The Floods of the Missouri.

The spring floods of the Missouri River were severer than usual, owing to the vast amount of snow to be melted, and the high water was made more than ordinarily disastrous by the frequent ice jams. For some weeks the local papers were filled with more or less exaggerated reports of destruction and loss of life. The hazards of life were undoubtedly many, but fortunately very few people were actually drowned. The commander of the military department embracing that region, General Terry, promptly sent Captain Claque, Commissary of Subsistence, to investigate the losses and provide for the relief of sufferers. In his report Captain Claque says that from the mouth of the Big Sioux River to Yankton, the bottom land on both sides of the river was covered with water its entire width, and looked like an inland sea, with occasional huge drifts of black ice somewhat resembling lava beds. Such sudden and merciless destruction is seldom witnessed in a lifetime. On the Dakota side alone it is estimated that about 225,000 acres of fertile land were submerged. Some idea of the destruction may be conceived when it is known that here was one of the oldest and most prosperous settlements in Dakota, said to average a family to about every 20 acres, and having a railroad transverse its length for about 50 miles, passing through six thrifty villages, now all submerged with water or entirely washed away, Elk Point Station suffering the least on account of its elevation. It may safely be said that no one living on this bottom was left free from serious loss, many having their all swept away—lands, houses, grain, and stock. On the Nebraska side the destruction was much less, as the bottom was not so thickly settled, and did not contain so much land. The most wonderful thing in this whole catastrophe is the small loss of human life.

Wool Sorters' Disease.

For some time past considerable discussion has arisen in the manufacturing districts of England over a malady called wool sorters' disease. Mr. Roberts, the medical officer of health for the district of the Keighley Local Board, treats at considerable length in his annual report for 1880 of the nature and preventives of this disease. In summing up from the report it is recommended that the following precautions be taken without fail by wool sorters: "(1) Wool sorters not to sort dangerous wools when they have any sore places or cracks on their hands or fingers; (2) to be careful not to wipe or rub their faces with their hands while sorting, especially if they have any cracks or pimples on the face or lips; (3) to wash their hands before eating, and to take neither food nor drink into the room where the wool is being sorted." The sorting room, he adds, ought to be well ventilated, to be swept regularly, and to have the walls and ceilings whitewashed twice a year.

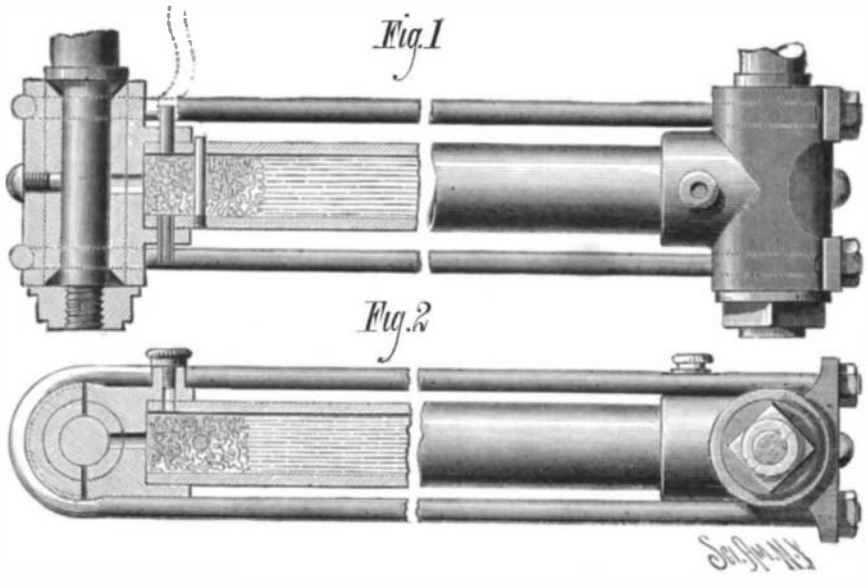
Seats for Shop Women.

The Legislature of New York has passed a bill requiring employers to provide seats for women in their employ. The absence of any seating contrivance likely to prove convenient and usable in the narrow spaces between shelves and counters is more likely to make the new law practically inoperative than any indisposition on the part of employers to deny rest to the saleswomen, for whose relief the law is chiefly intended. Why cannot some bright shop girl utilize the experience she has painfully acquired behind the counter and contrive a seat that will meet the requirements of the case? The market is ready, and the profit might be considerable.

IMPROVED CONNECTING ROD.

The engraving represents an improved connecting rod lately patented by Mr. Jacob J. Anthony, of Sharon Springs, N. Y., and designed for all varieties of machinery in which connecting rods are used. It consists of a straight tube forming an oil chamber, and having on each end a journal box communicating with the interior of the tube. The caps of the journal boxes are held in position by straps extending parallel with the tube on opposite sides of it. In each end of the tube is placed a quantity of fibrous material which acts as a strainer and prevents any impurities that may be suspended in the oil from entering the journals. The fibrous packing is held in place by a pin passing transversely through the connecting rod, and oil is introduced through a hole closed by a screw plug.

When this connecting rod is used vertically an oil cup is placed in the cap of the upper box. This rod has the advantage of being very light and yet strong and free from vibrations, while it is at the same time self-lubricating.



LUBRICATING CONNECTING ROD.

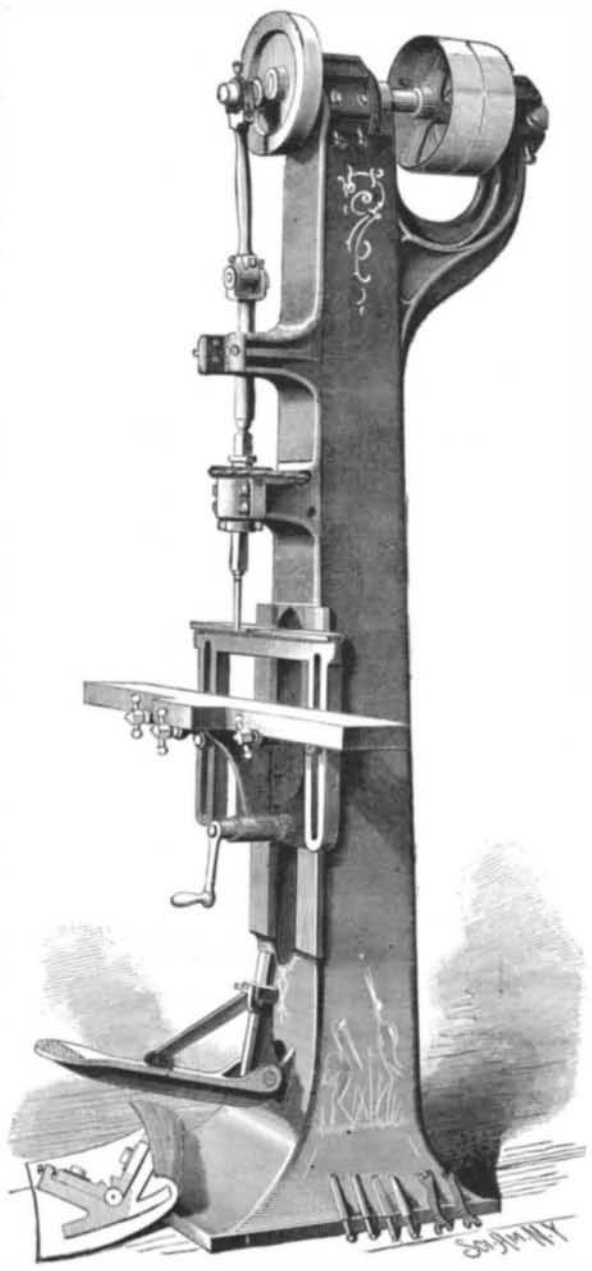
Lead Pipes Corroded by Lime.

It is a common practice with plumbers and house builders to embed lead pipes in lime mortars and cements. A writer in the London *Globe* says that when in contact with lime, lead pipes are rapidly corroded, in some cases so as to become porous and brittle within a space of fifteen or sixteen months. Obviously the careful testing of pipes in such position is in order; and if the facts are as stated, the exposure of lead pipes to lime should be carefully avoided.

NEW STYLE POWER MORTISER.

The annexed engraving shows a power mortiser for mortising doors, sash blinds, furniture, etc. The frame is cast in one solid piece, and the machine is built in the most substantial manner, and can be run at a higher rate of speed than other machines for doing the same work.

In all other mortising machines the cap of the box on crank shaft has to withstand the full effects of the blow of the chisel, thus bringing all the strain upon the caps of the box, causing a great deal of wear and lost motion. In the machine illustrated the solid iron frame is extended over the crank shaft, and the patent sliding caps—shown separately in the small detail view—are placed beneath, and the wear can be taken up by simply setting up the caps. This is an important improvement and will be readily understood. The machine also has the patent three-part box on the vertical spindle.



NEW POWER MORTISER.

The bed can be used for straight mortising in the usual manner, and is capable of being tilted to any angle for radial mortising. It is provided with the belt friction reverse known as the "Smith reverse," which reverses the chisel instantaneously, whether working or at rest. This reverse motion is acknowledged to be the best in use.

The shafts are all of the best cast steel, and the bearings are made very long. The high rate of speed at which this machine is run permits of doing a large amount of work in a given time.

The several improvements on this mortiser make it very valuable and desirable. The manufacturers of this machine call especial attention to their patent three-part sliding cap box, as shown in the detail cut. This box requires no liners, and the side as well as top wear can be taken up by setting down the governing screw.

Rowley & Hermance, the well known manufacturers of woodworking machinery, Williamsport, Pa., are makers of this machine.

Henry Chisholm.

In the death of Henry Chisholm, May 10, Cleveland, Ohio, lost a useful citizen and the iron trade one of its most deserving and capable pioneers. Mr. Chisholm was born in Scotland in 1822, and at the age of twenty emigrated to Montreal, Canada. In 1850 he removed to Cleveland to build a breakwater for the late terminus of the Cleveland and Pittsburg Railroad Company. For several years he was engaged upon the improvement of the Cleveland docks and piers. In 1857 he turned his attention to the manufacture of iron, forming the company of Chisholm, Jones & Co, setting up a rolling mill. Two years later the company which he founded set up the first blast furnace in that part of Ohio, and in the years immediately following several other furnaces and mills were established by this firm at Chicago and in Indiana.

In 1864 the firm of Stone, Chisholm & Jones organized the Cleveland Rolling Mill Company, and the year after they constructed the second Bessemer steel works in the United States. In 1871 Mr. Chisholm organized the Union Rolling Mill Company, of Chicago, and in connection with his Chicago partners erected another rolling mill at Decatur, Ill. These enterprises, the outgrowth of the original establishment in Cleveland in 1857, gave employment directly to 2,500 men. Mr. Chisholm was much esteemed by his neighbors and employes.

Arsenic Sulphide as a Poison, and its Import in Judicial Investigations.

The question was raised whether in a certain dish of cabbage containing arsenic sulphide, there was poison enough to prove fatal to a man. From a number of experiments the author concludes that arsenic sulphide, whether prepared in the moist way, or the orpiment of commerce used by painters, forms, in contact with putrescent organic matter, arsenious and small quantities of arsenic acid. In cases of poisoning with arsenic sulphide these oxidation products appear sooner or later according to circumstances. Hence, if articles of food, vomited matter, etc., are only sent for chemical examination after the interval of weeks, or perhaps months, the expert cannot give a definite answer to the question whether the poison was sufficient in quantity to prove fatal to a man.—*J. Ossikovsky.*

ENGINEERING INVENTIONS.

An improvement in that class of devices which are designed to be applied to boilers for automatic extinguishment of the boiler fires when the water in the boiler evaporates to a point below the low water line, has been patented by Antonio A. Amuedo, of Algiers, La.

Mr. Reuben Jones, of Mountville, Ga., has patented an improvement in horse powers which consists in the peculiar construction of the driving wheel, carrying an endless rope, whereby the latter is prevented from slipping on the driving wheel.

Mr. Thomas Trimble, of Albia, Iowa, has patented a removable platform and arm loop, to be used on freight cars to prevent accident to life while coupling the cars together. The invention consists in a light narrow platform removably attached to the outer end of a freight car, and a suitable loop for the brakeman's arm secured to the platform.

An improvement in dumping cars, patented by Mr. David E. Small, of York, Pa., consists in the peculiar construction of the plate for connecting the tilting body of the car to the truck, the plate being made with elevated side supports, which raise the pivotal point of the car body sufficiently high to enable it to be tilted without striking the truck too soon, and the supports have an offset at one side of its fulcrum, which catches and sustains the car body when in a horizontal position.

An improved automatic valve operator for tanks has been patented by Messrs. Alexander Jones, Charles Collins, and Hartwig A. Cohen, of New York city. The object of this invention is to provide a device for preventing the waste of liquids caused by the overflowing of tanks on account of the carelessness of the attendants or the inefficiency of the devices for indicating the exact quantity of liquid in the tank.

Mr. John F. Smith, of Erie, Pa., has patented an improved nut lock particularly adapted to bolts for connecting the ends of railroad rails, but capable of being applied to bolts

and nuts generally; and the invention belongs to that class of nut locks wherein a ratchet block or spring stop is employed between the inner face of the nut and its contact surface, and engages with grooves upon the said inner face of the nut to admit of the free movement of the nut in one direction and prevent it from moving in the other direction.

The Yellow Pine of the South.

The average height of the yellow pine, says a southern writer, in the virgin forest is from 60 to 70 feet, with a diameter of 12 to 18 inches for two-thirds of its height. It is of slow growth, particularly at the later periods of its life. According to the number of annual rings, trees of the above dimensions must have reached an age of 60 to 70 years. The reproduction of a tree from the seed, furnishing an equal supply of timber, would at this rate take two generations. It is a poor seeder, as the younger Michaux observed. In unfruitful years, a forest of hundreds of miles may be ransacked without finding a single cone, and these, according to my observations, are far more frequent than fruitful ones. In its struggle for existence in our days, the odds of a survival of its kind among the arborescent vegetation that disputes its ground are greatly against it. Taken from the flat and moist lands, and it is replaced almost exclusively by the pond and old-field pine; the hilly, broken, dry upland, denuded of the grand old pine forest, is with surprising rapidity covered by a dense and scrubby growth of blackjack, turkey oak, scarlet, and upland willow oak, above which seldom a young pine raises its head, crowned with its large white-fringed terminal bud.

Full of resinous juices through all stages of its life, the young trees are not as able to withstand the raging fires that annually devastate the woods as the less resinous species and the deciduous-leaved trees; besides that, being of much slower growth, this noble tree is doomed to extinction if not protected by the aid of man. On tracts sheltered from the invasion of fire, groves of young trees from 15 to 25 feet high, can be observed around Mobile, testifying that its existence for the future can in some measure be secured if protected from these destructive influences, unnecessarily caused by man. The utmost efforts by an enlightened community should be made through active and efficient State legislation without further delay, to guard against the calamity of a total destruction of such a magnificent estate intrusted to the hands of our people. Besides its contributions to the manifold necessities of the agriculturist, the builder in naval architecture, the construction of railroads, the arts, medicine, and the innumerable smaller demands of domestic economy, and the varied industries of the world, the influences of this great belt upon the climatic conditions and the salubrity of the Southern coast, are even of more far-reaching importance to the interest of the community at large, extending far out of its confines. Rearing its horizontally outspreading limbs high up into the atmospheric ocean, their branches densely clothed with the long, slender leaves, the forests of these trees present to the canopy of heaven, for many hundreds of square miles, an unbroken sheet of perpetually active vegetation, whose forces at such an altitude affect a constant attraction of the fleeting clouds, causing them to deposit their life-giving and supporting humidity in grateful showers over a large area with wonderful regularity during all seasons. To this fact is due the delightful climate of this part of our country, equalizing its temperature, particularly in tempering the rigors of the long summers of a region near the tropics.

During the great progress of meteorological science of late years, the fact has been established that in this exercise upon the conditions of the atmosphere, as regards the precipitation of its moisture, the pine trees stand unrivaled among all other trees of the forest. Robbed of this protection, the hills and the plains of the Gulf region, now blooming and clothed with the richest verdure, would be arid and parched, presenting as forbidding and austere an aspect as those of the denuded coast of Africa along the Mediterranean Sea, devoid of productive power and unfit for the habitation of civilized man. The efforts of nature are ever directed to recuperation in its aims to insure the existence of different forms of the living organisms from generation to generation.

To secure to our posterity the blessings enjoyed by us in its bounty in assisting these efforts as directed by her laws, is a stern duty imposed upon us. Its discharge in the prevention of a wanton destruction of our forests and the adoption of measures regulated by the light of science, common sense, and the proper regard to the future, should engage the attention of every intelligent and patriotic citizen, appealing particularly to the owners of the soil. Of little importance to agriculture and industry are the other species of pines found in this region. Of considerably smaller dimensions than the yellow pine, and of a soft and sappy wood, they have, as timber trees, but a small value.—*N. W. Lumberman.*

ENGLISH SOFT PORCELAIN.

In England no regular hard porcelain is made, but a soft porcelain of great beauty is produced from kaolin, phosphate of lime, and calcined silex. The principal works are situated at Chelsea. The export of these English porcelains is considerable, and it is a curious fact that they are largely imported into China, where they are highly esteemed.

ENGLISH SOFT PORCELAIN VASE.

Our engraving shows a richly ornamented vase in soft porcelain from the works at Chelsea.

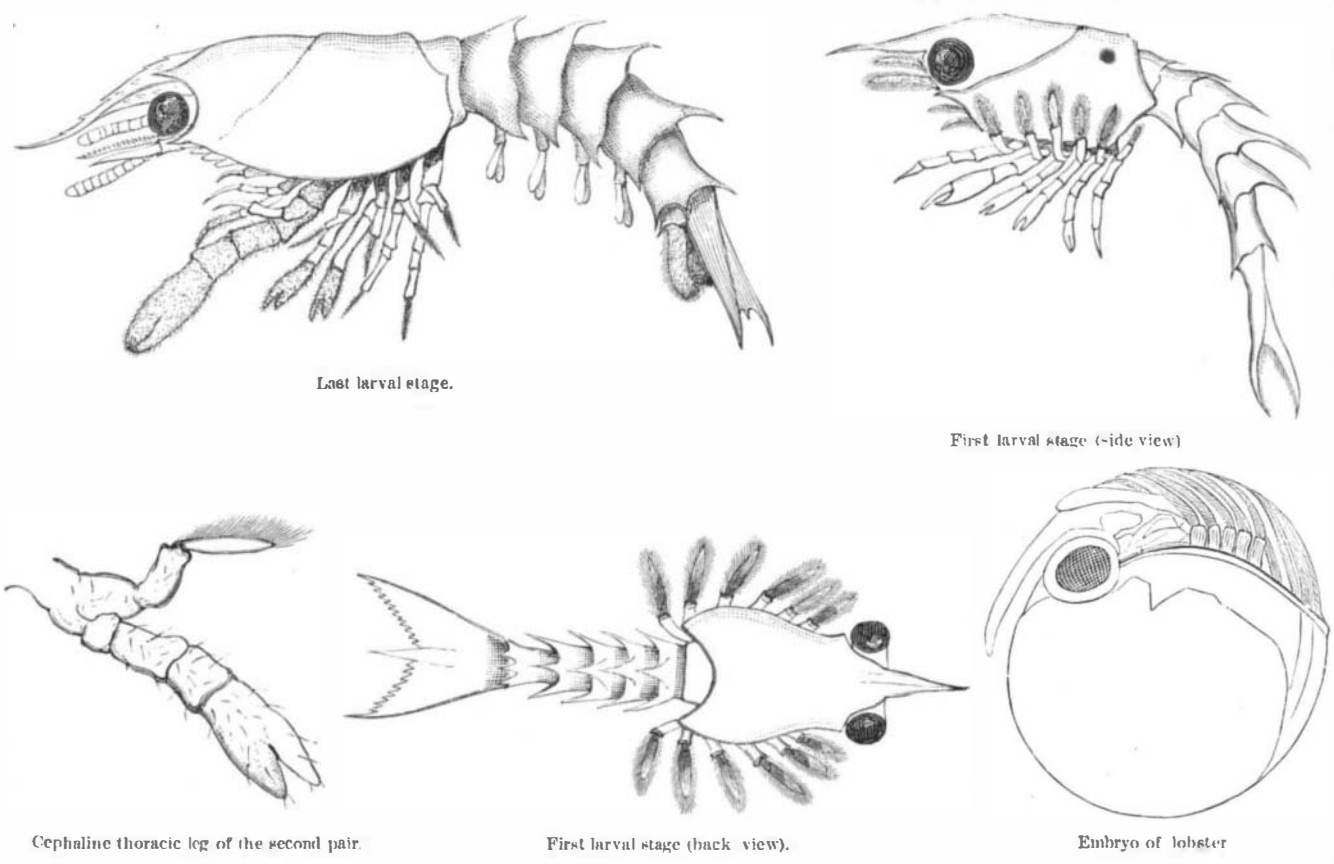
LOBSTERS.

BY A. W. ROBERTS.

Previous to the establishment of the oil works at Hunter's Point and Greenpoint, the lobsters caught at Hell Gate were considered to be the finest that came to the New York markets. But the few caught now are so strongly impregnated with sludge, acid, and coal tar, that it is next to impossible to eat them. There is no doubt that the blastings at Hell Gate destroyed immense quantities of lobsters; so great a dread have lobsters of thunder that they will cast off their large claws when a loud clap occurs or when a gun is fired. In olden times captains of vessels often extorted blackmail from lobster fishermen by threatening to fire cannon over their fishing grounds, knowing full well that the concussion would cause the lobsters to cast their claws, thereby destroying their value. Our common lobster (*Homorous Americanus*) belongs to the order of long-tailed crustaceans (*Macroura*), which includes the crayfish, prawns, and shrimps. As an article of food the lobster is the most important of all crustaceans, and dates back to the early ages of the world. Latium was famous for its lobsters, and Athenæus, whose cook book is the oldest in the world, mentions Apicius, who spent much of his time at this place on account of its lobsters.

Fifty years ago large quantities were taken on the reef of rocks that extended from Castle Garden to Pier 4, North River, and also on the reefs off Governor's Island; now only a few are taken in the neighborhood of Fort Lafayette, our markets being supplied from Maine, Nova Scotia, and Massachusetts, the lobsters reaching here alive in "well" smacks. Large quantities are sent to New York from Boston, all ready cooked, during the winter season. On the Maine and Nova Scotia coasts thousands of girls, women, and boys, are employed in the canning of lobsters. On the first floor of these canning establishments are brick furnaces, in which are placed large copper boilers filled with sea water kept at boiling heat. As fast as the lobsters are received fresh from the fishermen they are plunged into the hot water for a few minutes, after which they are distributed on long benches covered with zinc. The women and girls then break them up and extract the solid meat from the tails and large claws, the only parts used in filling the cans, which are then placed in shallow boilers to expel the air before sealing them up, after which they are taken to the second floor to be labeled and packed in boxes capable of holding four dozen cans; these sell at four dollars per box. The number of lobsters boiled per day varies from one thousand to three thousand. The American canned lobster goes to all parts of the civilized world.

The usual way of catching lobsters is in what are known as "pots." The "lobster pot" is made of a variety of materials, laths, netting, and wicker work. On the Eastern coast nearly all the pots are made of laths, forming a long semicircular cage; at each end is a door, which lifts up when the lobster presses against it; after he has passed in the door drops back into its place, and the lobster is imprisoned, as the door cannot be raised from the inside; others have a funnel-shaped netting of rope. The pots are weighted with stones and fastened on set lines, which are buoyed at each end to mark their positions. A smart fisherman can fish one hundred and fifty pots on a single line, but it is very hard and laborious work lifting and hauling up from the deep water into the boat so many heavily weighted pots; each pot has to be rebaited and emptied of its lobsters, also cleared of all seaweed and drift. The pots are baited with what are known as "evil" fish, such as stinging rays, skate, bonkers, etc., which cost the fishermen a few cents per hundred-weight. After the lobsters are caught they are placed in large stationary cars provided with a hopper on the top, the lobsters are thrown into the hopper and pass into the car, where they remain until the "well" smack returns from New York for a fresh load. Lobsters are in season all the year round, but are the fattest from April to October. It is a mistake that any part of the lobster is poisonous; although the "lady," which is the stomach of the lobster, is very tough and indigestible, it is not poisonous. The bluish vein situated along the back and tail is to be avoided, as it often causes sickness. Lobsters are prepared for the table in many ways, the flesh is boiled, fried, pickled, scalloped, and is used for soups, salads, sauces, croquettes, pies, and pastry, but the most delicious of all is a fried "shedder" lobster. A "shedder" is a lobster who is within one or two days' time of casting its shell, which is removed artificially from the lobster before cooking. The shell of a lobster is composed of an unyielding calcareous substance, which, without doubt, is a most excellent defense for a *full grown* lobster, but it leaves no room for growth. To overcome this, all crustaceans possess the power of shedding their shells at certain seasons of the year, after which a new shell is formed; this again is cast off, and so continually until the animal has attained its full growth. Not only is the shelly coat of the body and limbs cast off, but also the following portions of the body: The foot-stalks of the eyes, external cornea of the eyes, internal thoracic bones, membrane of the ear, membranous covering of the lungs, tendons of all the claws, lining of the stomach, and the stomachic teeth. There can be but little to wonder at that a lobster often experiences great difficulty in shedding



Last larval stage.

First larval stage (side view).

Cephaline thoracic leg of the second pair.

First larval stage (back view).

Embryo of lobster.