, the red sponge is good for them.

Five fingers, or "stars," "wrinkles," and "drills" are somewhat troublesome, but not so much so as in waters outside in Long Island Sound.

The theory of the "star" which is entertained there is as follows:

It does its destructive work mostly in the summer months. Then the oyster is growing and has a very thin and tender edge. Some of the oyster's body, a very thin slip, is in this new part of his shell. The "star," clasping his body and fingers around the oyster, breaks off some of this thin edge. Thus an opening is made for the star's stomach. He is able to make this thin enough to enter the thinnest little opening. It can go where edge of sharpest knife could not enter. Then through his piece of his stomach he infuses gastric juice which paralyzes the oyster. He can then get in more of his stomach, open the shell, and possess himself of his prey. This he does very quickly, unless he is disturbed.

The most vexatious enemy to the cultivator, as they all claim, is what they call the "beach comber," or "barne-gatter." These are persons who live around the shores, fish and dig clams, and steal oysters. Because they use iron rakes to rake or "comb" the flats for hard shell clams they are called "beach-combers."

Being residents along the shores, they seem to feel that they have an inalienable right to all they can find in the water. Private ownership of sea bottom they regard as somehow abridging their natural privileges. They have apparently no compunctions in getting all they can from the cultivator's grounds. In skiffs with muffled oars, at night, they carry off whole boat loads. It is difficult to convict them, even when arrested and proven guilty. Public sentiment has always been much in their favor. If taken before a jury, some one interested in some way is very likely to be on the jury, whose course will secure a verdict for or a disagreement.

Moreover, unless one has his grounds surveyed and recorded he can really have no evidence against a depredator. The expenses attending securing and renewing leases, surveys, fees of committee, and making maps are considerable; and there must be a new survey and record each time a lease is renewed. At these renewals much expense is sometimes caused by parties bidding against each other. The law gives any resident the right to bid off such ground. Notice has to be given that application has been made for certain pieces of ground. Others who wish to object, or to make application for the same, can then be heard. This leads to rivalries and expense, as we have said. Cultivators are, however, finding it wiser to agree not to bid against each other. But a very desirable or favorably situated piece of ground is apt to excite considerable of a struggle, costing the planter much money that goes to lawyers or the State.

Against all these vexatious obstacles the business increases, because the demand for good oysters steadily increases. A change of public sentiment is gradually taking place, more favorable to the private cultivator, as the people see the value of this industry to the public at large.

Cultivation means good oysters at reasonable prices. Merely natural supplies mean inferior oysters at high prices. The oystermen are still restricted to the use of tongs or rakes to gather oysters with. The boats used are loaded down the river or bay and towed up to Providence wharves by steam tugs.

A large business is done with opened oysters as well as with those in the shell. Some Providence firms employ forty openers at a time. These are paid for their work at the rate of twelve cents a gallon of solid meats. They can earn good wages at it, one man being known to open nineteen gallons in four hours. The city, though containing over one hundred thousand people, does not use one hundredth part of the oysters raised and handled there. They are sent out through all the New England States and as far West as Toledo, O. These oyster cultivators are among the best known, substantial, and most respected business firms of the city and State. Large amounts of capital are likely to be invested in this industry during the next few years. Sagacious minds are seeing the wealth of returns that are likely to be obtained for their money cast into the sea. The facilities of communication by railroad and steamboat with even far distant places give the Providence oystermen special advantages in sending to market. Their ready sales in the future, as in the past, can only be limited by the amount they are able to produce in their waters.

## Raw Oysters.

Dr. William Roberts, in an interesting series of lectures on digestive ferments, published in the *Lancet*, says: The practice of cooking is not equally necessary in regard to all articles of food. There are important differences in this re-

spect, and it is interesting to note how correctly the experience of mankind has guided them in this matter. The articles of food which we still use in the uncooked state are comparatively few; and it is not difficult in each case to indicate the reason of the exemption. Fruits, which we consume largely in the raw state, owe their dietetic value chiefly to the sugar which they contain; but sugar is not altered by cooking. Milk is consumed by us both cooked and uncooked, indifferently, and experiment justifies this indifference; for I have found on trial that the digestion of milk by pancreatic extract was not appreciably hastened by previously boiling the milk. Our practice in regard to the oyster is quite exceptional, and furnishes a striking example of the general correctness of the popular judgment on dietetic questions. The oyster is almost the only animal substance which we eat habitually, and by preference, in the raw or uncooked state, and it is interesting to know that there is a sound physiological reason at the bottom of this preference. The fawn-colored mass which constitutes the dainty part of the oyster is its liver, and this is little else than a heap of glycogen. Associated with the glycogen, but withheld from actual contact with it during life, is its appropriate digestive ferment—the hepatic diastase. The mere crushing of the dainty between the teeth brings these two bodies together, and the glycogen is at once digested, without other help, by its own diastase. The oyster in the uncooked state, or merely warmed, is, in fact, self-digestive. But the advantage of this provision is wholly lost by cooking, for the heat employed immediately destroys the associated ferment, and a cooked oyster has to be digested, like any other food, by the eater's own digestive powers.

**NATURAL HISTORY NOTES.**

*Fertilization of the Tulip.*—Mr. W. H. Patton, writing to the *American Entomologist*, says: It has been believed that the nectar of the tulip is poisonous to bees, and that they rarely escape from the flower alive. However this may be with the yellow tulip (*Tulipa sylvestris*), in which Kerner has described a special contrivance for excluding small insects from the nectar secreted at the bases of the filaments, it cannot be applied to our common garden tulip (*T. gesneriana*), for in this species there are neither glands to secrete nectar nor tangles of hairs to protect it, and I have never found nectar in the flowers. It is, moreover, small insects which the plant appears to attract, although the smooth cup of the perianth probably excludes crawling insects. Some of the smaller species of bees of the genus *Halticus* I have, during the past five years, observed to be frequent guests, coming for the pollen. They always alight upon either the perianth or the stigma, most frequently upon the latter, and crawling down from their alighting place to the base of the stamens, they then climb up to reach their booty. Whatever pollen they bring from other flowers has, therefore, a chance of reaching the stigma first. The perianth of the flower is red, the stigma is yellow, and the stamens—which are deeper down in the cup of the flower, and thus to a certain extent out of the line of the bee's flight—are black; and it is probable that the marked difference in the color of the stigma serves to attract the bees to the proper and most convenient landing. There appears to have been no direct observations hitherto made upon the fertilization of the tulip by insects. It may be that in the native home of the plant large insects are concerned in its fertilization, or that *T. sylvestris* thus differs from *T. gesneriana*; but Kerner's supposition that the trichomes on the filaments of *T. sylvestris* are intended to exclude small insects from the nectar, is open to doubt, in view of the observations upon the visits of small bees to the other species. A similar structure for protecting the nectar in *Geranium sylvaticum* was believed by Sprengel to serve as a shield against rain, and it may be that this is the real purpose in the tulip. Whether the supposition that the nectar of the tulip is poisonous is founded upon authenticated facts is also worthy of further investigation.

*English Birds Compared with American.*—Mr. H. D. Minot, in an interesting article in the August *Naturalist*, claims that after a residence of over four summer months in England, he found birds less abundant there than with us; but that, on the other hand, their companionship is more readily obtained abroad, and the naturalist need not seek for birds so often as he must in the United States, for the "respect and consideration" shown them there gives some of them, at times, almost a social ease with man, while the English public at large are more reasonable in their instincts and customs than the free and thoughtless American, who must fire his gun whenever he gets a chance, regardless of the true interests of all concerned. Wild pigeons, though heavier than ours, have a more than correspondingly slower flight; and it is curious to observe how heavy the English atmosphere seems to British birds, and how general it makes this difference in speed. The English snipe seemed to the author less quick and dashing than his American cousin, as is also the grouse; while English birds are inferior to those of New England in variety, so are they, on the whole, in coloration and in song. Among English song birds none correspond to our hermit thrush, house wren, water warbler, song sparrow, or solitary vireo. "To all England's song birds that I have heard, on the contrary, except two or three," says Mr. Minot, "we have singers corresponding; and to all absolutely, I may say without prejudice, equals or superiors, as well as I can judge." The nightingale, says he, has a voice of most wonderful compass, and is the greatest of all bird vocalists, but with a less individual and exquisite genius than our own wood thrush.

The wood lark is an exquisite songster, while the note of the song thrush is exceedingly pleasing." As for the English sparrow, Mr. Minot was delighted, almost on his first day among British birds, to meet a genuine old English woman, who assured him that the year before she was "nigh heat hout of 'ouse and 'ome by them sparrows."

**Vegetable Wax.**

In the island of Java a species of wax is obtained from *Ficus gummiflua*, probably by drying the pith. This wax is used for lights, and is manufactured in hard lumps of a chocolate color; it becomes soft in heat, melts at 60°-70° C.; loses in boiling water its brown coloring matter, and becomes nearly white. It is partially dissolved in boiling alcohol, about one-third of it entering into solution and being deposited on cooling in a mammillated form. When treated with cold ether it separates into two parts, which are unequally soluble. These can be isolated by means of solutions in ether and by fractional precipitations after repeated and numerous additions of alcohol. The least soluble part melts at 62°, and, by analysis, it is found to have a composition which is expressed by the formula C<sub>24</sub>H<sub>36</sub>O<sub>2</sub>. With perchloride of phosphorus it gives a chloride which is insoluble in water. The most soluble part crystallizes in a mixture of ether and alcohol, and melts at 73°. Its composition seems to be C<sub>26</sub>H<sub>36</sub>O<sub>2</sub>. The decolorated wax, if submitted to a dry distillation, yields, among other products, a crystalline substance and an oil. The first one, if crystallized in petroleum ether, forms beautiful clusters of crystals, which melt at 67°, and form a liquid, the boiling point of which is 250° (C<sub>12</sub>H<sub>12</sub>O<sub>2</sub>); nitric acid transforms it into a crystallizable nitrate.

**Inversion of Gelatine Negatives.**

M. Isard's method consists in making two layers of caoutchouc dissolved in benzene; when the first of these layers is dry he interposes a film of ordinary collodion containing about 1.5 per cent of pyroxyline, and covers it with the second layer of caoutchouc, this latter being itself again coated with a film of ordinary collodion. When this is finished, strips of the peculiar black paper called *papier à aiguilles* are glued all round the plate, so as to form a frame of the required dimensions, and the whole is then allowed to become thoroughly dry. If now it be desired to at once transfer the negative, it is only necessary to cut through the layer along the outer edge of the paper frame, and by raising one of the corners of the pellicle with the point of a knife the whole may be stripped off in one continuous movement. Provided care has been taken to let the paper get perfectly dry, the pellicle is sure to come off without its dimensions being in any way distorted. It will be seen that by nearly all similar processes we are enabled to get films which are so thin that we can, by inverting, print on either side. We can, therefore, in case of necessity, prepare for the inversion, while leaving the pellicle adherent to the glass plate on which a negative image has been taken; and when we wish to invert the negative, we have only to cut through the edges of the film as above described, and to strip it off the plate.

**Moistening the Air in Mills.**

To the Editor of the *Scientific American*:  
On page 135, No. 9, current issue, Mr. L. E. Bicknell suggests the plan of moistening cotton mills with jets of steam running under the rows of looms for the purpose of moistening the warps, etc. This method has been in operation for many years (thirty years at least) here, and was always considered a success until recently, when a better plan has been adopted, which consists of pipes arranged overhead on the floor beams, and supplied with small glass sprinklers, through which, by means of an air pump (force pump), air mingled with water is forced at about twenty pounds pressure, and forms a very fine spray, which is all evaporated before it reaches the floor. This plan gives a better atmosphere for the operatives to breathe by supplying a proper quantity of oxygen to take up and purify the deadly carbonic acid gas given off their lungs. It also sweetens up the room, and there is not a foul sickening smell that steam always gives off, and the operatives are more cheerful, and there is less sickness among them since its introduction.

J. J. I.

**A False Meteoric Report.**

The *Cleveland Leader* states that at midnight on Saturday, August 16, Caledonia, Marion county, was visited by a terrific thunderstorm, accompanied by hail and the most vivid lightning, flash following flash in quick succession. There had been a political meeting there that evening, and the people from the neighboring villages and surrounding country were detained by the storm. Suddenly the sky appeared as bright as noonday, in fact fine print could easily have been read, so great was the light, but strange to say the light was steady, not flash after flash, as it would have been had the light been caused by lightning. A deafening roar was heard, continuing to become louder as the light became brighter. Gradually the roaring changed to a hissing, sparkling sound. It is needless to say that the people were frightened, and upon running into the street a ball of seeming fire came moving through the air from the northeast. The ball seemed to be at least twenty-five feet in diameter. As it neared the earth the heat could be plainly felt. The body struck the earth just north of the village and buried nearly one-half of itself in the ground. Good judges estimate the weight at three to five tons, but the heat

is yet so great that it is uncomfortable to go nearer than thirty or forty feet. It looks like a mass of pig iron. It was visited by hundreds yesterday. The gentleman who owns the land on which it fell has been offered \$300 for it.

We learn from the editor of the *Caledonia (O.) Argus* that the above statement of the *Cleveland Leader* is untrue.

**ENGINEERING INVENTIONS.**

Mr. Samuel L. Marsden, of New Haven, Conn., has patented an improvement in that class of crushers which operate with a reciprocating moving jaw or jaws. The invention consists in constructing a vertical jawed ore crusher with an adjustable pitman, friction driving pulleys, toggle lever, toggle, and jaw plates, arranged so as to increase the efficiency, durability, and convenience of the machine.

Messrs. Alvin R. Bailey and James B. Glass, of East Somerville, Mass., have patented packing for the piston rods of pumps, and of compressors for compressing air or chemical gases for refrigerators and ice-making, and for other uses. It is so constructed that it will not lose its pliability and usefulness from long use, and which will require only a light pressure to keep it tight, so that the piston rod may work free and cool.

An improved apparatus for increasing the production from oil wells has been patented by Mr. Charles S. Shoup, of Franklin, Pa. The object of this invention is to increase the production of oil wells by inducing and stimulating the flow from the oil rock when it falls. The invention consists in a return pipe connected with the tubes of the pump and the casing head of the well and fitted with cocks, whereby the oil may be passed to the tanks or directed through the casing head, and thence conducted down between the casing and the pump tubing alongside of the steampipe to the oil rock at the bottom of the well, for the purpose of clearing the well of paraffine.

Mr. Conrad H. Matthlessen, of Odell, Ill., has patented an improved road scraper which may be used for scraping and planing roads, and for ditching and other similar purposes. It consists in a novel arrangement of devices for raising and lowering the blade, and for adjusting it to different positions.

**Ancient Man in Missouri.**

The finding of numerous relics of a buried race, on an ancient horizon, from twenty to thirty feet below the present level of country in Missouri and Kansas, was noted in this paper a few months ago. The *St. Louis Republican* gives particulars of another find of an unmistakable character made last spring in Franklin county, Missouri, by Dr. R. W. Booth, who was engaged in iron mining about three miles from Dry Branch, a station on the St. Louis and Santa Fé Railroad. At a depth of eighteen feet below the surface the miners uncovered a human skull, with portions of the ribs, vertebral column, and collar bone. With them were found two flint arrow heads of the most primitive type, imperfect in shape and barbed. A few pieces of charcoal were also found at the same time and place. Dr. Booth was fully aware of the importance of the discovery and tried to preserve everything found, but upon touching the skull it crumbled to dust, and some of the other bones broke into small pieces and partly crumbled away, but enough was preserved to fully establish the fact that they are human bones.

Some fifteen or twenty days subsequent to the first finding, at a depth of twenty-four feet below the surface, other bones were found—a thigh bone and a portion of the vertebra, and several pieces of charred wood, the bones apparently belonging to the first found skeleton. In both cases the bones rested upon a fibrous stratum, suspected at the time to be a fragment of coarse matting. This lay upon a floor of soft but solid iron ore, which retained the imprint of the fibers.

Overlying the last found bones was a stratum of what appeared to be loam or soil from two and a half to three inches thick, below which was a deposit of soft red hematite iron ore, lying upon two large bowlders of hard ore standing on edge, standing at an angle of about forty-five degrees, the upper ends leaning against each other, thus forming a considerable cavity, which was filled with blue specular and hard red ore and clay, lying upon a floor of solid red hematite. It was in this cavity that the bones, matting, and charred wood were found, intermixed with ore.

The indications are that the filled cavity had originally been a sort of cave, and that the supposed matting was more probably a layer of twigs, rushes, or weeds, which the inhabitants of the cave had used as a bed, as the fiber marks cross each other irregularly. The ore bed in which the remains were found, and part of which seems to have formed after the period of human occupation of the cave, lies in the second (or saccharoidal) sandstone of the Lower Silurian.

We have received a finely illustrated 70 page catalogue of wood-working machinery issued by Messrs. Rowley & Hermance, of Williamsport, Pa. It describes a large variety of improved wood working machinery adapted to almost every imaginable use. One of the machines made by this firm is described in another column.

POSTAGE STAMP MUCILAGE.—Gum dextrin, 2 parts; water, 5 parts; acetic acid, 1 part; dissolve by aid of heat and add 1 part of spirits of wine.