

THE BREEDS OF FOWLS.

THERE has just appeared at the book house of Emile Deyrolle a work on the "Breeds of Fowls," by Mr. La Perre de Roo, giving a complete history and description of all the breeds of fowls known up to the present time, and they are numerous.

The domestication of the barnyard fowl dates back to remote antiquity. Darwin, says the author, thinks that he is able to fix the time of the introduction of it into Europe in the sixth century before Christ. Formerly there was but a single species of wild cock known, but now we know four very distinct and characteristic species, viz., the Bankiva cock (*Gallus Bankiva* or *ferruginea*), the Lafayette or Stanley cock (*G. Lafayettei* or *Stanleyi*), the forked cock (*G. furcatus* or *varius*) and the Sonnerat cock (*G. Sonneratii*). It is especially in the vast forests and the mountains of India and other countries of Asia that we find the

ernment Entomologist, came to the rescue. He had, after careful investigation, definitely ascertained that the scale in question was a native of Australia, and that it was not practically injurious there. Here was the clew, and it was skillfully followed up. Long correspondence with Australian entomologists, and the dispatch of a carefully instructed agent to that country, resulted in the discovery of the parasite now so well known as *Vedalia cardinalis*, which keeps the Cottony Cushion Scale in subjection in its native home. When the scale was inadvertently brought over to California upon Australian oranges, *Vedalia* had been left behind, with the result that its host, the scale, had multiplied without restraint, as commonly happens when an insect is imported without its natural checks. Forthwith a large shipment of living *Vedalias* was made from Australia to California, and the surprising result is known to everybody. Within a few months the scale was obliterated, orange culture

service rendered by him to me, and which I assure him will ever be appreciated by me."

Vedalia is rather a pleasing name, and it is not surprising that there should be as a substantial commemoration of this entomological romance a Cathryn *Vedalia* Riley, the youngest of five girls, who form part of a happy family at the well-known entomologist's home at Sunbury, in Washington.—*Mechanics Monthly*.

ANTARCTIC SEALS.

By WILLIAM S. BRUCE, Naturalist to the Antarctic Expedition, 1892-93.

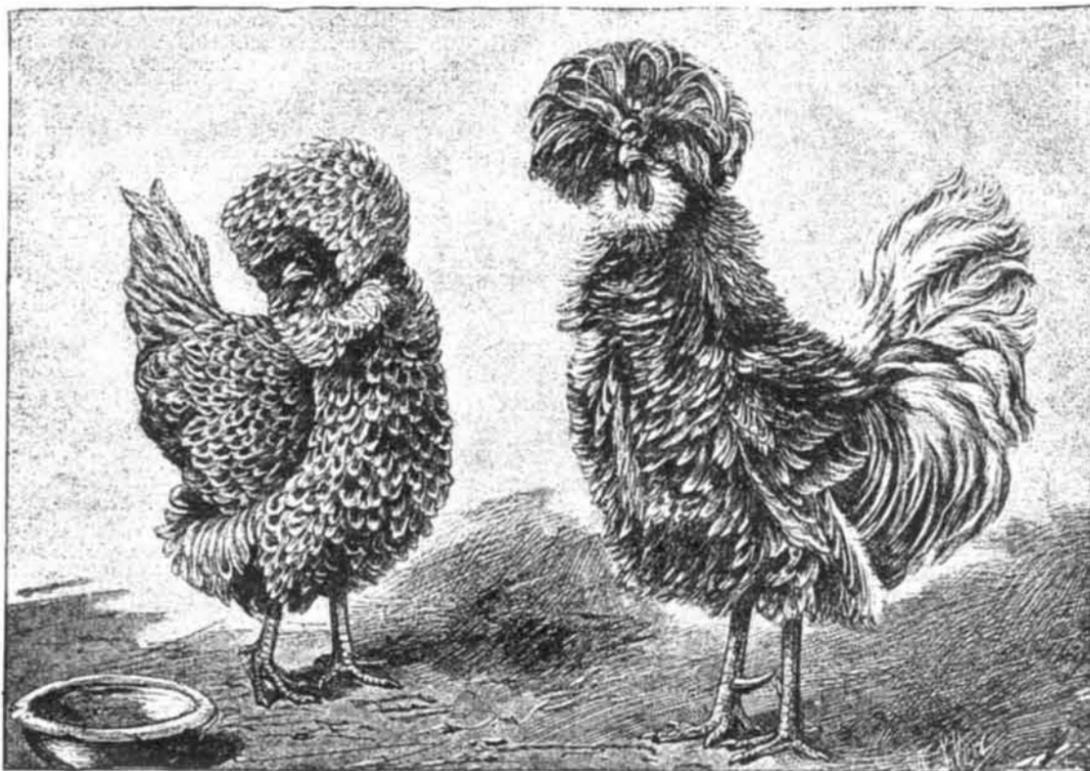
AFTER a period of dormancy extending over more than half a century, the Antarctic is again being opened up to scientific investigation and to commerce. Scotland and Norway sent out five vessels last year, and Norway is again to the fore this year; New Zealand also is said to be eager to join the chase. It seems also likely that work of a more purely scientific nature will be undertaken in the Antarctic during the coming year. Some readers may, therefore, be interested to hear something about the southern seals, which differ very considerably from those of the north.

In the Antarctic only two of the great families of seals are represented; they are the sea lions and sea bears, or eared seals (*Otariidae*), and the more specialized true seals (*Phocidae*); the intermediate family of walruses (*Trichechidae*) being entirely absent. In recognizing nine different species of *Otariidae*, Mr. J. A. Allen divides the family into five species of sea lions and four species of sea bears, and three of these five sea lions and three of the four sea bears belong to southern seas. The true seals he divides into sixteen species, and five out of these sixteen species of true seals belong to southern seas. It is from the sea bears of the *Otariidae* family that ladies' seal-skin jackets are made; the under skin, to which the long, rigid hairs are attached, is shaved off, and the long hairs fall out, leaving the upper skin with the soft under fur alone. The Falkland Islands fur seal (*Arctocephalus falklandicus*) is noted, however, for the evenness, shortness and elasticity of the fur. The fur is soft enough to wear as a rich fur without the removal of the longer hairs, which are always removed in the other fur seals. The skins of all other seals, whether sea lions or true seals, are used for making leather. The tens of thousands of seals that are slaughtered annually off Newfoundland and Greenland supply us with patent leather, and similarly the twenty to thirty thousand seals' hides that the Dundee whalers brought home from the Antarctic last spring will eventually be used for the same purpose. Crocodile leather, which we see in such vast quantities nowadays, is also said to be largely made from seals' skins. Besides skins, seals provide a great quantity of oil. During the recent trip to the south, the Dundee vessels secured from seven hundred to one thousand tons of seal oil; this is largely used in the jute manufactory for moistening the fibers, and this fact possibly accounts for Dundee not only being "Juteopolis," but also practically our only remaining sealing and whaling port. But now mineral oils, which are so cheap, are taking the place of animal oils in the jute factory, as they have in other branches of industry, and the masters and owners of sealers and whalers are beginning to think it hardly worth while fishing seals and whales for oil alone.

Concerning the sea bears, or fur seals, and the sea lions, or hair seals, of the Antarctic very little is known. The former have an abundant soft, silky under fur, are black when young, and ultimately yellowish or whitish-gray color; and the latter, the sea lions, have no under fur, but only coarse, hard, stiff hair; they are yellowish or reddish-brown, dark when young, but become lighter as age advances. The groups generally live apart, but have the same geographical distribution. They are gregarious, polygamous, and the males are from three to five times as large as the females. They differ very markedly from true seals in having the power to turn their hind limbs forward, and thus use them for locomotion on land; the presence of a small external ear is another characteristic. Of the Alaskan seal herd, Mr. H. W. Elliott gives the following graphic description, which may be extended to the southern herds: "The fighting between the old males for the cows is mostly—or, rather, entirely—done with the mouth. The opponents seize one another with their teeth, and then, clenching their jaws, nothing but the sheer strength of the one, and the other tugging to escape, can shake them loose, and that effort invariably leaves an ugly wound, the sharp canines tearing out deep gutters in the skin and furrows in the blubber, or shredding the flippers into ribbon strips.

"The bulls generally approach each other with comically averted heads, just as though they were ashamed of the rumpus which they are determined to precipitate. When they get near enough to reach one another, they enter upon the repetition of many feints or passes before either the one or the other takes the initiative by gripping. The heads are darted out and back as quick as a flash; their hoarse roaring and shrill piping whistle never cease, while their fat bodies writhe and swell with exertion and rage; furious lights gleam in their eyes; their hair flies off into the air, and their blood streams down. All this combined makes a picture so fierce and so strange that, from its unexpected position and its novelty, this is one of the most extraordinary brutal contests man can witness."

Mr. J. A. Allen has done much to simplify the classification, but the utmost confusion exists in most of the attempts made to classify them. Many attempt to divide them into a great many genera, but Mr. Beddard considers that if "the genus be split up at all it should be divided into *Otaria*, containing only the Patagonian sea lion (with its various synonyms) and *Arctocephalus*, comprising all the other species." The latter have narrower and more pointed noses and longer ears, besides other anatomical differences. The most notable is the Patagonian sea lion (*Otaria jubata*), which is represented by a living specimen in the gardens of the Zoological Society. Besides inhabiting Patagonia and the coasts of South America, this remarkable animal is also found in the Falklands. As is well known to frequenters of the Zoological Gardens, this animal in captivity becomes remarkably tame,



COCK AND HEN OF THE FRIZZLED BREED OF CHILE.

various species of wild fowl in large numbers. They are met with also in the wooded portions of the mountains of Java, Ceylon, etc.

To return to the work above mentioned, let us say that it contains a description of all the breeds known, their history, particular study of the male and female, their habits, characteristics, etc. All the varieties, moreover, are studied and discussed. The work is illustrated with 121 figures in the text and 32 plates, both in black and colors, giving the principal types. We give herewith two specimens of these engravings, representing the cock and hen of the frizzled breed of Chile, the cock and hen of the breed known as *sabot*, and the cock and hen of the breed of Nangasaki, variety *coucou*. We are happy to make the appearance of this very complete work on the breeds of fowls known.—*Le Naturaliste*.

VEDALIA CARDINALIS—A TRIUMPH OF SCIENTIFIC METHOD.

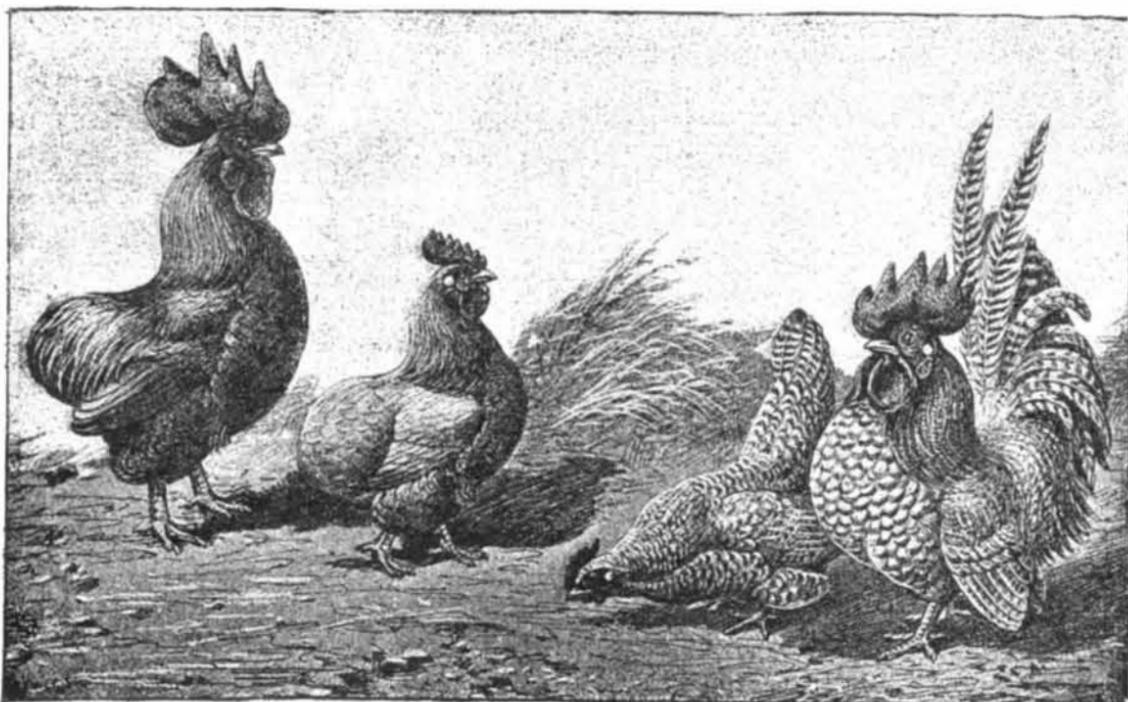
SOME three or four years ago California orange culturists were almost in despair at the ravages in their orange groves of an insect known variously as the Fluted Scale, the White Scale or the Cottony Cushion Scale (*Icerya Purchasi*). For a time it looked as if orange culture would have to be abandoned in California, but just in the nick of time Prof. Riley, Gov-

was again on its feet, and *Vedalia* had become a household word in California.

The experiment was successfully repeated in the Hawaiian Islands, where also the scale threatened to extinguish orange raising, and last fall a special commissioner from the Cape of Good Hope arrived in the United States, with the purpose of securing a supply of *Vedalias* for use in his country, where the scale was menacing orange culture. He was given every assistance possible, both at Washington and in California, and went home with a good stock of the insects. One package was kept upon ice during the voyage (the method adopted in the original importation into California) and a second was left open, that the insects might be fed *en route*.

The special commissioner alluded to, Mr. Thos. A. J. Louw, has recently reported to the Department of Agriculture the entire success of this latest colonization of *Vedalia*, the insects having reached the Cape alive and well, and been distributed to various infested localities, and there is every reason to believe that they will make as rapid and effectual a clearance of the scale in South Africa as they have in California and Hawaii. In closing his letter to Assistant Secretary Willets, Mr. Louw says:

"While thanking you again for the kindness displayed toward me, may I request you also to convey to Prof. C. V. Riley my extreme obligations for the



COCK AND HEN OF THE BREED CALLED SABOT.

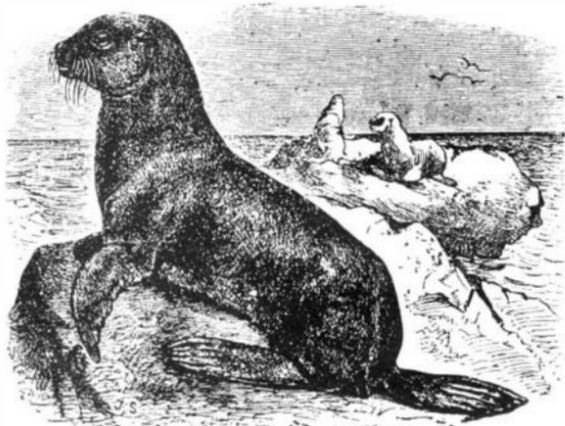
COCK AND HEN OF THE NANGASAKI BREED; VARIETY COUCOU.

and even shows great affection to those who attend to its wants. The Cape sea lion (*Otaria pusilla*) inhabits the islands south of Africa. A living representative of this species is also to be seen at the society's gardens, its pond being close to that of the public favorite; it is smaller than the Patagonian sea lion, and is less familiar to the public. The Australian seas have also a representative. Strictly speaking, perhaps one should exclude most of the *Otariidae* from Antarctic fauna, but in a wide sense most of the localities above mentioned are spoken of as being within the sphere of the Antarctic regions. In places such as South Georgia, the South Shetlands, and the island of Mas-a-fuera, near Juan Fernandez, and other localities where these animals abounded, they now no longer exist, on account of the excessively greedy ravages of man.

Formerly there was an extensive fur seal trade in South America and the Falkland Islands, in Australia, and in South Africa; but now there are so few seals in these localities that they are not worth hunting. In the Falkland Islands, however, it is pleasing to hear that the fur seals are now increasing in numbers, the most rigid protection being enforced; but with no telegraphic communication, and with no railways in the islands, poachers are said often to be able to secure a considerable amount of booty and make off before the authorities are able to enforce the law. In islands lying within New Zealand or Tasmanian waters a close season has also recently been proclaimed.

The true seals are represented by five species and two genera (Allen); they are the white Antarctic seal (*Stenorhynchus carcinophaga*), sometimes called the "crab eater seal" (for what reason it is difficult to say); the sea leopard seal (*Stenorhynchus leptonyx*); Weddell's false sea leopard seal (*Stenorhynchus Weddellii*); Ross' large eyed seal (*Stenorhynchus Rossii*); and, lastly, the monster seal known as the "sea elephant seal" (*Cystophora elephantina*). Skulls, and in some cases complete skeletons, of most of these seals are exhibited in the British Museum, South Kensington, and the College of Surgeons Museum, as well as in some of the provincial museums; one or two stuffed specimens also occur.

Of these five species the first two, the white Antarctic seal and the large sea leopard, are most abundant, being found in great numbers on the pack ice. The beautiful white Antarctic seal must surely be a descendant of Rudyard Kipling's great white seal, which roamed the world around to escape cruel and relentless man. Its coat is of a beautiful creamy white, resembling that of the polar bear, but short haired, the color becoming somewhat more intense along the back. Looking at the animal face to face, its coat appears silvery, and the dorsal stripe almost vanishes; but when looked at from behind it assumes a deeper cream color, and the broad stripe along the back becomes quite prominent. The full grown animal may attain a length of about seven feet. The sea leopard is a very striking animal, and, with the exception of the sea elephant, is the largest of all seals. In the recent Antarctic expedition (1892-93) some were met with that measured over thirteen feet in length. Their coat is a dark brown-gray and mottled, becoming paler gray below, and in some cases almost black on the back. A rather striking and not altogether inappropriate name was given to these seals by the sailors in the recent cruise; they called them "serpents," and they do really often look very serpent-like with their long necks and green eyes. Weddell's false sea leopard is more rarely met with, and is nearly as large as the sea leopard, but less shapely and more thickly blubbered; its head is smaller, fore flippers very small, coat more woolly and of a dark brown-gray. Ross' large eyed seal is a beautiful creature, with bright and affectionate eyes; in form and size it is very like the white seal, but its coat is of a beautiful mottled gray, darker toward the back. The sea elephant is the largest of all seals, attaining the enormous length of twenty feet. It is a near relative of the crested seal of the north, and is also found along the Californian coast. The male has a somewhat elongated snout, hence the origin of its name. The females are about one-third less in size. The males are said to come ashore on the Shetlands about the end of August, and beginning of September, and in the first part of Octo-



THE PATAGONIAN SEA LION.
(*Otaria jubata*.)

ber are followed by the females. The males are very fat when they first arrive, but get lean toward the end of December, when they leave the islands. Another herd was said to visit the islands about the middle of January—when they renew their hair—and still another in March; by the end of April all returning to the sea. They are very difficult to kill, but, like the other species, allow themselves to be approached even with a club. This seal used to be highly valued for its blubber; in 1821 and 1822 alone as much as nine hundred and forty tons of sea elephant oil was taken from the South Shetlands; and it may here be mentioned that during these same two years at least three hundred and twenty thousand fur seals were also taken from these islands.

It was with the skins and blubber of the first two species of these true seals that the Scottish and Norwegian crafts loaded themselves last season. The slaughter was revolting to one unused to it; within two minutes the seal is brained, deprived of its skin, and its gory corpse left writhing on the snow. Early in the morning, when the sun is beginning to make more or less impression by his rays, and the seals are coming out of the water on to the pack, all hands are ready to take part in the fray. The sails are stowed; the skipper sits in the crew's nest from early in the morning till late in the evening; the two engineers, relieving one another, take charge of the engines; the cook or the steward is on the lookout; some non-combatant takes the helm; all the rest are away after plunder in the boats. Now a full boat is making its way to the ship. She steams toward it. As she nears, the engines are stopped and the boat glides alongside. The cook or the steward rushes from the look-out, the helmsman from the wheel, one working the steam winch and the other unswitching the skins, while the



SEA LEOPARDS ON PACK ICE.

boat's crew swallow a hasty meal. Their boat being unloaded, they are off again for another fill. Another boat is seen approaching, and away the ship goes again, dodging this piece of ice, charging that piece with her sturdy bows, boring away where the ice lies closely packed, rounding this berg, and on to the next, until she reaches the boat, which is down to the gunwale in the water, with its crew cautious, plying their oars as they lie crouched upon their bloody load. So it goes on from day to day; "hay is made while the sun shines," and the pile of skins and blubber rises high upon the ship's deck. Then comes a gale of wind, accompanied by fog, sleet and snow, and the ship "lays to" under lee of a stream of pack ice or a berg. The deck becomes busy with life; the blubber is "made off," and put into the tanks, and the skins are salted. During such inclement weather the seals do not seek the ice, but may be seen swimming about in the water. When the gale is over, at the end of two or three days, the next few days of calm weather are again taken advantage of to continue the slaughter. Thus the periods of gales and calms, which alternate in this part of the world, come in conveniently for sealing; the produce obtained in the calm weather being "made off" during the gales.

Concerning the habits and anatomy of these seals much remains to be investigated. During the summer months (December, January, February), as has already been stated above, the first four are to be found on the pack ice, where, during the day, they bask in the sun, digesting the meal of the previous night. Their food consists of fish or shrimp-like crustaceans, and sometimes of penguins. Stones, which were probably first swallowed by the penguins, may also be found in their stomachs. They become so lazy with sleep that a man may dig them in the ribs with the muzzle of his gun, and wondering what it is disturbing their slumbers they raise their head, which quickly falls pierced with a bullet. There may only be one seal on a piece of ice, which is usually the case with the sea leopard seals, but the smaller kinds lie in half dozens and tens, and as many as forty-seven were seen on one piece during the recent cruise. On one occasion several seals were found upon a tilted berg; so high was the lowest edge above the surface of the water that the boat's crew with difficulty clambered up and secured their prey. Yet the seals must have made a leap from the water on to this their last resting place. December seems to be their mating season; about that time they are in very poor condition, and very much scarred. The females appear to be as freely scarred as the males. It was also noted that the seals were most numerous where the water was bluest and clearest—this, in all probability, meaning that they were more numerous on the outside of the pack, since the muddy olive-brown color of the water, due to *corethron diatoms*, seen so frequently in the south polar seas, seems to indicate proximity to the main pack. The males appear to be as numerous as the females, and, in the case of the sea leopard seal and Weddell's seal at least, the males are perhaps rather smaller than the females.

They move swiftly through the water, and can throw themselves eight or nine feet above the surface, covering distances of fully twenty feet. Their moaning in the gloaming of a calm gray day comes as a weird sound through the haze, and makes the icy solitude more lonely, adding awe to a scene already full of fascination! They seem to wonder at man, and not recognizing him as an enemy, they allow him to approach, only to be laid low with club or bullet. It is a matter of great regret that they should be so indiscriminately massacred; there is no regard for sex or age, and even females heavy with young do not escape. If fleets of sealers continue to visit the south, there should be some law of protection, otherwise there is no doubt that, like the southern fur seals at the beginning of the century, these Antarctic seals will be exterminated.—*Knowledge*.

THE PECTEN OR SCALLOP.

BY NICOLAS PIKE.

PECTENS are found the world over; and 176 species have been described and figured now existing and many fossil ones. Yet few know more of them than the form of the shell and the luscious morsel it contains. The uses of the pecten are and have long been many and varied.

The "scallop shell" has had world-wide fame since the days of the crusades. The pilgrims to the Holy Land were recognized by one of these shells fastened on the front of the hat and one or more on the cloak,

as ensigns they were warriors of Christ, to free the sacred soil from paganism. A shell may still be seen on many a coat of arms dating from that period. How fruitlessly such wealth of life and treasure was spent history's pages tell; but the scallop lives on and flourishes through all the centuries. The shell used was the *P. jacobus*, abundant on the shores of the Mediterranean.

Not alone was it a Christian emblem, but is said to have been employed as a drinking cup celebrated in Ossian's "hall of shells." This is supposed to have been the *P. maximus*, common on the shores of Great Britain and Ireland. In some countries the poor people use the large shells as plates. In restaurants in Paris delicate preparations of mushrooms are served in them, and in England oysters are scalloped in them. I once saw them in Galicia, Spain, used for side dishes filled with fish paste and garlic.

The shells of most of the species are beautiful when well prepared; those of the Indian Ocean are said to be the handsomest. Some have become articles of commerce and all kinds of fancy bags, baskets and boxes are ornamented with them. Some of the shells are large, stout and heavy, while others are thin and transparent.

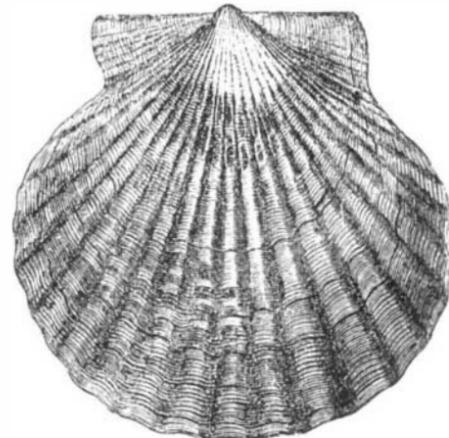
The pecten of our coasts is the *P. irradians*, which grows to a fair size, and is much sought after for its strong muscular abductor muscle, familiarly known as "scallops." Though this muscle is the only part of the animal sold as food here, yet the whole pecten is credited as being good and wholesome, several species being eaten.

The scallop is very abundant on the shores of Long Island, also is found from Cape Cod to Cape May, but little of its life history is known generally.

Unlike the oyster, which is a complete fixture to its bed, the pecten is perfectly free, and shifts about from place to place. It has the power of making frequent and sudden contractions of its muscles, by which means it moves rapidly through the water, making its capture difficult. This movement is made by quickly closing its half open valves and forcibly expelling the water, and is backward, by a sort of reaction. This action, repeated many times, compels the animal to move in spite of itself, enabling it to avoid danger and reach the desired spot. Some naturalists assert that when raised to the surface of the water, the pecten half opens its shell and the upper valve serves the purpose of a sail (?) Aristotle first noticed that it had the power of leaping when out of the water.

Miss Catlow mentions that a basketful of common pectens placed near the water was speedily emptied, by the individuals springing from their confinement to their native element. M. Lesson immersed a basket of pectens in the sea, the water coming to within six inches of its rim. He says, the individuals which formed the superior layer, constrained in their movements by those that were beneath, after many efforts succeeded in leaping from their prison. No sooner did they fall upon the water, than, by striking their valves rapidly together, they ran or rather skipped a few seconds upon the surface, and then sunk to the bottom. In this way all the contents of the basket disappeared in fifteen minutes. The Rev. D. Landsborough observed young pectens when less in size than a sixpence swimming in a pool of sea water left by the ebbing tide. Their motion was rapid and zigzag, and it seemed to him that the sudden opening and closing of the valves gave them the power of darting like an arrow through the water. One jerk carried them some yards and then by another jerk they were off in a moment on another tack.

In my studies of this curious animal I found it very difficult to pursue them on account of their habits. They throw off the spat like the common oyster, only unlike it, the growth is rapid. After the females have done spawning they frequently bury themselves for some days in the sand. The young spat seem to have the power of guiding themselves without difficulty till they come in contact with some substance, generally the *Zostera marina* or eel grass, where they attach themselves by spinning a byssus, and in a few hours a thin coating is secreted which covers the little animal and is as transparent as glass. In five or six days the shell is completed so as to give protection to the little animal, when he drops off and commences the battle of life on his own account. They are now the size of a pea,



PECTEN IRRADIANS.

but their growth is rapid and they become very active, darting about for food. Those I carefully watched in an inclosure in Huntington Bay grew so rapidly that in seven or eight weeks they were as large as a silver dollar and ready for the market.

A favorite location of this animal is where the water is shallow, generally near the banks of rivers and bays opening out to the sea, where the bottom is sandy and there is a good growth of eel grass. The food of the scallop is similar to that of the oyster, and minute diatoms are found in the stomachs of the young when ten days old. At the approach of cold weather the scallop goes into deeper water and often buries itself in the sand, as some were brought up in my dredge I had unearthed in the latter part of November.

The scallop breeds from June to the latter part of