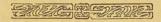


With Colored Manikin Illustration Showing the Inside and Outside of the Oyster Shell, the Anatomy of the Oyster and the Pearl in its Course of Development

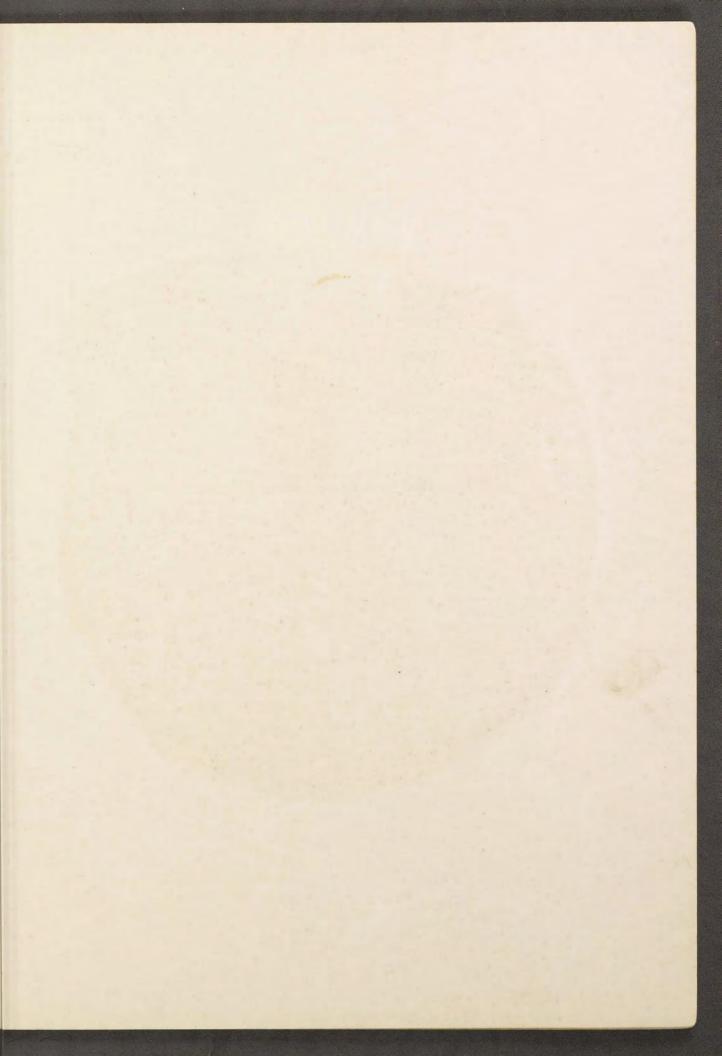
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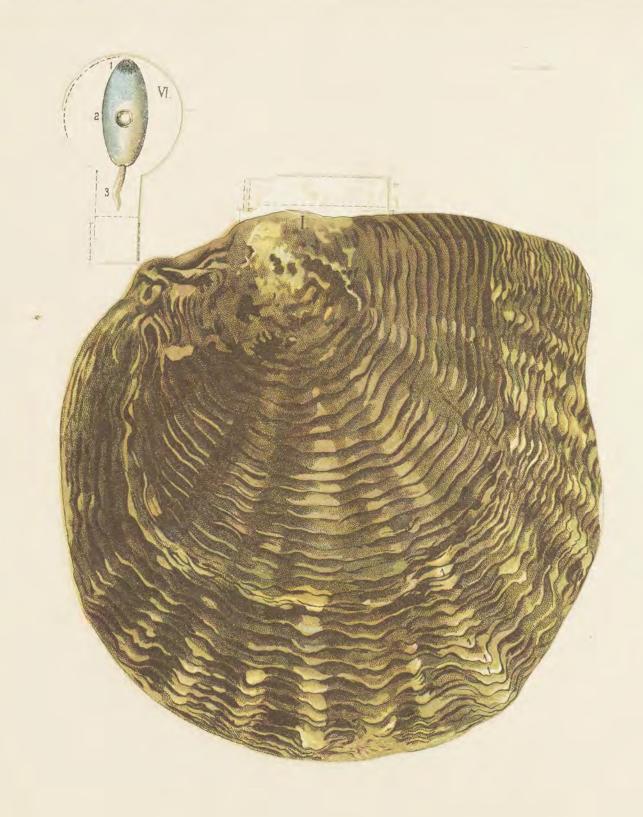
A. L. CLINTON



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# I. Outside of the pearl-oyster magnified

ii. Annual rings of the shell

# II. Inside of the oyster shell

ii. Layers of pearl

# III. Section No. 1 of the oyster

1. Inner hinge

2. Right mantle lobe

Left mantle lobe

4. Labial palpi

Gills

Intestinal sac

7. Posterior part of intestinal sac

Adductor muscle

9. Hind intestine (Anus)

## IV. Section No. 2 of the oyster

Nerve of the edge of mantle lobe
 Openings of the hollow space between inner and outer gill plates

4. Adductor muscle

5. Anus

6. Hind segment of adductor muscle
7. Edge of mantle
8. Exterior labial palpi
9. Interior labial palpi
10. Hind part of intestinal sac

11. Terminal intestine
12. Mouth

13. Stomach

14. Apertures of liver ducts15. Liver

16. Genital gland17. Kidney

18. Heart

19. Cerebral ganglion

20. Visceral ganglion

21. Gill nerve 22. Nerve of margin of lobe

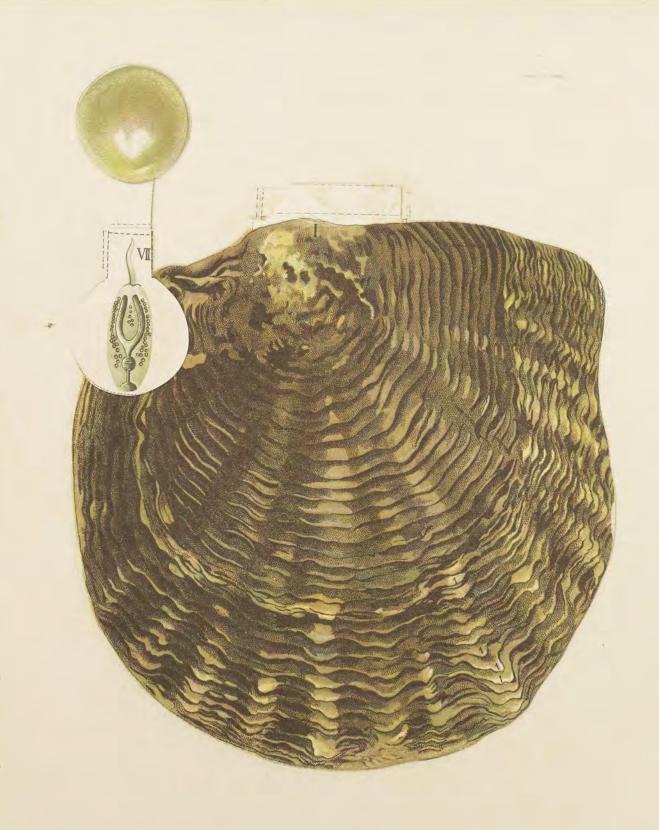
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1, 2, 3, 4, 5, Pearl in its course of development

# VI. Oyster-fluke (Distomum)

1. Mouth aperture

Sucking discs
 Tail



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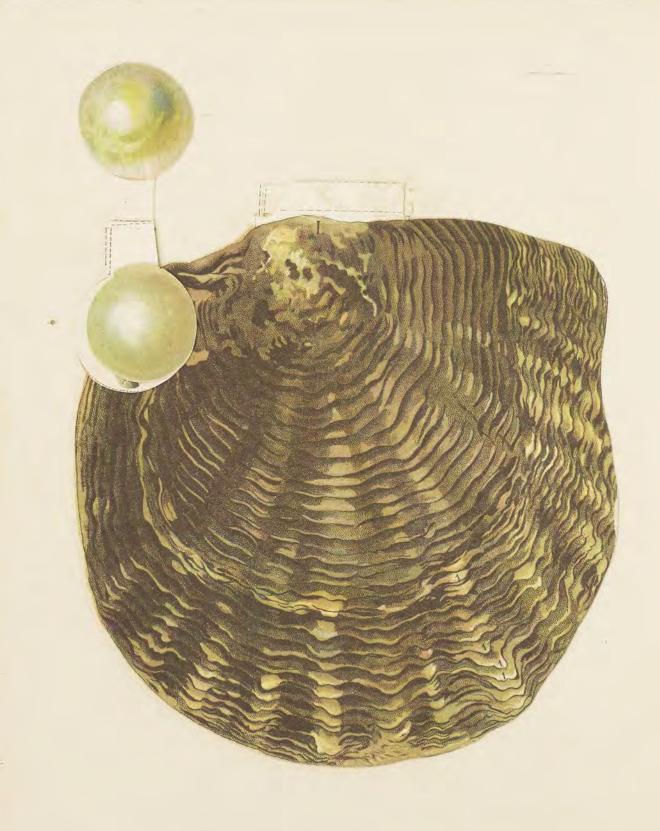
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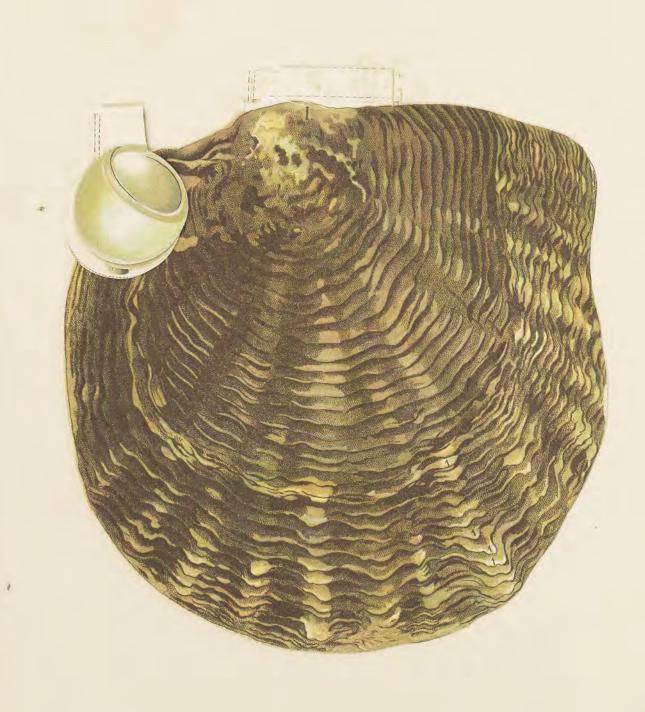
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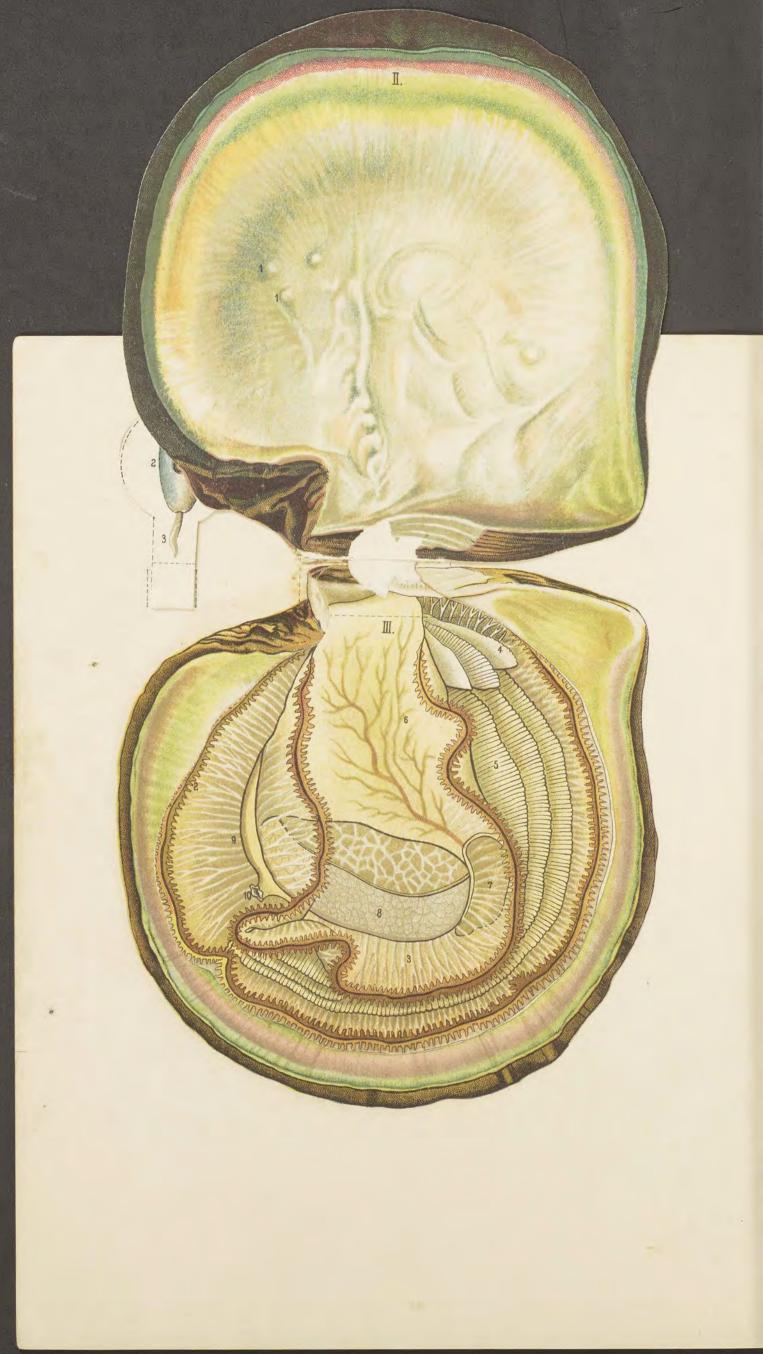
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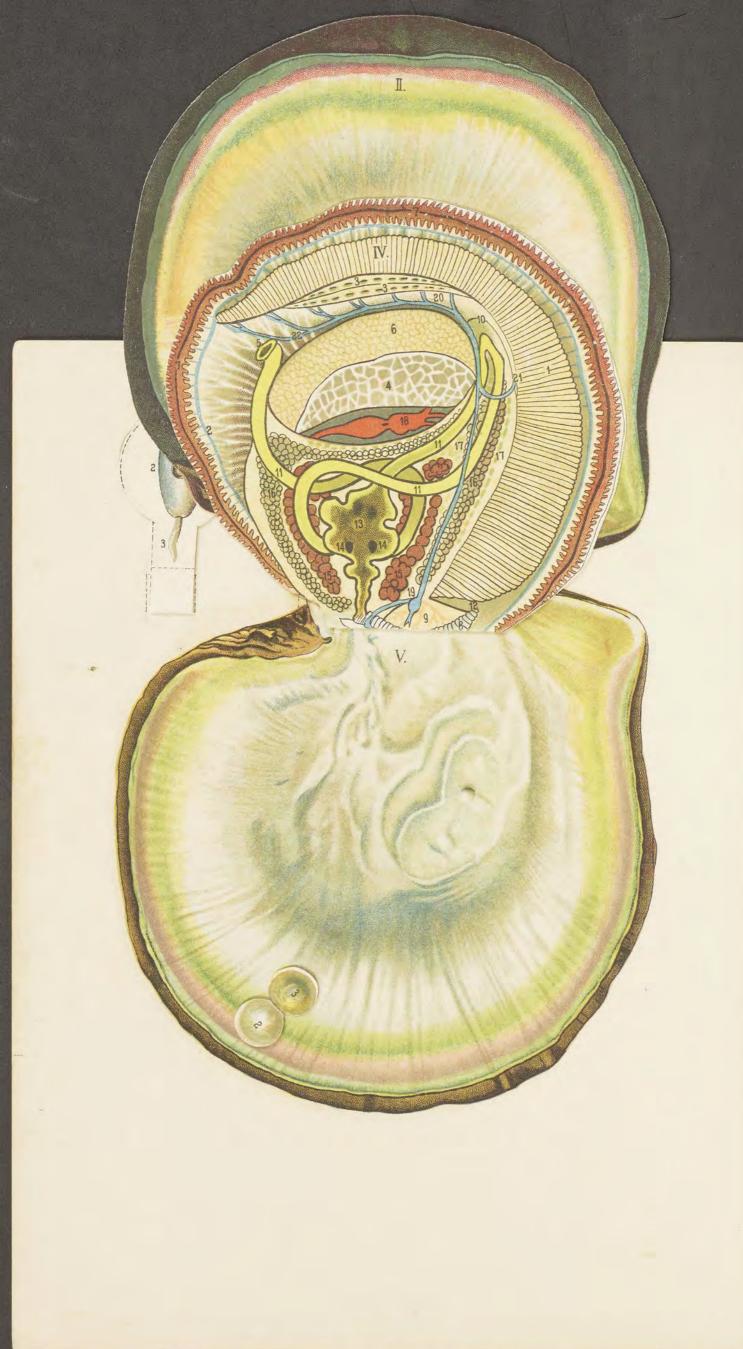
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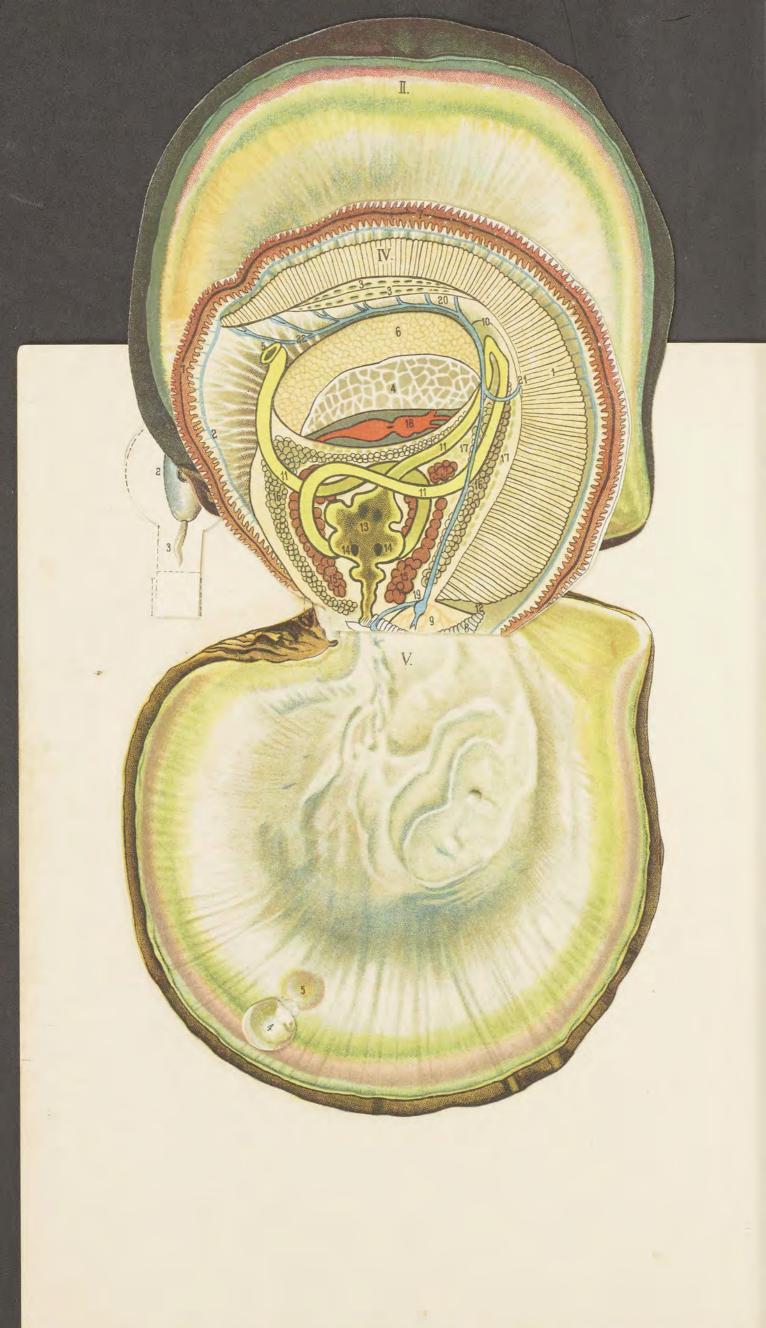
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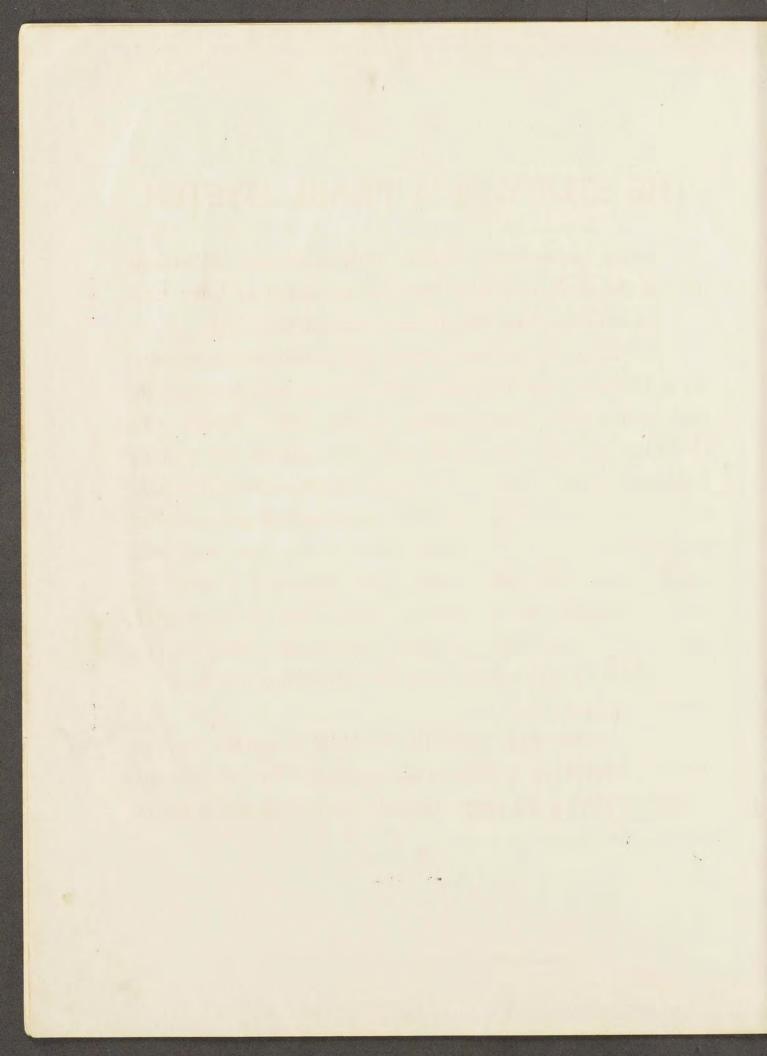
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1. Mouth aperture

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Jimmy Harter was a chubby, wide-awake boy of ten who lived in the small town of Chester on the shores of Lake Erie, with his father, mother and thirteen-year-old sister Nan.

What fun the two had had all one January afternoon playing in the snow that had fallen steadily since early morning, the great, fluffy, white flakes making the sky look a leaden gray, they came so fast. But along about four o'clock the mercury had taken a sudden tumble, the snow had ceased to fall, and the two children had raced for home, rosy-cheeked and with ears and toes tingling from the cold. Now, at six, they were both stretched out comfortably on the floor in front of a wood fire blazing cheerfully on the hearth. Jimmy was on his stomach, poring over a new book, and Nan lay with eyes shut, dreaming wonderful fairy stories that brought smiles flitting across her pretty lips now and again.

All at once there came the stamping of feet on the front veranda, a latch key quickly sought and found the key-hole, and a blast of chilling air swept through the hall as the door was opened.

Up jumped Jimmy, his book forgotten, and Nan was at his heels, both eager to claim the first evening kiss from their father.

"Not so rough, my hearty!" the tall man laughed, as he stooped to bestow a kiss first on his son and then a second on the lips of his fair daughter. "Don't you see I have my hands full to-night? Here, take this to mother in the kitchen, Nan, and tell her I hope she has planned nothing else for this evening's meal," and he handed over a quart carton to the little girl.

"Oh, goody, goody, father!" she said. "It's oysters, isn't it? Just the thing for such a cold night!" and off she skipped kitchenward.

Mrs. Harter quickly had on the stew, and it was not many minutes before the family of four were gathered about the table to enjoy the meal together.

"When I was in the market to-night," Mr. Harter began as he waited for his oysters to cool, "a man came in and bought oysters in the shell, and when they were opening them for him, what do you suppose they found in one of them?"

"Not a pearl, father?" inquired Mrs. Harter, her eyes alight.

"You know I have one I found set in that little old-fashioned ring I wear once in a while. It was found that very same way in a Baltimore market when I was a tiny girl."

"Say, dad, how do the pearls get in the oysters, anyhow?" interrupted Jimmy, always ready with a question.

"They grow there," replied Mr. Harter, as if that would settle the matter for all time.

"Huh!" incredulously from Jimmy. "Diamonds are jewels, same as pearls, and I guess they don't grow. Now do they?" he persisted.

"Well, Jimmy, really that's all I know about the matter," confessed Mr. Harter with a short laugh. "You've got me this time. But I can tell you how people get so many pearls that the ladies wear them in rings, necklaces, pins and so on."

"I s'pose that'll have to do, then," replied Jimmy, carefully choosing the very largest oyster on his plate, and eyeing it calmly as he spoke. "My, isn't it a whopper, Nan?"

"Well, you know I've often told you that my father, your grandfather, was sent to India years and years ago by our Government. He used to amuse me often by telling me the way he saw

them fishing for pearls in Ceylon. You know that is a large island right south of India, and I wonder if Nan can tell you how everybody comes to know about it?"

"Yes, indeed, father," she replied. "They have great plantations there where they raise fine tea."

"Very good!" he commended, smiling at her. "Six or eight miles off the western shore of this island are the pearl fishing banks. They are in the Gulf of Manaar. The government has control of these banks, and inspectors regulate the fisheries. When they say the banks are in a fit condition, then the work begins, but not before. The season usually opens the second week of March. Sometimes it lasts for four weeks, and other times as long as six weeks."

"How do they fish for oysters? With hook and line? That's what I want know," said Jimmy.

"Oh, no, son! They dive for them. The boats go out in fleets of from sixty to seventy, and they start at midnight or just a little later, for they wish to be all ready for work just as soon as the sun is up.

"And in every boat there is a steersman and ten rowers,

who send the craft skimming over the waves at a smart pace. Then there are two divers in each boat, beside a shark charmer. He is a very, very important person, because the divers look to him to protect them from the many sharks found here in the sea.

"When the boats reach the fishing banks, they wait until a signal gun is fired, and then the work of diving begins in earnest.

The divers work two by two. First a stone weighing about forty pounds is fastened to a cord by which the diver is to be let down. It is thrown overboard, and then down goes one diver, the other watching the signal rope. The moment he gets the sign, he pulls up the stone first, then the basket of oysters, and last of all, the man!"

"How long do the divers stay under?" questioned Jimmy.

"Just a minute. Sometimes a few seconds less, and sometimes a few seconds more. There is a story told by the divers that once one stayed under water six minutes, but of course that is the record, and some even doubt if it really ever was done at all. After a few minutes of rest on the surface, down goes the diver again, and so on and on until he is exhausted. Between forty and fifty trips to the bottom make a day's work. When he is

tired out, he goes on board boat, and watches the signal rope while his comrade relieves him and does the diving for a while."

"Do they wear divers' dress, father?" said Nan. "I should think they could stay under longer if they do."

"Oh, no! Didn't I mention that the diving is done by the native Indians? They go down naked. The only thing they do wear is a sort of a girdle, to which they fasten the basket in which they gather the oysters.

"These Indian divers are just as superstitious as they can be, and never go down without first having the shark charmer repeat incantations that are supposed to protect them from the sharks while at work. But in spite of this, the diver carries a stout club in order to be able to defend himself if there is need.

"The work of diving goes on from sunrise until about noon-day. Then a second gun is fired, and all the boats make for the shore. There the divers carry their catch to a shed, and pile the oysters in four heaps. One of these piles belongs to the diver as his pay."

"How many do they bring ashore, I wonder," said Mrs. Harter.

"About a million every day from these banks, and they auction them off at from ten to twenty dollars per thousand. They have sometimes brought as much as twenty-four dollars per thousand."

"Wh-e-e! They don't have to work long to be rich!" said Jimmy, his eyes bulging.

"Oh, but not every oyster contains a pearl," said his father, with a laugh. "About one pearl is found in a thousand oysters. So riches don't come much faster to the pearl diver than to us working right here in America, my son."

"What do they do with all the rest of the shells, I wonder," pondered thoughtful Nan.

"I believe these shells in the Ceylon banks are not worth much, but over in Australia, for instance, they find beautiful shells from which we get mother-of-pearl. Why, that buckle you wear at your belt is made of just such a shell, and the buttons on your dress too, I guess."

"And our fruit-knives have pearl handles," suggested Mother Harter.

"And the clasp of your new purse, too," added Jimmy. "I

guess there's plenty of use for all they can dig up from the bottom of the the sea. Where do they live---everywhere?"

"Australia, for one place, as I said," responded his father. "And now I've told you every single thing I know about the pearl and the oyster, too. Suppose we each look it up and report tomorrow night at this time."

"And the one bringing the most interesting information will get a reward," said Mrs. Harter.

"Hooray!" exploded the irrepressible Jimmy. "Let's make it a pearl tie clasp if the men win," said he, with a comical side glance at his father. "And if the girls win, make it a pearl handled pen-knife."

"Done!" agreed Mr. Harter. "And as there are only twenty-four hours in which to win or lose the prize, let's away to the library without any delay, James."

Such a scramble as there was! Nan and her mother washed the dishes in double quick time that evening, and then down came books from the shelves which had not been disturbed since their last dusting. Even old magazines were searched for possible stray articles. So eager were the children in their work that when the tiny cuckoo popped out of his home in the clock and announced that it was half past eight, it found Jimmy still wide awake and stretched out full length on the floor, a book before him.

"Please, mother, half past eight came so quickly to-night," he pleaded, looking up at his mother as she sat in the soft glow of the reading lamp. "Make bedtime nine just this once. I can win that tie clasp if you will," he wheedled.

And, much to his surprise and Nan's, too, Mrs. Harter relented this time and granted the extra half hour, though as a usual thing both of them marched off to bed on the stroke of the hour regardless of their coaxing.

The next evening there was no need to summon the four Harters to the table with the dinner gong. Jimmy, usually the very last one to appear when the weather permitted him to play out-of-doors, was on hand early to-day, ready to pop into his chair the moment Mr. Harter appeared at the door of the dining room.

And Nan, Mother's right-hand helper, brought in a covered casserole, proudly placing it at her father's place for him to serve.

"Why that broad smile, lassie?" he said, noticing her look of expectancy.

"Well, you see, mother said as we were to have an oyster conversation to-night, we might as well serve an oyster dinner. So I made these escalloped oysters all myself. I learned how just the other day at my cooking class. I do hope they'll be good," she concluded, settling herself with a little shrug of anxiety.

"Smell delicious," her father remarked, sniffing a little as he uncovered the dish and began serving.

"Well, who's first with his stunt?" asked Jimmy, unable to control himself longer.

"Yes, we might as well to business," seconded Mrs. Harter. "James, you first as I know you'll burst if you don't get it out very soon."

"Aw, I can wait," he boasted. "Anyway, ladies first, so my Scout Master says. Go on, mother, yourself!"

"Yes, do, mother," seconded Nan. "You always tell things so interestingly."

"Well, if I must, then," she replied.

"Jimmy asked last night how the pearls come to be, and when father 'fessed up he didn't know, I decided I would find out. So here's my story.

"All of us have seen the oyster time and time again, but I wonder if we really know much about the house in which he lives? Have you ever noticed, for instance, that his house is in two parts, called an upper and lower valve? Yes, of course," as the other three Harters nodded their heads. "But who knows that the two shells are not the same size, and are of different shapes?"

Not an answer, and so she continued with a smile,

"Well, they are! And it is the left one that is always the larger, too. Then it is thicker, and deeper. On this left valve the oyster rests, and it is this part of the shell that the young oyster fastens to some object on the sea-bottom when it is a young fellow. When the oyster is older, sometimes it is attached and sometimes it is free.

"Now the right valve is the roof of the oyster's house, and is both thinner and flatter than the left one.

"Can you tell me the times in the year when we never eat

oysters, Nan? That is something every cook ought to know," turning to her daughter.

"Yes, I can. We learned that in cooking class, too. Whenever there's an R in the name of the month, oysters are in season."

"And what months do not have the letter R in them?"

"Why, May, June, July and August are the only ones. How queer they should come one right after the other!" she exclaimed.

"Well, there's a reason for our not eating them during these four months," continued Mrs. Harter. "Those are the months during which the oyster produces the ova, or eggs. One oyster, it is said, produces as many as a million eggs in the course of its lifetime. In fact, some writers say our American oysters produce ten times that many. At any rate, the eggs are discharged into the gills, and here they accumulate, being held together with a white secretion called 'white spat,' and an oyster containing them is said to be 'sick'. By the time two weeks have passed, the eggs are hatched, and now the white spat is dark colored, and the little embryo oysters escape from the parent oyster's shell,

and swim about freely on the top of the sea. They haven't any shell, and look like a little bit of jelly.

"The larva, as we will call it, now floats on and on, wandering aimlessly here and there with a multitude of other tiny creatures that swarm on the surface of the sea. Sometimes it floats five miles or more away from the place it was born, because it stays on top of the water for about seven whole days. Then the oyster shell begins to grow. That means that it is now too heavy to float. So the only thing left for it is to sink down to the bottom of the sea.

"Down it goes, and sometimes it finds a bottom where the sand shifts about, or where there is mud. Then the young oyster dies.

"But if it happens to find a stony bed, or a place where there are plenty of shells, it is a very happy, contented, little oyster, for it has found a pleasant, safe home.

"It fastens its larger valve to a rock or another shell and right away it begins to grow and grow. It opens its shell, and lets the sea water wash in. It knows the sea will bring it many tiny, tiny creatures that the young oyster likes to eat, and these soon make it grow fat and big. Would you believe that at its first birthday it is about an inch in diameter? You see it is a busy oyster to grow so much in one short year. And it goes on growing just as rapidly until it is about three inches across. After that it is not in such a great hurry, and grows slower.

"But sometimes the sea water brings the oyster something it does not wish to have. A tiny grain of sand comes drifting in, or sometimes it happens to be the egg of some fish, or a wee sea insect. Now no matter how much the oyster wishes to get rid of the annoying intruder, it cannot do so, and the speck of sand, egg, insect or whatever it may be, stays right there, snugly cuddled up close to the body of the oyster.

"This rough little visitor pesters the oyster day in and day out, and as the oyster finds it cannot rid itself of the nuisance, it decides to do the next best thing. It sets to work and makes it smooth.

"A very wonderful thing happens then. A fluid comes out of the oyster's body and covers the unwelcome visitor. It is the same fluid with which the oyster has lined his shell, making it such a comfortable place for him to stay. This fluid

hardens around the grain of sand. Then more fluid comes, and layer after layer hardens. The pearl---for that is what the tiny bit of sand has become---grows larger and larger and larger, just as your snowballs do as you roll them about the yard, Jimmy. That is how we come to have pearls of so many different sizes.

"Sometimes a worm bores through the shell of the oyster, and enters his house without an invitation, and then dies. The oyster goes right to work, and makes a beautiful pearl of him, which fine ladies afterwards wear as a jewel."

At the end of her recital, Mrs. Harter sank back in her chair, and a pretty tinge of pink flew to her cheeks at the hearty applause of husband and children.

"It's lovely to have such an attentive audience," she laughed.
"No great lecturer ever had better listeners than I!"

"Well done! You've won the prize, mother. There's no use of the rest of us competing," smiled her husband, making a low bow.

"Oh, but that isn't fair," she answered. "Everyone of you will have to play the game."

"Well, I'm it next," said James. "'Cause mother got in

ahead of me and has told part of my story---only I know a little more.

"Away over in China, and 'way back in the thirteenth century there was a Chinaman named Ye-jin-yang. I had a terrible time learning that name, you better believe! He lived in the city of Hoochow, and he was the first person to learn how to make pearls.

"Ever since he taught the people how, they have been doing it, and now about five thousand people are busy all the time at this work. That's more than live in Chester, isn't it, father?"

"Yes, for we have about four thousand people here, so the last census told us."

"Well, these Chinamen live in some little villages in China near the city of --- here, I've it down on paper. I knew I'd forget all those horrid China names. T-e-h T-s-i-n-g, it's spelled.

"They gather lots of the mussels in May and June, and then they open them with a spatula. Do you s'pose it's like the one you use in the kitchen, mother? Well, anyway," he went on, without waiting for an answer, "they have a bamboo stick that is forked, and with these sticks they drop in little pieces of bone, or brass or wood. They put a number one side, and then the poor little mussel is turned over, and they drop more inside the other shell. Then they take them back and put them in shallow ponds. They let them be for months and months, sometimes two or three years. Then they take them out of the water, and they find that the things they put inside the shells are all covered with beautiful pearl, just like the little grain of sand mother was telling about.

"You know the Chinese worship an idol they call Buddha, and he is usually sitting down. Well, they make images of him in thin lead, and put them inside the oyster shells, too, and when they take 'em out, they take the lead out someway, I don't know how, and fill the pearl with white wax, and close it up so that you'd hardly know a hole had been made. Just think, the book said millions of these little pearl idols are sold every year in China. No wonder it takes five thousand people to make them. 'Cause a million is more'n I could count in a whole day, if I went ever and ever so fast, you know."

"Now, Nannie, your turn comes," said Mr. Harter, "and

I know by the shine of your eyes you have something well worth telling."

"Well, father, you know last night I hunted and hunted and couldn't find a single interesting thing, and I made up my mind I would have to give up the pearl pen-knife, though I wanted it ever so much for my desk. But this afternoon, when I came home from school, I went up to mother's room, and what do you think happened?

"I was cold, and mother had lighted the gas logs in the grate, so I took the little jewel case from her dressing table and went over to her easy-chair and snuggled down to take a look at her pearl ring.

"I must have dropped asleep -- I s'pose it was the fire that did it -- but first thing I knew open popped that jewel case and out danced the tiniest little fairy and perched on my thumb. She wore fluffy white skirts and had a crown on her yellow hair, and when I looked closer, I saw it was made of beautiful pearls.

"'How d'ye do?' she said, nodding her pretty head in such a friendly fashion that I liked her at once. 'I come from a land away around the other side of the world. Some people call it

the Sunrise Kingdom. Yes, Japan is my country, and I am very proud of it, too. I'm the pearl fairy, you see.'

"'Yes, I knew that,' I answered, 'because you wear so many.'

"'Then you've heard of the Shrine of Ise?' she went on, smiling at me.

"I was ashamed to have to shake my head.

"She raised her eyebrows in wonder, and said, 'Why, that's one of the places where thousands and thousands and thousands of Japanese go to worship their gods every year. I thought of course you'd know about that! Well, anyway, just a few miles away is a lovely bay called Ago. It is about six miles long and half as wide. It makes a beautiful place for the pearl-oyster to live, and here I spend most of my time too. The coast is very rocky, and it is cut in deep with lots of smaller bays. Not far away in the ocean there is the great gulf stream that warms the water. Pearl-oysters aren't very fond of the cold, you know.'

"Here she stopped and looked me over from tip to toe, and finally asked saucily,

"'Tell me, how old are you?'

"'Just thirteen last November, though I'm not very big for that, am I?' I answered, straightening up.

"Indeed you are not. Well, if you had happened to be born over in Cherry Blossom Land near the Bay of Ago instead of here in Chester, you'd be through with school by this time, and you'd be going to sea.'

"'Tell me all about it,' I said, for you know some times I do grow tired of school and wish I was through.

"I will, but I must hurry, for it will soon be sun-up over in Japan and I must surely be there to see that no one disturbs my pearl babies.

"When a girl who lives on the Bay of Ago reaches her thirteenth or fourteenth birthday, she is through school, and is ready for work. She puts on a suit of white underwear, twists her coal black hair up in a hard, tight knot, and puts on a pair of glasses to keep the water out of her eyes. Then after she has learned to dive well in this uniform—it doesn't take long because she has been swimming ever since she was a little thing—she ties on a tub with a string around her waist, and is all ready to be a fisher for pearls.

"From five to ten women go in one boat, with a man in charge. When they reach the fishing grounds, they leap right in and begin to gather the oysters from the bottom of the bay. When their baskets are filled, the divers are raised to the surface and jump into the waiting boats. Sometimes they stay under as long as three minutes, holding their breath all that time.

"'Up and down, up and down they go, time after time. When they grow cold, they go to shore, and warm themselves by the fires, that are kept burning in huts for this purpose. Then when they are warm again, out they go and begin to dive once more.

"Some of the divers are forty years old, but most of them are younger. They say a woman between twenty-five and thirty-five does the best work, but many of them are in their teens.

"'During the summer they work six or eight hours a day, but in cold weather just an hour or two. And for all this hard work they get as much as from ten to fifty cents a day!'

"'Where do they sell the pearls they find?' I managed to ask.

"'Oh, all these women work for one man, whose name is

Kochiki Mikimoto. Now Mikimoto was a poor boy just a few years ago. He heard the stories of how men had grown wealthy finding pearls at the bottom of the Bay, but year by year fewer pearls were found and Mikimoto despaired. Then someone told him of the way the Chinese across the sea to the west made their little pearl-covered idols, and he thought about it day and night. Finally he set to work on a plan of his own, and in 1890 he went up to Tokyo, taking with him some pearl-oysters to show what he had done, for inside of each was a pearl.

"A professor at the Imperial University saw them, was interested, and together the two began to study and to work.

"'Just six years after that they began to harvest real pearls in earnest, and to-day Mikimoto is a rich, rich pearl merchant and these women divers are working for him.

"'But how does he make all his pearls?' I asked.

"'He has leased this Bay from the government, and during July and August he has his people busy putting small pieces of rocks in the places where the larvae of the pearl-oysters are most plentiful. Soon after the small oysters are found fastening themselves to these stones, and then the workers remove both stones and oysters to deeper waters. For the young oysters would surely die if they were left in the shallow water when the colder weather came. The divers lay them in beds at the bottom of the Bay, and there the oysters stay until they are three years old.

"Then down go the divers once more, bring them up and opening the shells, drop in a tiny seed pearl or round piece of nacre. The shells are put back once more, and left for at least four more long years. All this time the oyster is very busy covering this little pearl with layer after layer of the pearl liquid, and the precious gem is growing, growing, growing. When the diver once more goes down and brings up the oyster, the pearl is large enough to be sold as an ornament for some lady's ring, pin or necklace, and more money rolls into Mikimoto's pockets."

"The little fairy bobbed her head and waved her hand, and called out 'Good-bye!' before I realized she was going, and I reached out to grasp her for I wanted to ask her some questions, when the jewel case cover closed with a little snap, and I waked up with a yawn."

"It was so real that I was sure what she told me was true, and I went right down to the library, and the very first book I

opened told all about Mikimoto, just as she had. So I know he is a really, truly Japanese man, and that he makes all his money just the way she said."

"Hooray for Nan!" exclaimed Jimmy. "She's a hummer, she is!"

"Well, you can't crowd me out of this game," said Mr. Harter. "I'm bound to have my little say, brief as it is.

"Just as I thought, you've wandered all over the world in search of the pearl-oyster, when you have them right at home. Now none of you ever thought of the river pearls, did you?"

"Oh, tell us about them," said Nan, settling herself in preparation.

"Right here in our own state of Ohio, along the Miami River, pearls are found, and in the great Mississippi, too. In fact so many are found in that river that there are many factories along its shores making pearl buttons. In 1891 the first factory was built at Muscatine, Iowa, and one of them alone now turns out a thousand gross a day. That's one hundred and forty-four thousand buttons, you know, and they sell at from thirty-five to forty cents a gross.

"When I was down town to-day, sitting at the table at lunch time, I got to thinking about it, and decided that as we had no judges, it would be a difficult thing to decide just which of the four of us really had won to-night. So as I was passing a little shop in the arcade, I stepped in, and brought these along," and he reached in his pocket and laid four different packages on the cloth in front of him.

"This belongs to Jimmy, since he wears real ties," he said with a laugh.

"Whoop--ee!" the boy exclaimed, quickly fastening the pretty pearl tie clasp on his red scarf.

"I know what mine is from the shape and from your promise. Thank you, father," said demure Nan. "I've never owned a pen-knife before, you know."

"Open yours quick," said impatient Jimmy, going around to his mother's place.

"I can't imagine what's inside," she said, examining the package curiously. "O-o-h! How pretty it will be hanging to my silver chain!" as she held up to view a handsome pearl pencil, and then allowed Jimmy to turn it so the tiny lead point came into sight.

"These button-holes are a trifle too small for the links," complained Mr. Harter, puckering his brow as he struggled to slip one of his new cuff buttons into place.

"Here, let me help," offered Nan. "Why, father, I like them better than your old ones, even if they have little diamonds in them!"

"The very thing!" quickly exclaimed Mother Harter, softly clapping her hands together. "I've been wondering what we should do to make as pleasant a time as this tomorrow night. We'll take diamonds, my dears."

"Jimmy, it's time for us to move," said Mr. Harter, hastily gripping his small son by the hand. "If we stay here, they'll wheedle me into promising a prize again. Let's away!" and the two scurried for their cozy corner in the library for the usual after-supper story hour.

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(TRADE MARK.)







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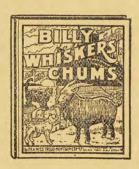
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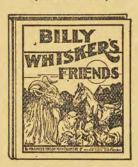
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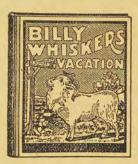
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