THE EDIBLE CRAB.

The life history of the crab is extremely interesting. The strange little animal that escapes from the egg resembles in no respect the parent crab. Its form is lengthened, ending in a forked tail; on the back is a long spine curving backward, and on each side a short spine directed outward. The eyes are large but not projecting, and the head is armed with a mosquito-like rostrum. This first stage of the crab is called zoea. After remaining for a certain length of time in the zoea form, it comes forth from its infant skin an entirely changed animal. Here the eyes are very large and projecting, the body squarish, without the long spine seen in the first stage; it has eight perfect legs and two claws; the "tail" has become short, and turned under; and yet it has no resemblance to the mature crab. This second form is called the megalops or great-eyed stage. When it again changes its skin, the body assumes a much broader shape; a distinct spine appears on each side, and the tail-like process is doubled up under the body. When its skin again becomes too tight for it, it at length comes forth a small but perfectly formed crab, *Callinectes hastatus*.

The crab is obliged to moult or cast off its shell many times during its life. This moulting appears to be an unpleasant ordeal to pass, for they often die during the act. When we see that they are not only obliged to escape from the carapax or shell, but also from the hard covering of their legs, delicate mouth parts, and even gullet—turning themselves inside out, as it were—it is not surprising that they perish during the ordeal. The crab crawls up into some secluded nook or cove in shallow water to moult, out of the way of its hard-shelled relatives, for the helpless, newly moulted, or "soft shell crab," if found, is devoured by them, as well as by several species of fishes.

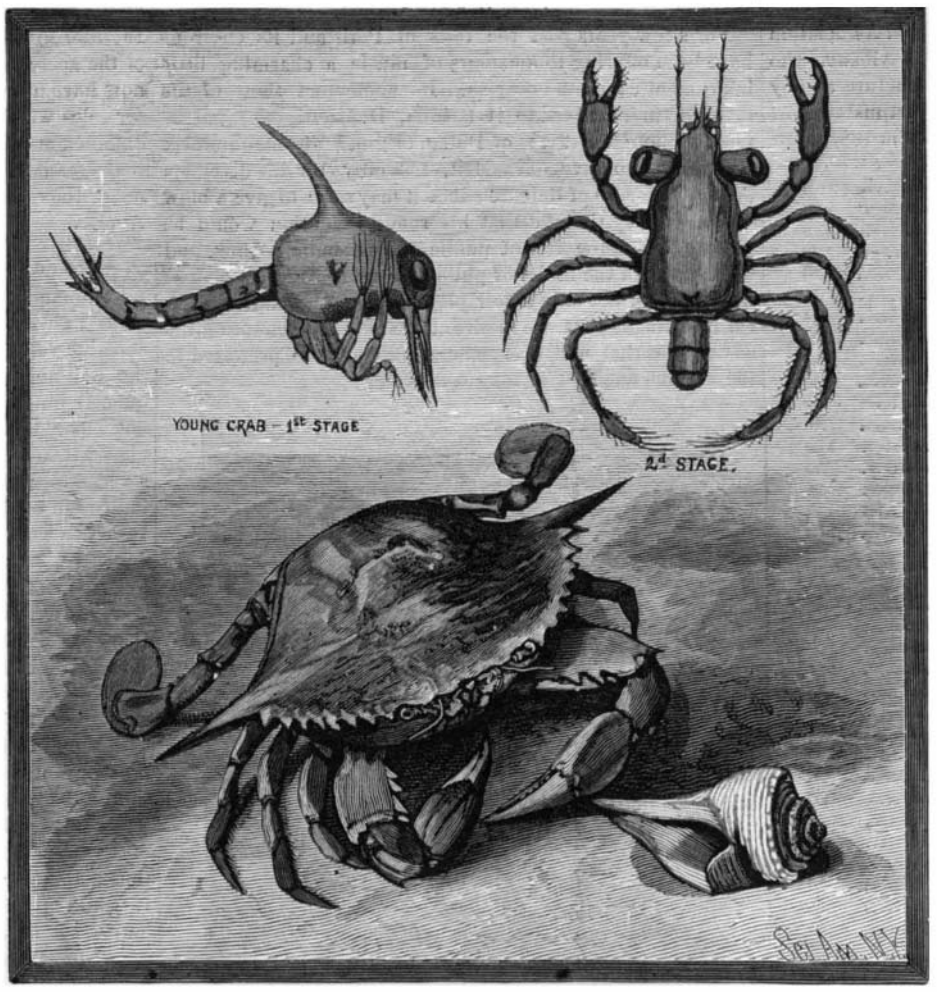
Fortunately for the crab, the soft covering hardens rapidly, and in a few hours it has a new and strong armor, and it then goes fearlessly out into the deeper water among the eel grass.

Crab fishing is an amusing but not always exciting sport. You simply row up into some shallow cove or bay of the seacoast, which has a muddy and grassy bottom, cast anchor, tie a good sized piece of meat on a strong line, lower it to the bottom, and wait for a bite. When you perceive a tug at your line, pull it up gently until the crab is visible; you must not attempt to lift it out of the water by means of the line, for then the crab will quit its hold and escape, but with one hand quietly but adroitly get the dip net under it, and with a dexterous sweep land it in the boat. Frequently two or three crabs are caught on the line at once.

Should you chance to go crabbing with a party of ladies, be extremely careful that they do not overturn the basket of lively crabs about their feet, for if this happens you will have your light skiff almost or entirely upset by the ladies jumping up and standing upon the seats, and you will get your fingers pinched, perhaps until the blood comes, as you recklessly endeavor to catch the crabs as they wildly scamper about the bottom of the boat. I have learned this from experience.

The edible crab of our coast can always be known by two long lateral spines of the carapax. The claws are blue above and whitish beneath, and the carapax above is of a dull olive or bluish color. It is called the "blue crab" by the fishermen of the New England coast.

C. FEW SEISS.



THE EDIBLE CRAB.

SADDLE MEN.

In Nepaul, India, there is a class of natives who serve as "saddle men," and take the place of saddle horses. Strapped around the waist and fitting into the curve of the back is a padded ledge. It is supported vertically by shoulder straps.

The rider rests on the ledge, in the position shown in the engraving, which is from the *Graphic*, and represents the Duke of Portland, and the Earl De Grey, going on a hunting excursion. Ladies of rank in this part of India are carried on "saddle women," in the same style.

SADDLE MEN.

Rain and Snow.

A paper giving results of experiments with rain gauges differently located, and of experiments as to the ratio of depth of snow to the depth of same when melted, by Edmund B. Weston, was lately read before the Amer. Soc. of Civil Engineers. It was found that in a number of experiments extending over considerable periods of time a gauge 14 ft. 8 in. above the ground collected 9 per cent less water than one 8 in. above the ground; that a gauge 22 ft. above the ground collected 10½ per cent less water than one 8 in. above the ground, and that a gauge 3¼ ft above the ground collected 6·7 per cent less water than one 3 in. above the ground.

The average result of 53 experiments at one point was that the depth of snow was 6·25 times the depth of the same when melted, and the average result of the same number of experiments at another point gave 6·64 times the melted depth.

Wood Flour.

A letter from the Catskills to the New York *Sun* says: The chief industry up here is producing wood flour, a kind of cousin to wood pulp. It was first manufactured in the Catskills about nine years ago, and now over twenty mills are in full blast. The process is exceedingly simple. Any soft wood tree—poplar is the favorite—is felled and drawn to the mill. The bark and boughs are removed, and the trunk put in a machine which is nothing but a lead pencil sharpener on a large scale, with four or more knife edges instead of one. On starting the machine the pencil sharpener revolves with great swiftness, and in a few minutes converts the log into a hundred miles of fine, clean shavings. These are ground and bolted exactly as in a flour mill. The product is a soft, fine, yellowishly white flour, similar in appearance to a very well ground corn meal. It possesses a slight woody smell, and is almost tasteless. It is put up in large bags, and then is dispatched, unmarked, to the buyers.

I tried to find out who purchased the article, but with no success. The wood miller was not very communicative. "It makes," he said, "well, I don't know how much exactly. One log may give five bags, or it may give ten. It sells, well, that is, pretty tolerable. I reckon I clear about $8 or $9 a day out of it—perhaps more. I never figured it up. What's it good for? Good many things. It's used to stiffen paper, but if you put in too much the paper gets brittle. Paper stock is much dearer than poplar flour, and that's why they put it in. If you mix the flour with linseed gum and 'biled' oil, you may get a kind of oil cloth. Some folks mix it with meal to give to pigs and other animals. I guess it's good, but I never give it to my hogs, and even those fellows give it to some other fellow's critters, and not their own. Yes, I heard that some bad contractors mixed it with meal for army and Indian supplies, but I don't take much stock in the story, because they could buy sour meal as cheap as poplar flour. It wouldn't pay to mill pine, cedar, or hemlock; they are worth too much as timber. But any wood that isn't used that way can be milled into flour. I use poplar almost altogether, but when I run short of logs I grind up buttonball, birch, elm, or willow."

The farmers dislike the new industry, as it promises to play havoc with the forests, which are both an attraction to the border and a protection to agriculture. The tanneries years ago used up all the oak and hemlock; the lumbermen have stripped the country practically of pine, cedar, and walnut; the chair factories are consuming the hickory and maple; now the wood flour mill promises to grind up what remaining trees there may be.

Opening of Great Grain Regions.

Russia has resolved to develop her system of railway communication on an enormous scale, and for this purpose has just contracted a loan of $75,000,000, to be expended during the next few years. India has already built lines of railway penetrating the furthest provinces. Australia has also made long strides in the same direction. Next in order is the Argentine Confederation, in South America, which is building four additional trunk lines of railroad at a cost of $28,000,000, to connect Buenos Ayres, her principal seaport, with the vast granaries opening up in the pampas of the interior. In every case the ultimate purpose is to overcome all impediments in reaching the central grain markets of Europe. And, in spite of all this, says the *British Trade Journal*, American grain speculators continue their efforts to artificially maintain the price of wheat, as though there were a great deficiency in the supply of the world, and the nations would eventually have to come to them begging the privilege of being allowed to purchase some of their surplus.

The Cost of Making Stoves.

At the late semi-annual meeting of the National Association of Stove Manufacturers, Mr. John T. Perry, of Albany, who probably knows as much about stove manufacture as any one, made the following statement of the estimated cost per ton of making stoves in the United States in 1884:

Foundry Cost.	
Iron	$20.00
Mounting material (nickel panels, rails, etc., not included)	8.00
Fuel for all purposes	2.75
Moulding sand and clay	.40
Facing	.25
Patterns, flasks, and lumber material	.75
Shipping material	.10
Freight and expressage	1.25
Machinery and tools	1.75
Repairs	.40
Gas and oil	.20
Stationery and books	.10
Rent	1.00
Insurance	.40
Taxes	.25
Miscellaneous and pilferings	.40
Castings broken and discarded that have been paid for	1.00
Total	$39.00
Labor.	
Moulding	$24.00
Mounting	8.00
Pattern making	1.45
Pattern fitting and repairs	1.50
Pattern moulding	.25
Carpenters	1.25
Cupola men, breaking iron, etc	.75
Cleaning and filing	2.00
Engineer	.30
Shipping	1.05
General labor	1.00
Watchman	.20
Foreman, moulding, and mounting	.50
Clerk	.50
Trucking	.75
Miscellaneous and pilferings	.50
Total	$45.00
Selling Expenses.	
Allowances, various kinds	$1.25
Attorney's fees	.25
Advertising, circulars, etc	1.75
Bad debts	2.00
Clerks	1.60
Freight on stoves delivered	1.00
Gas and oil	.10
Insurance	.20
Interest	2.00
Discount for cash	2.50
Miscellaneous and pilferings	.50
Postage stamps and telegrams	1.00
Rent	1.00
Stationery	.15
Traveler's wages	2.75
Traveler's expenses and general traveling	3.25
Taxes	.20
President and Secretary	1.50
Total	$23.00
Grand total	$107.00

In connection with the above, Mr. Perry said: "Gentlemen, everything in this world is imperfect, and so is this statement. Many of the items, I know, and you well know, are too low; for example, $5.20 per ton, or $15,600 for the year, for patterns and flasks, on a product of 3,000 tons, should be put down at twice that sum. Some items may be too high, and in many cases should be excluded altogether from the list, yet I believe the average cost on the basis named, taking one year with another, will reach $107, and generally more than that sum."

Properties of Quicksilver.

One of the most curious properties of quicksilver is its capability of dissolving or of forming amalgams with other metals. A sheet of gold foil, dropped into quicksilver, disappears almost as quickly as a snow flake when it drops into water. It has the power of separating or of readily dissolving those refractory metals which are not acted upon by our most powerful acids. The gold and silver miners pour it into their machines holding the gold bearing quartz; and, although no human eye can detect a trace of the precious substance, so fine are the particles, yet the liquid metal will hunt them out, and incorporates it into its mass. By subsequent distillation it yields it into the hands of the miners, in a state of virgin purity. Several years ago, while lecturing before a class of ladies on chemistry, we had occasion to purify some quicksilver by forcing it through chamois leather. The scrap remained on the table after the lecture, and an old lady, thinking it would be very nice to wrap her gold spectacles in, accordingly appropriated it to that purpose. The next morning she came to us in great alarm, stating that the gold had mysteriously disappeared, and nothing was left in the parcel but the glasses. Sure enough, the metal remaining in the pores of the leather had amalgamated with the gold, and entirely destroyed the spectacles. It was a mystery which we never could explain to her satisfaction.—*Fireside Science.*

PUSCHER, in the *Chemiker Zeitung*, states that the following cement resists kerosene, and is useful for cementing the brass collars to glass lamps. One part of caustic soda, three parts of resin, and five parts of water are boiled together; the resin soap thus produced is mixed and well kneaded with half its weight of plaster of Paris. It hardens in about three-quarters of an hour. If zinc white or dry white lead is used, it hardens more slowly

THE OCARINA.

For a few years past the fairs of Paris and its environs have been offering to amateurs of music a charming little instrument called the ocarina. Its name and those of the manufacturers affixed to it (Girola, Donizetti, etc.) tell us plainly enough that it is of Italian origin. The mountaineer who is said to have devised it, not only for his diversion but also a means of defense (since it may serve togive a blow with), scarcely thought that his rough invention would be patented, have the run of public places, enter parlors, and even figure in the midst of philharmonic societies.

It is, then, not only a new plaything, but a genuine musical instrument that we desire to extol in enumerating the advantages that will everywhere cause it to be preferred to the wooden flageolet or the tin flute.

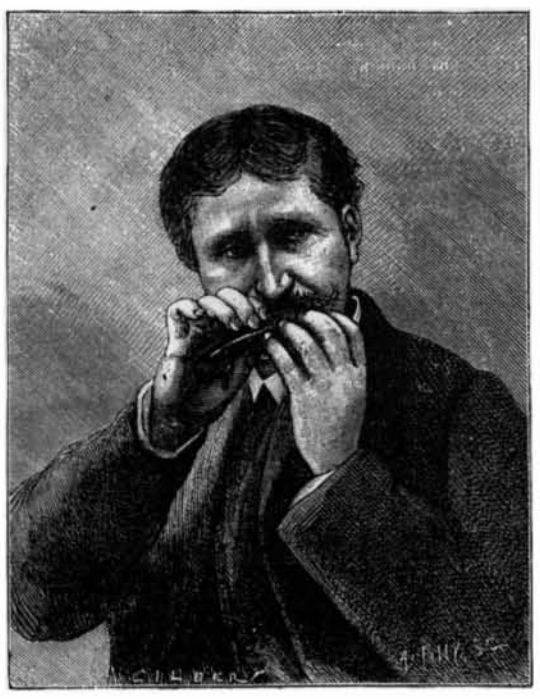


Fig. 1.—MODE OF USING THE OCARINA.

At its debut the ocarina was merely a little glazed baked clay, having the form of a black radish externally, but hollow internally, provided at the side with a mouth piece, and having nine or ten little apertures along it in place of keys (Fig. 2, No. I.). Its sonorous power ranged from *ut* natural to *fa* of the octave, passing through all the notes of the chromatic scale. It remained as primitive as this for a long time, and more than one amateur was enabled to draw from it lullabies and other music of the kind; but the programme that could then be got from its circumscribed range had its limit there.

A certain band of minstrels once passed through our northern towns, and their presence there has not been forgotten. This little troop had put aside the harp, the mandolin, and the violin, in order to give delightful serenades with well tuned ocarinas. It was original and delightful. But although in harmony, their scores, since they varied only from the melody to the third of the same octave, did not have the same interest as if they had been rendered from a grave to a sharp tone; and this gave rise to the idea of manufacturing the instrument in different sizes. So there soon appeared the soprano ocarina, which was smaller than an ordinary carrot and clearer than a small flute, and the double bass ocarina, larger than a pumpkin and graver than the alto. The principle remained the same. But the

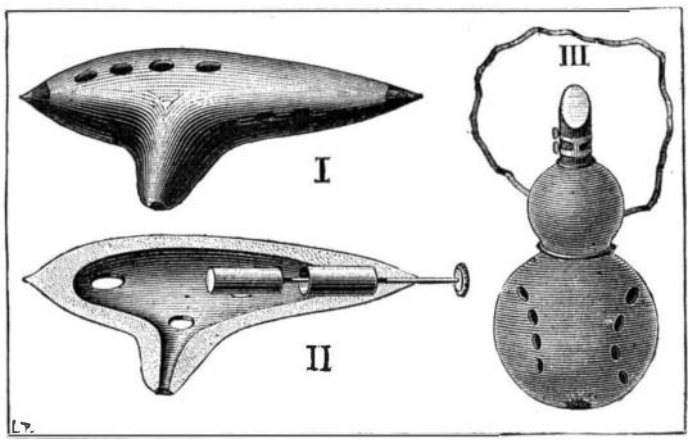


Fig. 2.—THE OCARINA IN PERSPECTIVE AND SECTION.

ocarina still had one drawback, and that was that it could not accord with the piano or the flute, from which it sometimes differed by one note. To obviate this, the instrument was provided with a piston, which, when drawn out or pushed in, raised or lowered the sounds by one note (Fig. 2, No. II.).

Finally, as a last improvement, a series of keys was added, symmetrical with the row of holes on the left side, thus giving a second complete scale.

The idea embodied in this simple instrument has caused us to make an experiment that has proved quite successful. We took a pilgrim's gourd, and first made some minute apertures in it, arranged something like those of the ocarina. For a mouth piece we affixed to it with wax an old one from a clarinet that was provided with a reed. In order to obtain notes—perfect gamuts—we enlarged each of the apertures with a knife until it gave the tone, and we now have a sordine that in no wise cedes to the hautboy for solos which are not very complicated. The sounds thus obtained are preferable to those given by the ocarina, since they emanate from wood, and not from clay. The instrument thus modified is shown in Fig. 2, No. III.—*La Nature.*

Need of Improvements in Marine Signals.

Commander Gorringe has written a letter in regard to ships' lights, called forth by the Tallapoosa disaster, which contains valuable suggestions. He shows that not only are the red and green side lights now carried by vessels frequently mistaken one for another, even by men who are not color blind, but that the position in which they are placed is such that in certain circumstances it is possible for a vessel to alter her course sixty degrees without giving any indication of the alteration by the appearance of her lights. In other words, the present system of lights is miserably defective, as is shown by the fact that it has failed in hundreds of instances to prevent collisions at sea. In the place of the red and green side lights it is proposed that every vessel shall carry four range lights. Two of these should be placed forward, and two aft. Of the forward lights one should be a white light and the other a red light, the latter to be placed somewhat higher than the other and some distance aft of it. The after lights should be arranged in a similar manner, except that the red light should be lower than the white light. This arrangement would render it possible to ascertain from the appearance of a vessel's lights the course steered by her, and the direction and amount of the slightest deviation from that course. It would also enable a steamer to avoid running directly into the stern of a slower vessel where both are steering the same course, and no one on board the slower vessel has the forethought or opportunity to a display a "flare." One objection to this plan is the fact that most persons who are to any extent color blind are unable to see the red ray. Were a blue light to be substituted for the red light, and were range lights to take the place of side lights, nothing except the grossest stupidity could bring about a collision between two vessels on a clear night.

Ear Diseases.

Dr. K. Buskner in a very elaborate paper in *Archiv fur Ohrenheilkunde* gives the results of his clinical observations and those of twenty other aural surgeons. From these he finds that on an average out of every three individuals in middle life one does not hear so well in one ear as in the other, while from an examination of five thousand nine hundred and five school children twenty-three per cent presented objective pathological symptoms of ear disease, and thirty-two per cent a diminution of hearing power. The following general conclusions are drawn from this immense mass of detail:

1. The most frequent causes of diseases of the ears would seem to be attacks of cold, affections of the nasal and pharyngeal cavities, and acute infectious diseases.
2. The liability to disease, of the ear increases from birth to the fortieth year, and decreases from thence to old age.
3. Men are more subject to affections of the ear than women, as three to two.
4. The external ear is affected in twenty-five per cent, the middle ear in sixty-seven per cent, and the inner ear in eight per cent of the total number of diseases of the ear.
5. The left ear is more frequently affected than the right, as five to four.
6. The acute affections of the middle ear occur less frequently in the summer and autumn than in spring and winter.
7. Of the total number of cases of ear disease in the outpatient cliniques about fifty-three per cent are cured, about thirty per cent are improved, seven per cent. are unimproved and three-tenths of one per cent terminate fatally.

Safe Lubricating Oils.

The standard of a perfectly safe lubricating oil, free from spontaneous combustion, which was established by the experiments of the Boston Manufacturers' Mutual Fire Insurance Company, is as follows: A mineral or "paraffine" oil, so called, bearing:

1st. A fire test of 300° or more.

2d. An evaporation of 5 per cent or less in twelve hours, at a constant heat of 140°.

3d. The greatest degree of fluidity consistent with keeping the oil upon the bearing.

There are now few or no oils offered to the members of the mutual companies by oil manufacturers of repute which do not meet this standard; but there are some of the members who prefer an admixture of fine animal oil to give more body to the lubricant.

To this end high-grade neatsfoot oil is sometimes mixed with mineral oil, and so long as the oils remain thoroughly mixed as much as 25 per cent of neatsfoot oil may be safely used. But five recent cases of spontaneous combustion (fortunately all extinguished without loss) have called attention to a tendency in these oils to separate, so that the neatsfoot oil has apparently been applied nearly free from mineral oil, and in such cases fire has ensued. Great care should therefore be taken that mixed oils are kept in safe condition by frequent agitation or stirring.