

# OYSTER

A GASTRONOMIC HISTORY  
{WITH RECIPES}



DREW SMITH



*Sunset over oyster farms in Tainan, southern Taiwan.*

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*Osias Beert the Elder, Dishes with Oysters, Fruit, and Wine (detail), c.1620.*



# FOREWORD

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The Celts did not hold with writing things down; they saw it as weak-minded. The proper storyteller should remember. He should remember things from his father, that came from his father, and from his father . . . if he could imagine that far back—all the way back to Neolithic Grange Barrow, on the river Boyne 3,400 BC, perhaps, and probably before that, as if there existed some perpetual line of Druid storytelling that would stretch so far.

The Celts were not the only people who were disadvantaged by not writing things down in the great saga of ours. So let us tell it as if we are moored on a packet boat on a Cornish creek, as the swell of the tide lifts us off the mud; or on a warm Louisiana bayou, drifting, waiting for the wind to get up, or we are waiting to dive from a galley in the Red Sea or off a row boat off Broome Bay, Kimberley, northern Australia.

Waiting, yes, oysters are good at waiting.

Tucked darkly in their calciferous shells, listening warily for dangers, breathing oxygen into the water, sifting the silt, changing sex, the oyster has witnessed all our histories, all our struggles.

Yes, we eat oysters, but that is only one part of our story, their story. The oyster was here before we were. Before once upon a time. Before, you might say, time itself. Back then oyster reefs encircled the continents, a great shelf or ledge between the ocean and the land that we used to haul ourselves up on, along, whichever it was, and row ourselves around this planet, cove to cove, not cavemen but covemen.

Take one in your hand, feel the scratch of the shell of what we now call rock, prise it apart and you will have Mother Earth's chronicle of the planet and a taste of the future.

Treat it with respect.



*An assortment of fresh oysters. Flavors vary widely, depending on the environmental conditions in which they grow.*



# ANATOMY OF AN OYSTER

*When the sapid and slippery morsel—which is and is gone like a flash of gustatory summer lightning—glides along the palate, few people imagine that they are swallowing a piece of machinery (and going machinery too) greatly more complicated than a watch.*

**Thomas Huxley**  
**“Oysters and the Oyster Question”**

# PERFECT ASYMMETRY

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**M**any things set the oyster apart from other creatures. Most living things are symmetrical. We have two arms and two legs, fish are perfectly aligned left to right, birds have two wings, even most other bivalves have shells that are neatly, roughly equal in size. Not the oyster.

The two sides of an oyster shell are completely different. The top shell is flat, or flatter; the low side is cupped and sagged because all the conchiolin has leached downward by force of gravity. And even though an oyster may choose to grow vertically as well as horizontally, the effect is the same. The explanation is simple, but it has no parallel in the universe.

The oyster is the one stable creature in an otherwise completely changing estuary environment. Biology has often stalled on the underlying challenge of it being almost impossible to draw precise comparisons between oysters, even of the same species, raised in one estuary to those raised in another, which is another part of their charming uniqueness. Where everything else moves, the oyster stays still.

To early man the oyster had other virtues. It was portable. Bagged up, it could hang off the side of a boat and travel to sea or back home again. Closed up in the shell, the meat stayed fresh and succulent for days. It was wholesome, nutritious food, too, full of energy-giving minerals: calcium for bones and vitamins that the early diet would have lacked so badly; a source of nutrition far superior to anything else available to wandering Neolithic families.

The oyster was as universal as man, more so in the beginning, whenever that was: Africa, India, Southeast Asia, Japan, China, the Philippines, Australia, New Zealand, all the Americas; so long as there was a coastline, where the waters were neither too salty nor too pure, not too cold nor too hot, the oysters spawned. In Europe they clung to the landmass down from Norway along the North Sea through the English Channel, around the edges of the French, Spanish, and Portuguese coasts and formed a collar around the Mediterranean.

*Can any thing in this world be more foolish than to think that all this rare fabric of heaven and earth can come by chance, when all the skill of art is not able to make an oyster?*

**Jeremy Taylor, "Apples of Sodom"**

The beds formed a ribbon along the Moroccan coast, penetrated the Black Sea as far as Crimea, and they wrapped themselves around the coast of Ireland. Britain was encircled by oysters even as far north as Orkney. We can presume that Anglo-Saxons survived and were powerful in part because their home on the Frisian peninsula was also an oyster bay.

The semi-salt waters protect the oyster from other predators, and so long as there is a firm rock footing to gain attachment; so long as the sea currents are not so strong as to destabilize the colonies; so long as the temperatures are not too extreme; and so long as no hurricane comes to muddy the beds, the oyster thrives.



*Fresh oysters demonstrating that the top shell is flatter while the lower side is cupped.*



*Fresh oysters on a market stall, Deauville, Normandy, France.*



# OYSTER SOUP

Make this recipe in two stages, preparing the stock the day before eating the soup.

Serves 4

*2 tablespoons butter*

*1 leek, topped, tailed, rinsed and sliced thinly, diagonally*

*1 carrot, peeled and chopped*

*1 bunch (3 to 4 ounces/75 to 100 g) fresh parsley, tough stems trimmed*

*3 cups (750 ml) white wine (see Note)*

*16 oysters, scrubbed*

*1 bunch (10 to 12 ounces/250 to 300 g) spinach, tough stems trimmed*

*4 tablespoons heavy cream*

*Fresh bread*

*To make the stock, melt the butter in a large saucepan over medium heat. Add the leek and carrot and sweat the vegetables for 5 minutes. Add the parsley as a bunch and pour in the wine. Shuck half the oysters and add them, with their liquid, to the vegetables and wine. Reduce the heat and simmer for 10 minutes. Take the saucepan off the heat and leave to stand.*

*To serve the soup, return the saucepan to medium heat. Lift out the parsley and discard. Warm your soup plates. Shuck the remaining oysters and add to the warming soup. Throw in a handful of the spinach per person. The moment the spinach wilts—about 1 minute—add the cream. Take the saucepan off the heat. Stir the soup and ladle into soup bowls. Serve with fresh bread.*

*Note: If making larger quantities, dilute the wine fifty-fifty with vegetable stock.*

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## OF PEDIVELIGERS AND CONCHIOLIN

Oysters spawn in the spring, when the waters start to warm. The young larvae propel themselves along using cilia, or hairs. When they get older, and stationary, they will use these same cilia to sort the food. The spat travel quite long distances, perhaps 2 miles (3 km) up or out of the estuary. After a week they start to sink toward the ocean floor. By then each will have started to grow a shell, and under a microscope can be seen to have taken an oyster shape. After fourteen to eighteen days, they will clasp on to a hard object, where they will settle forever.

Unless, that is, man transplants them to different waters to fatten off. Some will take two years to reach marketable size, others five or six years. Left to themselves, oysters can live to be fifty or more. Oysters found in Lake Bras, Canada, have been found to be one hundred years old. Finding something to attach to before giving up mobility forever is a momentous choice for an oyster. Out of preference it will choose another oyster to settle on. The larvae are, even at this stage, particular about the kind of foods they may eat and may also be listening out for the calling of the rest of the colony before committing themselves. There seems to be a primitive communication system that attracts larvae to settle near other larvae and oysters.

While the infant ostrea are still floating, they develop a pair of eyes—no one is fully agreed on their function—and a foot that they will use to glue themselves to their final resting place. At this stage they are, scientifically speaking, called pediveligers. If not to another oyster, the young pediveliger will cling to a hard stationary object like a rock, a mangrove tree, the solid bottom of the estuary, or the post of a pier. They have been found attached to bricks, boats, cans, tires, bottles, even crabs and turtles. If they are cultivated they will be ushered on to tiles, ropes, sticks, rafts, or bamboo.

Hanging in the water, the shell continues to form. The mantle inside absorbs the calcium ion from the seawater; it secretes the conchiolin, which in time becomes calcified, and forms the shell. Since so much of the conchiolin secretion occurs around the mantle's edges, the shape and position of the mantle determine the shape of the shell.





*Pacific oyster farmer in Woollooware Bay, Botany Bay, New South Wales, Australia.*

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## THE PURITY OF PLANKTON

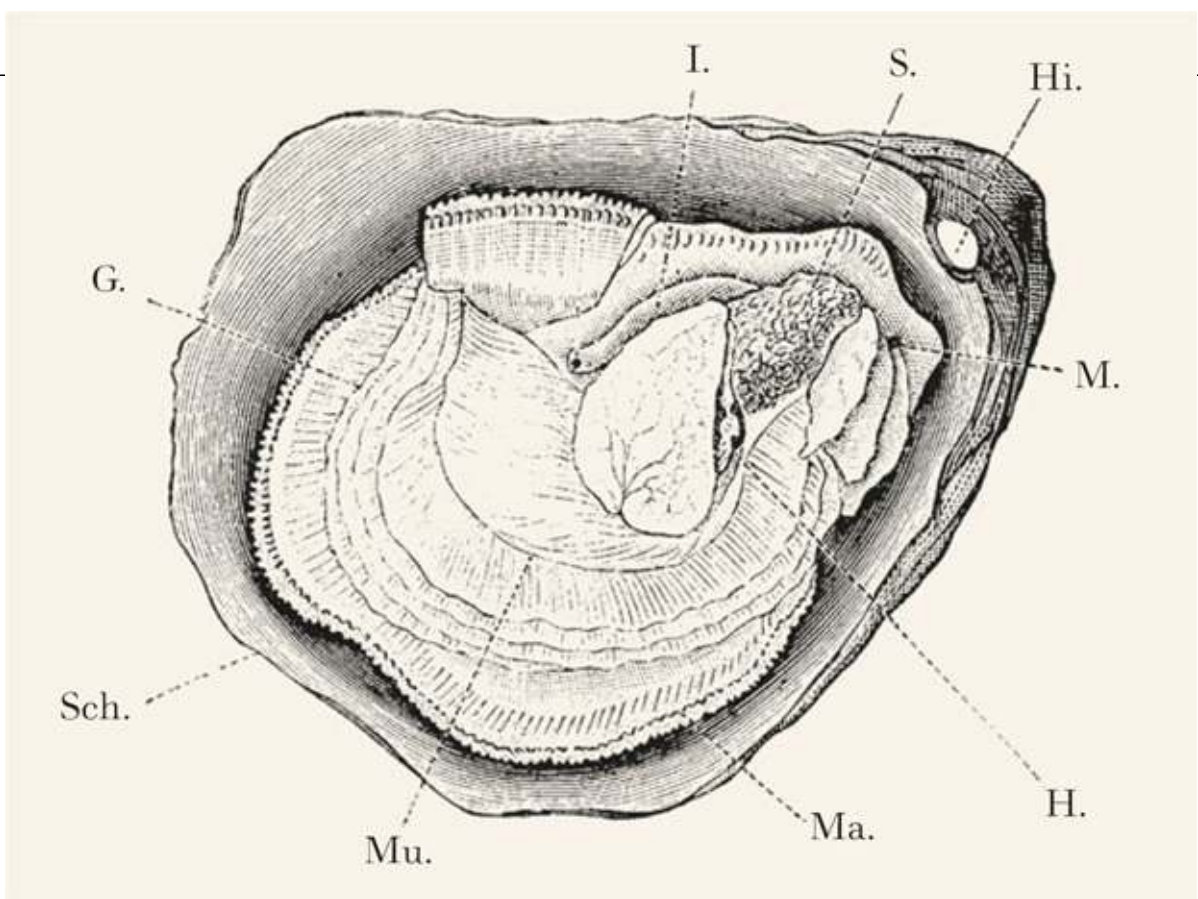
Although the oyster is sessile, its world is far from static. It lives in a constantly changing flow of plankton rushing through the estuary, creating myriad shifts in environment and diet, washing the oysters clean as well as delivering the precious algae that they diligently filter and sort. The plankton on which an oyster feeds are an array of micro-matter, pushed around by tides and winds, replenished by rainfall and washed off the riverbanks—a living soup held in suspension on the ocean currents.

We know what an oyster eats. Scientists have dissected the contents of an adult oyster's stomach and found a constellation of tiny plankton that enjoy their own marine biological sub-language—study as early as 1933 reported the following as an oyster's dinner: algae, tintinnids, silico-flagellates, dinoflagellates, ostracods, eggs, and larvae of marine invertebrates, pollen grains from land plants, detritus, sponge spicules, and sand. It is because of this plankton that the oyster is such a valuable part of an estuary ecosystem, and also why it is such a nutritious food itself. In a sense it is pure plankton. The richness of this diet allows it to grow, relatively speaking, spectacularly quickly and to create such a resilient shell in so short a time.

## OYSTERS ARE SENSITIVE

Oysters react physically in the same way that we taste or smell. That is an oyster's essential sense. In case of danger, they close their shells. They react to light, to levels of salt in the water, to temperature, to shadow and sound. They have complex responses to changes in the environment.

Any disturbing change in the water, or even just a passing shadow, stimulates the nerves of the mantle and causes the adductor muscle to close the shell. The inner ridge, the largest of the three, is muscular and mobile. It pumps water in and out of the shell fifteen times a minute, washing the body and keeping it constantly bathed. As long as the shell stays shut and retains this liquid, the oyster can ignore most predators, can survive in polluted waters or exposure at low tide, and can withstand the trauma of being transported.



Anatomical diagram showing the internal organs of the oyster (H: heart; M: mouth; Hi: hinge; S: stomach; I: intestine; G: gills; Sch: shell; Mu: adductor muscle; and Ma: mantle).

Walk along the beach near an oyster cove at low tide and you can hear—even from quite a distance—a series of short, sharp spitting sounds as the oysters react and close their shells. They are powerful. Canadian trials have shown that it would take a pull of more than 20 pounds (9 kg) to open up a 4-inch (10-cm) mature oyster that has clamped its shell shut.

An oyster breathes like a fish, using both the gills and the mantle. A small three-chambered heart lies under the adductor muscle and pumps colorless blood, with its supply of oxygen, through the body. An oyster also has two kidneys to purify the blood. The food is sorted by the lips and passed into its digestive system; then, through a coiled intestine, expelled through the rectal chute.

## **AN UNUSUAL SEX LIFE**

Oysters are bisexual, in the original terminology, meaning they can change from one sex to the other at will. They change from male to female and back again seemingly as they like, even during a single breeding season. The female lays her eggs in the shell, the male ejaculates, and the sperm is carried to her on a wave of plankton. What makes an oyster change sex is a mystery, although a change in water temperature may be a trigger.

The scientific literature says it was not until 1937 that J. H. Orton in the UK and R. Sparek in Denmark realized that oysters were changing sex at all. During Orton's research, a set of laboratory oysters marked as females started producing sperm. Astounded, Orton drilled holes in the shell. He watched through a microscope as the females changed into males over a few days. It seemed that as soon as the female oyster discharged her eggs, she transformed back into a male quite quickly.

The change from male to female took much longer—weeks, even months, irrespective of the conditions. Being bisexual makes for easier reproduction. Biologically, the oyster's anatomy is almost abstract. The female has no glands for making albumen or need for a womb to protect the eggs because she has her awesomely powerful protective shell; nor does the male need a penis or anywhere safe to stash his sperm. Nor is there any paraphernalia needed for courtship. There is simply less to get in the way of a sex change than with other creatures. The follicles produce eggs or sperm, or vice versa—a minor issue for a bivalve. It usually seems that the young oysters mature as males, then slowly change to become females. A female will guard the larvae in her shell for twelve days and then release them into the estuary to swim off in search of a safe place to settle.



*An oyster farmer in Malpeque Bay, off Prince Edward Island in the Gulf of St. Lawrence, Canada, breaks apart clusters of oysters allow proper growth of individual oysters, 1948.*

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## PROTANDRIC OYSTERS

The Pacific *Crassostrea* have no less an interesting sex life, albeit slightly different. They are able to change sex at will. They will spawn either as males or produce eggs as females and ejaculate both seed and eggs into the estuary to fertilize in the water (unlike the oyster, which lay their eggs in the shell, where the females fertilize them). The scientific term for this is “protandric,” which means the male organs develop first and are then inhibited to allow the growth of the female organs. They begin life male and change to females the following season. After that they seem to prefer to stay female most of the time but will, and can, revert. The older the oyster, the more likely it is to be female. The dictionary describes it grandly as “sequential hermaphroditism.” The ratios on a reef at any given time vary wildly. One study showed 100 females to 73 males, but in another account it was 13 young males for the same level of females.

Not incubating the larvae means as much as 80 percent of the *Crassostrea*'s bodyweight may be turned to sperm or eggs. A male ejaculation in a colony triggers other males to follow suit. The females sense what is happening and immediately start to release their eggs. Soon the whole reef will be covered in white clouds of floating eggs and sperm. In the context of a single oyster, fertilization seems almost impossible. How can a sperm find an egg when let loose in the wilds of the river? The answer is that oysters congregate en masse naturally. They spawn across each other. They send out hundreds of thousands of sperm and eggs at the same time, like pollen. The shells of the parents become the breeding grounds for the next generations.

## OYSTER NUTRITION

The way an oyster feeds makes it a highly nutritious food. Dietary textbooks hopefully recommend them for the young, the infirm, and the elderly. The prospect of a granny shucking oysters in her armchair, or a mother slipping an oyster into a sick child's supper, may smack of nutritional hubris, but it was a familiar recommendation from old apothecaries, and the analysis is solid enough. The oyster would also have made an ideal food for sailors, settlers, fishermen, and early nomadic natives.

A dozen oysters can amount to fewer than 100 calories but are worth as much in protein as a 4-ounce (100-g) steak and contain as much calcium as a glass of milk. Unusually for any living animal or marine food, oysters are also a source of vitamin C. They are low in fat because their fat is primarily glycogen and starch. The glycogen (stored glucose) would have been an important source of energy, especially useful for people facing long hard days of labor, building new settlements.

The cocktail of vitamins that an oyster provides would have been a viable alternative to fruit and vegetables, and would help stave off diseases like scurvy, particularly for early sailors. Vitamin B12 was thought only to originate in fungi and bacteria, but it is the most pronounced of all the vitamins found in an oyster. Vitamin B12 influences nerve cell activity, the metabolism in general, and DNA replication, and it improves your mood. It is often prescribed as an aid for depression.

In lesser amounts, in descending order, the oyster will have vitamin B1 (thiamine), which helps convert the glycogen into energy, vitamin B2 (riboflavin), vitamin C, niacin, vitamin A, vitamin B6, and vitamin E.

The highest quantity of mineral in an oyster is zinc, which protects and supports the immune system, helps to heal wounds, and promotes general growth, especially in pregnancy and childhood. Curiously, the next largest mineral is copper. Zinc often inhibits the absorption of copper into the

body, which in turn allows the body to absorb iron. Iron and selenium are the other main minerals among a supporting cast that includes magnesium, phosphorus, manganese, and calcium.

By instinct, if not perhaps by science, early medicine across Europe, going back as far as the Romans, assigned oysters as therapy for a number of ailments, including tuberculosis, catarrh, stomachache, anemia, and for invalids in general. Pliny was an enthusiast and suggested them for improving the complexion. This was one reason for driving oysters inland to cities.



*Oysters in Port Gamble Bay, Washington, USA.*



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