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— THE —  
**Student's Aquarium:**

(MARINE AND FRESH WATER.)

HOW TO MAKE AND MANAGE.

WITH  
CATALOGUE OF CURIOSITIES, &c., &c.

BY  
S. JACOB, NATURALIST,  
Late of Great New York Aquarium, &c., &c.

Price, 25 Cents.

NEWPORT, R. I.,  
F. W. MARSHALL, PRINTER,  
1886.

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NATIONAL MUSEUM

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MUSEUM OF NATURAL HISTORY  
NEW YORK

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S. JACOB, Naturalist,

[Late of the N. Y. Aquarium, and Eastbourne, Sussex, England, &c., &c.]

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# THE STUDENT'S AQUARIUM.

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## INTRODUCTION.

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THE reader of this little treatise on the Aquarium may want to know *How much of it is Theory and How much Practice?* and when I reply and say it is all solid, hard earned experience, they may feel interested enough to know where I received such experience.

I was brought up from infancy in one of the principal branches of Natural History: as a boy I collected shells and operculums for Messrs. Bryce Wright and George Sowerby of London, England, who were acknowledged to be the greatest conchologists that England has had; since which I have been connected more or less with all the Aquariums and Zoological Institutions in Europe. The two years of 1877-78 I served with The Great New York Aquarium; in 1880 I was the manager of one of the most successful exhibitions of dogs, poultry, rabbits, pigeons, birds, cats and monkeys held in the South Coast of England under the patronage of England's nobility, and at different periods of my life I have had in charge in some way or another nearly all the known varieties of animal life, and in a great many instances have captured them myself or have

taken charge soon after their capture, and have most generally succeeded in keeping them in good health and condition. Among the larger varieties I may mention whales, man-eating sharks, bottle-nose dolphins, porpoises, sword fish, sun fish, 16 foot alligators, sea lions, seals, snakes and serpents of all kinds, elephants, tigers, lions, bears, giraffes, ostriches, chimpanzees, and smaller varieties of nearly all the known kinds of fish, animals and birds. In 1879, I put in the lake of August Belmont, Esq., at Babylon, Long Island, 65,000 young trout. Such is some part of my experience, and with the experience I have had aside from the above details, I make claim to the title of Naturalist.

Very respectfully,

S. JACOB.

*Newport, R. I., 1886.*

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## THE AQUARIUM.

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IT has often occurred to me that if people knew how easy it was to manage an Aquarium, Marine or Fresh-water, we should see them in not only every house, as we do birds and pet animals, but in schools, colleges, and institutions of all kinds. I never could see anything in having a globe with two or three gold-fish, or a tank with an assortment of fish, and changing the water every day, or two or three times a week. It always appeared to me too much like a set picture; certainly nothing could be learned from it, for nothing has a chance to germinate in the water used in such a manner. In public aquariums in Europe, where there is a circulation, it will be found that the water is allowed to flow in and out of a tank, but that the water runs into a reservoir, and a continual circulation is

kept to and from the reservoir, and the water preserved for the purpose of what it will germinate. The different varieties of fungus and parasites that will come into life will, I am sure, amply repay any one who would take the little trouble necessary, and who has the love of nature at heart.

The starting of an aquarium is really the first and only trouble that one has to overcome, and then to avoid overstocking the tank, and all will be well :—but too much stress can not be put on the matter of overstocking. It is always the difficulty that new beginners have,—everything they see they want to place in the tank, and the result is failure and disgust.

After my twenty years experience in Europe and America, I feel justified in writing a few instructions, feeling confident that if they are read carefully success is assured ; and in giving these instructions I shall avoid as much as possible, if not altogether, the use of Latin names and technical terms, so that the school-boy may understand the matter and go ahead himself.

Let us then commence with a Fresh-water Aquarium. We must have something to hold the water ; what shall it be ? As it is for fresh water it matters not what it is made of ; but the principal use of an aquarium being that we may study the lives of the inmates, it would be better if we could have one with glass sides and ends. Any tinsmith can make you one out of tin, say about 18 inches long by about 9 inches wide ; this bottom piece should have  $\frac{1}{2}$  inch turned down all around, so that it could be fitted on to a piece of board  $\frac{1}{2}$  inch thick, which would prevent any bending from the weight of water, and the wooden bottom must have a beading  $\frac{1}{4}$  inch thick for the glass to rest against. It then wants four corners soldered on, about 10 inches high and extending  $\frac{1}{2}$  inch each way, for fitting your glass into, and a piece of tin about  $\frac{1}{2}$  inch wide for a band at top of the corners.

The tank is now ready for glazing and decorating. Do your own glazing in the following manner : take 1 lb. of com-

mon putty and work  $\frac{1}{4}$  lb. of litharge into it, and use in the same manner as you would set an ordinary window pane, pushing the glass bedded in the putty as far home as it will go, then fill the corners in the angle from bottom to top with putty, and have four strips of glass about 9 inches long by  $\frac{1}{2}$  inch wide, and press these well on to the putty,—this will give the corners all the strength they require and prevent any leakage there; this must be done after the sides and ends are set; the putty in the corners need be no thicker than where your strip of glass will meet each side of the corner piece. You can Japan or paint the outside any way your fancy may dictate. You will doubtless have friends who will advise you to set the glass with red or white lead, but these same friends perhaps do not know that glass will expand or contract according to the temperature, and that red or white lead sets like stone and will allow of no expansion or contraction, consequently when set with lead the first great change in temperature will leave the aquarium with a cracked glass, and it would take anyone with the patience of Job to set another in its place, even if they succeeded in getting the lead out, which I think is doubtful.

But perhaps before going to the trouble and expense of getting an aquarium, you would like to try what success you can have in keeping fish alive without changing the water. Then get a tin dish-pan, a china bowl, or wooden wash-tub,—in fact anything, as I have said before, anything that will hold water; if for fresh water, it matters not what. Before going any further we will stop and consider what supports life, and after due deliberation we conclude that it is *oxygen*, air. We find nothing created can exist unless it has a supply of fresh air. Let us take an instance in the subject of aquarial life. We catch a fish: if we place it out of water in a cool spot it will live say 24 hours,—I have had them live longer; place that fish in a bucket of water, he will die in two hours. Why will he die in two hours in a pail of water, which is its natural

element, and live 24 hours out of water? Because it can live on the air while out of its element, but as soon as it has exhausted the air that is in the pail of water it must suffocate, unless you devise some way of keeping the water charged with oxygen, air. This must show us at once what is needed, if we desire to keep fish alive without changing the water, whenever the oxygen is exhausted. It has been known for many years that all true fresh water aquatic plants, and some marine algae [plants], are capable of supplying oxygen to the water in which they grow or are grown. It is also an established fact that all true aquatic plants take root from a joint. Having become acquainted with these facts, we are prepared to go ahead and see if we can keep fish alive on this principle. Now we will get our vessel, whatever we may have concluded to put the water into, and put at the bottom of one side sand, and the other gravel. This sand and gravel for the fresh water must not be from the sea-shore but such as builders use, and have it washed well before putting it into your tank. When putting it in you can suit your fancy, for it is only for the purpose of helping your captives to keep themselves clean, and the scavengers to retire and rest in. I have stated that I generally put sand at one end and gravel at the other. I have seen it prettily arranged in alternate strips of gravel and sand, and again, with a circle of sand surrounded with gravel,—but in this, as I have said, you may devise some original and pretty way of doing it. Some small sea shells that have been allowed to remain 24 hours in water before using them, may be used with perfect safety, and can be mixed with the gravel and sand. You can build very pretty rock work with larger shells, by mixing  $\frac{2}{3}$  Portland cement with  $\frac{1}{3}$  sand; or if you prefer it, very realistic rocks can be built with pieces of pumice stone. After you have the gravel in and rock work built, it is advisable to fill the tank with water and let it remain 24 hours, and then draw that water off and throw it away. Though arches are generally

built for rock work, again your ideas may vastly improve this methodical way of doing. Of course the pumice stone can be joined together with the same mixture of Portland cement and sand. One of the prettiest home aquariums I ever saw represented a small cave, with pumice stone hanging as stalactites from the top. They were hung in rows and were arranged on strips of wood running from end to end of the tank; in front they just touched the water, and gradually lengthened with each row, until at the back they nearly touched the bottom of the tank. The effect was really beautiful. In filling the tank, as we do not wish to disturb the gravel, sand, &c., we put a pail of water so that its bottom is as high as the top of the tank; we then get a piece of rubber pipe, say about three feet long, close one end by bending over about three inches, and fill the pipe with water to about three inches of the other end, and close it in same manner, place one end in the pail of water and the other end in the tank below the bottom of the pail, then release both ends and thus create a siphon. The tank is emptied in same manner, but of course the pail into which you wish to empty the water must be below the tank. Everybody lives in the neighborhood of a lake or large pond of fresh water, and we will now go on an expedition to collect some plants, for aerating the water. We want something to drag the bottom of the lake with,—a garden rake is a good thing for the purpose; tie a good stout cord to the handle of it, then find what looks like a clear spot along the edge of the pond or lake, and is not too deep; throw the rake in and drag it along for a short distance, and if you do not get any green plant the first time, no matter what the season of the year, try till you do, as it is there. You will likely pull it out some 2 or 3 feet long; nip the ends off about 6 inches or even 2 inches from the top; these top ends are what you want, but as it grows from a joint it will not matter what part you take so long as it is green. For the Fresh-water Aquarium I will not recommend any one variety.

I am aware that some claim one variety will supply more oxygen than another. My experience is that all true aquatic plants will do the work required of them, and that in different localities we find different varieties, so get as many different kinds as you can find and tie them together in bunches of say from 3 to 10 slips in each bunch; from 3 to 6 bunches will be enough for the tank, according to the size of the bunches; then tie a stone or shell to the bottom of the bunches and they are ready for the tank. This work can be done, and perhaps it is better to do it, previous to putting the water in the aquarium. When you put the plants in the water, try and cover the stone or shell to which you have them attached with the sand and gravel that is in the bottom of the tank. While on the subject of plants it is well to know that a Calla Lily will make a pretty ornament to your aquarium. You can in building the rock work mentioned before, take and work into it a flower pot,—by covering it over with your mixture of Portland cement it will match the rest of the work,—put the lily not quite to the bottom of the pot, fill the pot two-thirds full of earth and fill up with gravel. The water should not reach more than  $\frac{1}{3}$  the height of the lily out of water, and you will find it thrive and do well. If your rock work comes within say 3 inches of the top of the water, you can tie to it a Stag-horn Fern. Any florist will provide you with one and show you how it should be bound on in order that it may adhere to the rock. Of course these suggestions are of no practical value outside of their ornamental uses.

We are now ready to get and put in our live stock,—but before doing so, let me tell you under no circumstances to take hold of with your hands anything that you desire to keep in good health. Always use a small net; if you cannot make one you can buy one for a few cents. If you do not handle your captives yourself you will allow no one to do so. I have had parties who deal in fancy fish for aquaria tell me it will not hurt the fish, but I never take them when thus handled. I have

had fish in my charge treated as above, and in a few days the marks of a person's hand has appeared in the growth of a fungus. I have seen it where the fingers and thumb have been fully outlined, and in nearly every case it has resulted in death. The most important reason why you should adapt yourself to the use of the net only, at home and on collecting expeditions, is your own safety. In my own experience I have had so many what I thought close calls, that I cannot lay too much stress on what we are at first sight led to believe is a simple matter. An instance, one of many, that I consider came near costing a lad and myself our lives, occurred in the lower bay of New York city, and may not be out of place if mentioned here. I was in the employ of the Great New York Aquarium, and was on a collecting expedition. It was Summer, and we were in a small cat-rigged sailboat, and had pleasantly sailed through the Narrows and were heading for Port Monmouth, N. J. I was about half way across the bay when the wind died out and we were becalmed. The lad was in the bow and I was lazily smoking in the stern and almost asleep, when he shouted out, "Look! look at the snake!" I replied, "You must have good eye-sight to see a snake ashore from here." But on looking in the direction pointed out, I saw, about fifty yards from the side of the boat, the head and part of the body of a snake extending about six inches from the surface of the water and pointed to the sky. By a good deal of manoeuvring, still having no wind, I managed to get alongside. The lad's first impulse was to take hold with his hands, and I must confess that I came near doing the same, thinking it was only a small adder, he having one coil around a Diamond-back Turtle, which was nearly exhausted. However, I took the *net* and lifted turtle and snake into one of the cans of water I had in the boat. I leave it to the reader to decide whether the lad and I had a narrow escape or not, when on my return to the Aquarium, and after due inspection it was determined that the

snake was a South American Copperhead, which had undoubtedly left a fruit vessel at Quarantine. You perhaps would be glad to know that Mr. Turtle, after his experience, lived some time to enjoy the hospitality of the Aquarium. I had put a piece of cork in the can for him to rest on. Mr. Copperhead also enjoyed himself in the same institution with others of his clan. This is only one of numerous instances I could give you.

Nowadays there is hardly a town of any importance where there is not a store that deals in fancy fish for aquarial purposes. But perhaps you happen to live in the country, or that there is not such a store in your town, so much the better,—you will have to collect the specimens yourself. Remember that the smaller your specimens, the better success you will have in keeping them. Go to the lake or pond where you procured the aquatic plants and you will find adhering to the plants some small water snails; you want 6 or 12 of these, as they act as scavengers, and you may also be successful, if you again use your rake, in hauling up two or three clams,—these will also assist the snails in keeping your tank clean.

The most interesting fish that can be kept in a Fresh-water Aquarium, is the Fifteen-spine Stickleback. They are generally found in the Spring of the year in brackish water. I have taken large quantities of them on Staten and Long Island, where streams run into the New York bay. Again, I have taken them in Lakes Mahopac and Gilead, Putnam county, N. Y., and have seen them in the Mohawk River, at Utica, N. Y., &c. If you can obtain them, I advise you to have them. They are from two to three inches long, and this beautiful little fresh-water fish build a nest in just the same manner as a bird does, and will hatch their young and bring them up in places where a great many apparently more hardy fish will die. As I have said before, if possible get them,—they will amply repay for expense or trouble. Get seven or eight of them and put in your tank; they are very pugnacious, and at the least fancied

insult will have a terrific battle, and the weak ones will go to the wall and the strong live,—and these are what you want. You will likely keep out of seven or eight fish, one or perhaps two pair. They breed three or four times a year, and during those periods the male fish will possess as beautiful and brilliant colors as the Humming-bird, and will divide the attention to the nest with the female: their attention consists in blowing water on their eggs all day and night until their young are hatched, and it is certain death for any other small variety of fish to approach their nest during this operation. There is the brilliant Golden Carp or Gold-fish, Dace, Roach, Perch, Sun-fish, Cat-fish, Eels, and numerous other varieties, all of which will do well if the specimens are not too large. You can at any time divide your tank with a small piece of wire netting with very small meshes, or a piece of glass will answer all purposes, so that you can keep the varieties named with the nest-building Sticklebacks, otherwise Mr. Stickleback will soon end their career. All the other varieties will live harmoniously together. You can add with perfect safety a small Nute, or Lizard, and a small Turtle. If your rock-work does not allow of them getting their heads out of the water it will be necessary for you to put a piece of cork or wood in for them to rest on, otherwise they will be drowned. They must be well supplied with raw beef for feed, which should be placed on the rock-work or wood,—and they will have no fooling about it; if you do not supply them they will help themselves, and some fine morning you will find your other captives minus their caudal appendages. Again, I beg the student to get the size of the fish in accordance with the size of the tank they are to be kept in.

And now let us understand something about the location of the aquarium, as this is also a very important matter. It wants all the light it can possibly get, so that the plants can thrive, but under no circumstances must the sun be allowed to

shine direct on it, in fact it must be kept away from heat of any description. The fish mentioned in this treatise can stand any amount of cold, but if the water gets any way warm they must die. I have had fish frozen solid in a glass globe, and the globe crack and fall to pieces, and have then taken them in a solid lump of ice, put them in a bucket of water to thaw out, and have then kept them several months in perfect health. Again, I have had by accident fish where the sun shone direct upon them or too close to the stove, and in a very short time they have been live fish no more. Should you find your fish at any time swimming close to the top of the water, in almost a perpendicular position, something is wrong; hasten and get a common tea cup, dip it in the water and lift it up about 18 inches from the top of the tank, and then empty the cup of water into the tank and thus force air into the water; do this three or four times, and then look for the trouble; it will generally be found that there is a dead fish, or some food that has been overlooked and has commenced to putrify. Your aquarium should have a cover, made of fine linen, to keep out the dust. After we have considered something about feeding fish I will tell you what I know about a Marine Aquarium. Big fish eat little fish all the world over, but in the face of this old saying, you will have people tell you your fish in the aquarium can live on nothing or else on the animalculæ contained in the water. I tell you it is all nonsense, but I am willing to admit that they can live longer on apparently nothing than anything created that I know of. I myself kept two gold fish eight weeks without feeding them, and they then looked in perfect health although rather thin, but at the expiration of the time mentioned I took pity on them and commenced to feed them. I do not believe I ever saw anything hungry before until I saw those fish eat; between them, in less than five minutes, they managed to dispose of seventeen worms, and might have still been at it if the worms had lasted. My experience with the

occupants of rivers, lakes and oceans leads me to the conviction that there is not in this world greater gormandizers created than the said occupants. Once in a while we read of the devastations of the grasshopper and army worm on land, but to use a phrase perhaps more expressive than polite, they do once in a while "take a rest." Ask an oyster fisherman if he ever knew a star fish to do so. I maintain that fish and the lower orders of aquatic life will go through more and give up their lives quicker than anything else created, for something to eat. Perhaps you have seen the educated seal go up stairs, ring a bell, bow, &c. Let me tell you, if you do not know it, that he does it all for something to eat. No fish! then no bell ringing, bowing, &c. I knew of a pair of nest building Sticklebacks who had been taught to ring a bell when they were hungry. It came about by hanging a worm to a thread suspended in the water: they used to pull on the thread when there was no worm; some one suggested a bell on the end out of the water, and then the fish rang the bell because there was no worm where the worm ought to be.

Feed your fresh-water stock with worms and your salt-water stock with any kind of clams: put in what you think they will eat, and in an hour's time take out what is left. Allow nothing to decompose in the water, and all will be well.

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## THE MARINE AQUARIUM.

**I**N the management of a Marine Aquarium we support life by air in the water, exactly as we do with fresh water, but we encounter a difficulty here that we do not in fresh water,—that is, Evaporation. Where you have only a small body of water without a circulation, it is much more easily

managed than when you have a large body of water with a circulation. We must remember, that it will not be the salt which will evaporate but that it will be the water. Where there is a circulation the density of the water must be kept with a lactometer ; but in a small aquarium it can be easily ascertained by the sediment on the glass. Particular care must be taken of this sediment ; it must be watched closely, and it will be found that when you fill the tank or globe say within three inches of the top, that after 24 hours it will have a line of sediment on the glass level with the water, this is your lactometer. When the water has fallen one-half inch or more from the line of sediment, that is the amount of water that has evaporated and this must be replaced with fresh water, *not* salt water, for the salt is still there, it is only the water that has been lost. Again, the aquarium I have recommended for fresh water will not answer for salt water. In the first place, salt water is much more penetrating than fresh, and would work its way through the putty and litharge in a very short time ; and secondly, under no circumstances must you allow salt water to come in contact with metal of any description. If you have a large iron tank, and the glass has been set with some other substance than putty and litharge, or red or white lead, you can make it serviceable by covering the iron with a mixture of  $\frac{2}{3}$  Portland cement and  $\frac{1}{3}$  of sand,—this will be found to resist salt water. But the nicest, cleanest, and in every way best adapted vessel for the Marine Aquarias are those bell glasses with ebonized stands, sold or obtained for you by the glass and china trade throughout the United States. These can be used successfully for all the lower varieties of marine life. You can keep in one, say anemones, barnacles, serpules, coral, clams, and oysters, in another you can keep hermit, spider and rock crabs, star fish, &c., &c. In fact you will find a very large variety of life in the orders mentioned, and with the ways of which you are not acquainted or ever will be until you have an

opportunity of studying their modes of life, which can only be seen to advantage in the aquarium. But I fancy I can hear you ask, "Why can I not keep a flounder, striped bass, black-fish, and other fish in the Marine Aquarium?" You can if you are inclined to go to the expense of a tank, say from 4 to 6 feet long, and about  $2\frac{1}{2}$  feet wide and  $3\frac{1}{2}$  feet high, and then your tank must be one mass of algae to keep two or three fish alive, and perhaps besides you might have to go to the expense of a circulation or an artificial aeration, and for that reason the keeping of fish is generally left in the hands of institutions and colleges who will go to the expense. But I have no hesitation in saying, that if you could have fish swimming around you, say ten or twenty varieties, you and your friends who have the least love of nature would nine out of ten times be attracted by what we would call the lower orders of life, among which say the varieties named for the bell glasses. Such has been my experience in institutions where we have had a very large variety of fish; the lovers of nature could always be found studying the anemones, corals, &c., &c. Now as regards plants or algae for the Marine Aquaria. There are two kinds whose reputations are well established:—the first is *Ulva*, which is a plant that grows in long strips, sometimes found measuring 6 inches across and 18 or 20 inches long, again not  $\frac{1}{2}$  inch wide and only about 5 or 6 inches long; you cannot mistake it,—it is dark green in color and looks very much like a lettuce. This is by all odds the best oxygen-giving algae known. The other is *Sylira*: this grows in bunches like coral; it is dark red in color and almost transparent. These are really the only two algae that are of any service as oxygen-giving plants. I have thoroughly tested some twenty other varieties, and although I found some that do throw off a certain amount of air, but none that I would venture to recommend to a new beginner for the purpose of supporting life in an aquarium. The two algae mentioned being of two such

distinct colors allow of very effective grouping. They must be anchored in the same manner as directed for fresh-water. The bell glass can be fitted with rock-work, gravel, &c., exactly as the fresh-water one. As I have before stated, the only difference between the fresh and salt-water aquarium, is the matter of evaporation, and the action of the salt-water on metal, and its penetration. The same principle governs both. I think the palm for hardiness must be given to marine aquatic life. I have succeeded in shipping and delivering specimens from salt-water in good condition much further than I have specimens from fresh water. In conclusion, while I make no claim to literary ability, I am quite sure that if you wish to have an Aquarium and will read the foregoing carefully you will be enabled to carry one on successfully, and if you can do that my object in writing this treatise will be attained.



**S** MALL SEA SHELLS.—For Aquarial purposes or Fancy Work. East or West India assorted, about 8 varieties, 25 cts. ; half-pint by mail, 30 cts. ; \$3.25 per gallon, by freight or express only.

**R** HODE ISLAND SCOLLOP SHELL (*Pectan irradians*.) Polished and mounted into pairs, making a pretty needle book finished with flannel and silk ribbon ; free by mail, 25 cts. 5 valves mounted into a pretty basket finished with silk ribbon ; 50 cts., free by mail. 12 polished valves, free by mail, 35 cts. I have a few very small specimens, beautiful colors, mounted as gentlemen's scarf pins, measuring about  $\frac{1}{2}$  inch ; 35 cts. each, free by mail.

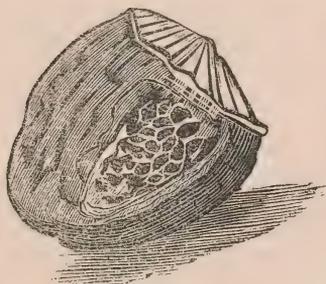
**S** HELLS FOR PAINTING.—The Rhode Island Clamshell, measuring from 5 to 7 inches long and about 4 inches wide, nicely cleaned, 75 cts. per dozen, by express. This is a nice and cheap shell to study painting on. The Pearl Saddle-back Shells, 25 and 50 cts. each, free by mail. Large Mother of Pearl Shells, 75 cts. to \$2.00 each, by express only.

**T** O those who cannot visit Newport I can send by express an exact model of the "Old Stone Mill," about five inches high, worthy of a place in any cabinet. The Mill is without any authenticated history but is supposed to have been built by the Norsemen. Price, 50 cts.

**VIEWS** of the principal places, such as the Old Mill, Forty Steps, Ida Lewis' Lighthouse, Fort Dumplings, &c., painted on R. I. clamshell, 50 cts. each, free by mail.

**GUIDE BOOKS** with views of some of the principal villas, 25 cts., free by mail. Books containing from 12 to 24 views of the city, 50 cts., free by mail.

**C** HINESE CAT'S EYES for specimens or mounting, two sizes, 75 cts. each, free by mail. This must not be judged by the price ; it is a dark pearl from China, and at day or night looks like the eye of a cat ; is really worth more money, but having received quite a consignment I offer them to my customers at this price.



**T**HE RAJAH or BETEL NUT, from Australia, sometimes found in the West Indies. This little nut contains an indelible ink for marking linen. It will grow if planted in a conservatory. It is chewed by the natives of Australia to blacken their teeth. One nut will mark six dozen pieces of linen with initials. 10 cts. each, 3 for 25 cts., free by mail.

**E**YE-STONE or Operculum, from Singapore; price 75 cts. each, free by mail. This is the eye-stone used by oculists for passing through the eye. These are already ground and polished, and mounted on pearl as a shirt stud. The supply is limited and they cannot be obtained elsewhere in the United States.

**E**NGLISH SCOLLOP-SHELL (*Pectan Jacobæans*), used for cooking and serving oysters and fish in; 75 cts. per dozen, by mail 85 cts. This shell measures from 4 to 6 inches across and has gone through a process of cleansing that makes it perfectly sweet and clean. During the last two seasons I have sold several hundred gross of this article. It is the only known shell that will stand the heat of the oven.

**S**HELL CAMEOS, beautifully carved in Rome, suitable for mounting on the cabinet; subjects, principally heads; small sizes 25 cts. each, large sizes 75 cts. each, free by mail. These cannot be matched elsewhere in the United States for double the money.

**W**ALRUS TEETH, showing the nervine or marrow bone of the tooth, the upper part of the ivory having been cut off; 75 cts. each, by mail 85 cts.

**N**APLES RED CORAL in natural condition, very rare and nice specimens for cabinet, 75 cts. each, free by mail.

IN MEMORY OF  
GEORGE \_\_\_\_\_

BORN \_\_\_\_\_ DIED \_\_\_\_\_

**A**NY NAME cut on a Leopard Cowrie shell as above, giving full name, date of birth and death. This is an everlasting remembrance of the departed and can never be erased. I claim to be the only one in the United States who does this work. It always gives great satisfaction. Price 50 cts. each, by mail 60 cts.

**S**ICKLE MOTHER OF PEARL PAPER KNIFE.—As its name indicates it is cut from Mother of Pearl and resembles a sickle with wooden handle; an elegant present. Price 50 cts. each, free by mail. I manufacture this article.

**H**ANGING FERN BASKETS, made from four of the large English scollop shells, 50 cts. each; double ones, standing, \$1.50 each; both by express or freight only.

**A** WHITE WHALEBONE GENT'S WALKING STICK mounted with ivory handle; a great curiosity, made by sailors on whaling ships. I have only a few and they are getting scarce. \$3.00 each, by express.

**S**EA-SHELL JEWELRY, of which I have a large variety, manufactured by myself, among which I will mention the Tasmania Spiral Shell; the iridescent colors in these shells are acknowledged to be the most beautiful of anything known in the way of shells; mounted in ear-rings in solid gold, \$1.50 a pair, free by mail. A very pretty pair of Shell Ear-rings, 50 cts., free by mail. Shells mounted in Gent's Scarf-Pins, very pretty and rare, from 25 cts. to \$1.00 each, free by mail.

**I** CLAIM to be Headquarters in the U. S. for Sea Shells, for cabinets, ornamental uses and for manufacturing purposes, and collectors will find numerous rare shells among those advertised under head of "Small Shells" which other parties sell per specimen.

**T**O YOUNG BEGINNERS who will send me \$1.00, I will send by express 12 specimens of Native and Foreign Sea Shells, all good nice-sized cabinet specimens, something they cannot collect or buy elsewhere for three times the money. I make up collections of shells at \$5, \$10, \$15, \$20, \$25, named or not as desired. In writing for any of the above, tell me about what you think you want, and I will give you more for the money than you can get elsewhere and guarantee to satisfy you. You will learn more by not having them named, so that you can search them out yourselves.

**T**AMARAND BERRIES from Jamaica, W. I. These will grow if planted in hot-house or conservatory. 15 cts. a package, free by mail. This must not be confounded with the Florida Black-eyed Susan.

**J**OB'S TEARS on Strings, from the West Indies. Price 50 cts. a string, free by mail.

**E**GGs.—OSTRICH and EMU EGGS, from \$2.50 to \$5.00 each; ALLIGATOR, 25 cts. each; FLAMINGO, \$1.00 each; FLORIDA GALLINULE and FLORIDA HERON, 25 cts. each. I can supply you with all commoner varieties that you may require. Send 2 cts. for Egg Catalogue.

**M**AMMALIAN SKINS AND SKULLS furnished on short notice.

**I**CAN FURNISH you with any of the known varieties of Bird Skins, mounted or not as desired.

**S**OUTH SEA ISLANDS.—I make a specialty of Curios from this part of the world. I generally have in stock an assortment of weapons of warfare, &c., that I can supply lower in price than they can be obtained elsewhere. I claim my success in business to be the result of always giving satisfaction to my customers in price and quality of goods and making no false representations.

**A SLAVER'S TREASURE CHEST**, about 350 years old. 36 inches long, 19 inches wide and 19 inches deep. Worthy of a place in any museum ; price, \$50.00.

*From the Newport Daily News, March 19, 1885.*—"Mr. S. Jacob, of Bellevue Avenue, has temporarily deposited with the Historical Society for public examination, the treasure chest of one of Newport's slaving vessels. It is a massive affair, weighing some four hundred pounds, and yet with no mean pretensions to beauty of workmanship and adornment. The lock is not the least of its features of interest. The strength of the chest is suggestive of the fears of its former owner that his ship might be overhauled by one of its dreaded Newport rivals, by courtesy termed privateers but elsewhere sometimes called pirates. Possibly itself has one time been filled not with milled dollars merely, for the purchase of flesh and blood, but with gold and silver chalices and candlesticks, rifled from the churches of the Spanish main. Its full history will probably be given at the next meeting of the society, but meanwhile it is well worthy a special visit during the librarian's hours, from 10 to 12 and from 2 to 4 daily. Such a marked illustration of a civilization and of public morals now fortunately past, and of the methods by which Newport achieved its former prosperity, should not be allowed by our moneyed men to leave the city, as so many of our most valuable memorials have already done. Whoever sees this treasure chest will agree with us that it should be purchased and presented to the society for permanent preservation."

**SAGO PALM.**—A bunch of the seed, about six feet long ; brought from the Island of Martinique, W. I. It resembles a bunch of bananas, the seed being cones intersected with leaves and curious fir. A curiosity that has attracted an immense amount of attention from scientific people. Price \$35. Specimens of the cones, 25 cts. each, by mail 30 cts.

**OLD STYLE OF WHALE HARPOONS, LANCE AND Spade.** These are becoming quite rare, and are much sought after for collections ; to parties in want of them I shall be pleased to quote price per piece or in set.

**ANTIQUES.**—I am quite a large dealer in these goods. I always have on hand Old Brass Door Knockers and Latches, Plated and Brass Candle-Sticks, Snuffers and Trays, Warming Pans, Spinning Wheels, Old China and Silver and Pewter Tea Sets, Brass Andirons, Colonial Currency, Shoe Buckles, Watch Keys and Charms, China Cups and Saucers, Figures, Plates, &c.,—a variety far too numerous to enumerate. I have from the battlefield of Telekeber, Egypt, a Stack of Arms suitable for a Museum, consisting of 3 guns, 3 horse pistols, 2 sabres, marked "British Crown, Tower, 1864."

**CHELSEA CHINA FIGURES** [*Antique*]. I have a pair of most beautiful figures, standing about eleven inches high, representing a shepherd and his lady surrounded with flowers. They are in perfect preservation, but it is impossible to give a description of their beauty of workmanship; they must be seen to be appreciated. They are marked on the bottom of each piece with a red anchor. Price \$50 for the pair. They could not be duplicated at any price.

**PORTUGUESE WATER BOTTLES.**—These are very curious shapes, and some are decorated with various colors. They make very pretty decoration for any room, being great curiosities. The ones that are not painted keep drinking water quite cold in the hottest weather. Price \$2.00 each, by express.

**ANIMAL SKINS FOR RUGS.**—I have constantly on hand a large variety of Leopard, Tiger, Fox, Wild Cat, Deer, &c., &c., with and without heads, mounted, lined or not, as desired, China Goat, black, white and silver grey. The prices of these goods varying so much it is impossible to quote a regular price. I will supply anything in this line as low as good and thoroughly cured skins can be sold at.

**BUFFALO HORN AND TOOTH** from Dakota, mounted on a small wooden shield. Price 75 cts., by mail 85 cts.

**MINERALS.**—I have in stock at all times a very large variety of all known American minerals, prices ranging from 10 cts. per specimen up, and am constantly receiving shipments from all parts of the world, such as Rough Diamonds and Crocidolite from Africa, Flourite, Calcite, Quartz and Iron, Zinc Blende, Galena, &c., from Cumberland, England, fine Topaz Crystals from Brazil, from 10 cts. each, Malachite and Azurite from Arizona; a splendid specimen of the Moonstone, from Middletown, Delaware County, Pa., measuring 4 by 2½ inches, polished on one side, price \$5.00. Common minerals, fair specimens, can be supplied at 10, 25, 50, 75 cts. and \$1.00 each; on all others the prices range from 25 cts. to \$2.50 and for rare minerals from 50 cts. to \$50.00 each. I have a large stock of Brazilian and other Agates polished, from 25 cts. to \$2.00 each.

**THE NEW ENGLAND CORAL** [*Astrangia Danae*].—This is the only true coral yet discovered on the coast of New England; specimens, 50, 75 cts. and \$1.00 each, free by mail.

**CASTS OF FISH.**—I am now taking casts of all fishes visiting or inhabiting American waters. These casts are taken direct from the fish, not from models. They are very desirable for museums, &c. Price from 50 cts. to \$1.00 each; a large reduction where 20 or more are taken.

**LOBSTER FIGURES.**—Something very comical; old men made from lobster shells. They are very much admired and are very cleverly made. Something entirely new. Single Figures, \$1.00 each; Fishing in Rockwork, and Ash, and Match Stands, \$1.50 each; Two Figures Fencing, &c., \$1.75. They stand from 9 to 12 inches high and are very firmly made. If by mail, 20 cts. must be added to prices given.

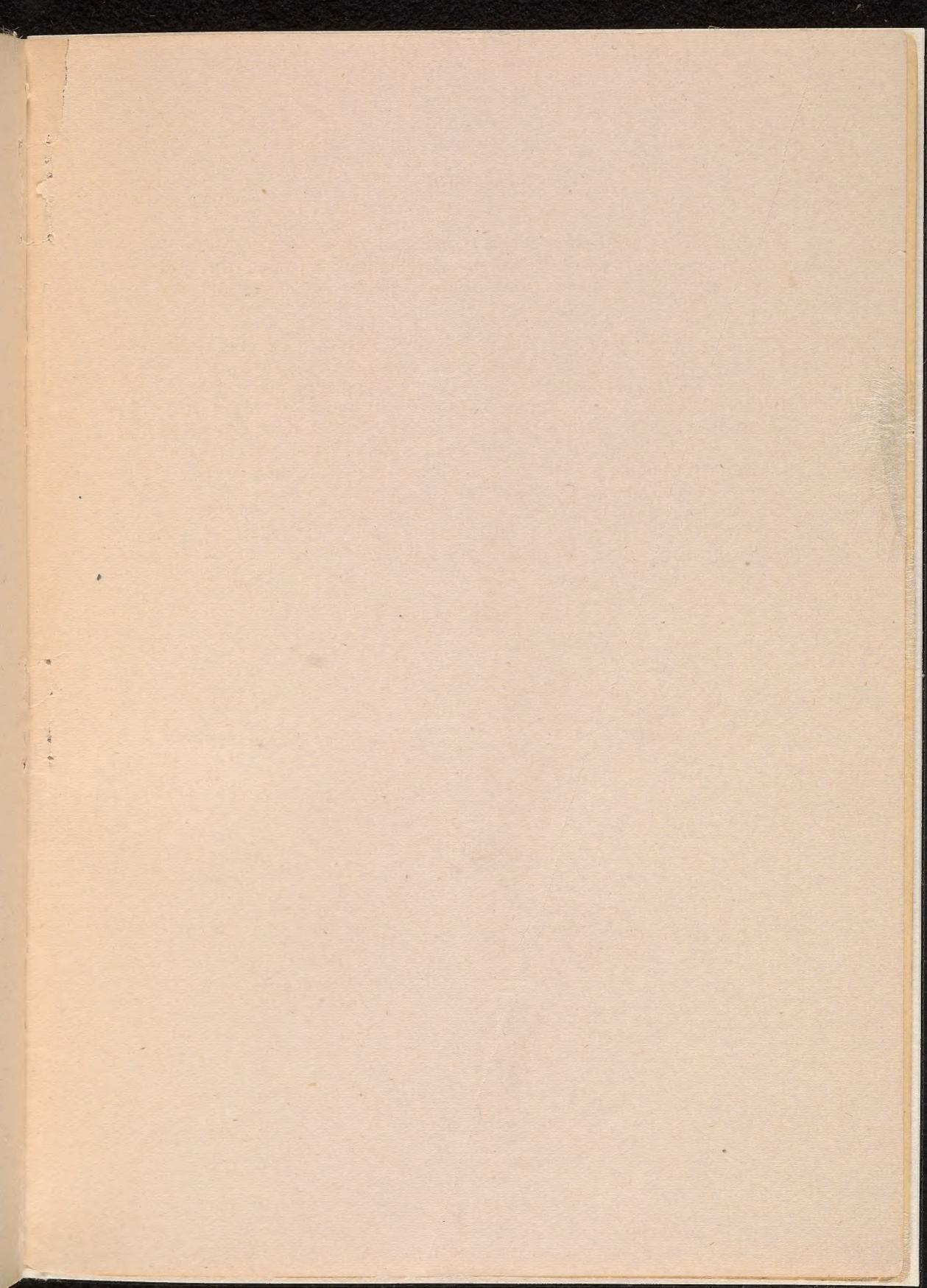
#### SPECIAL NOTICE.

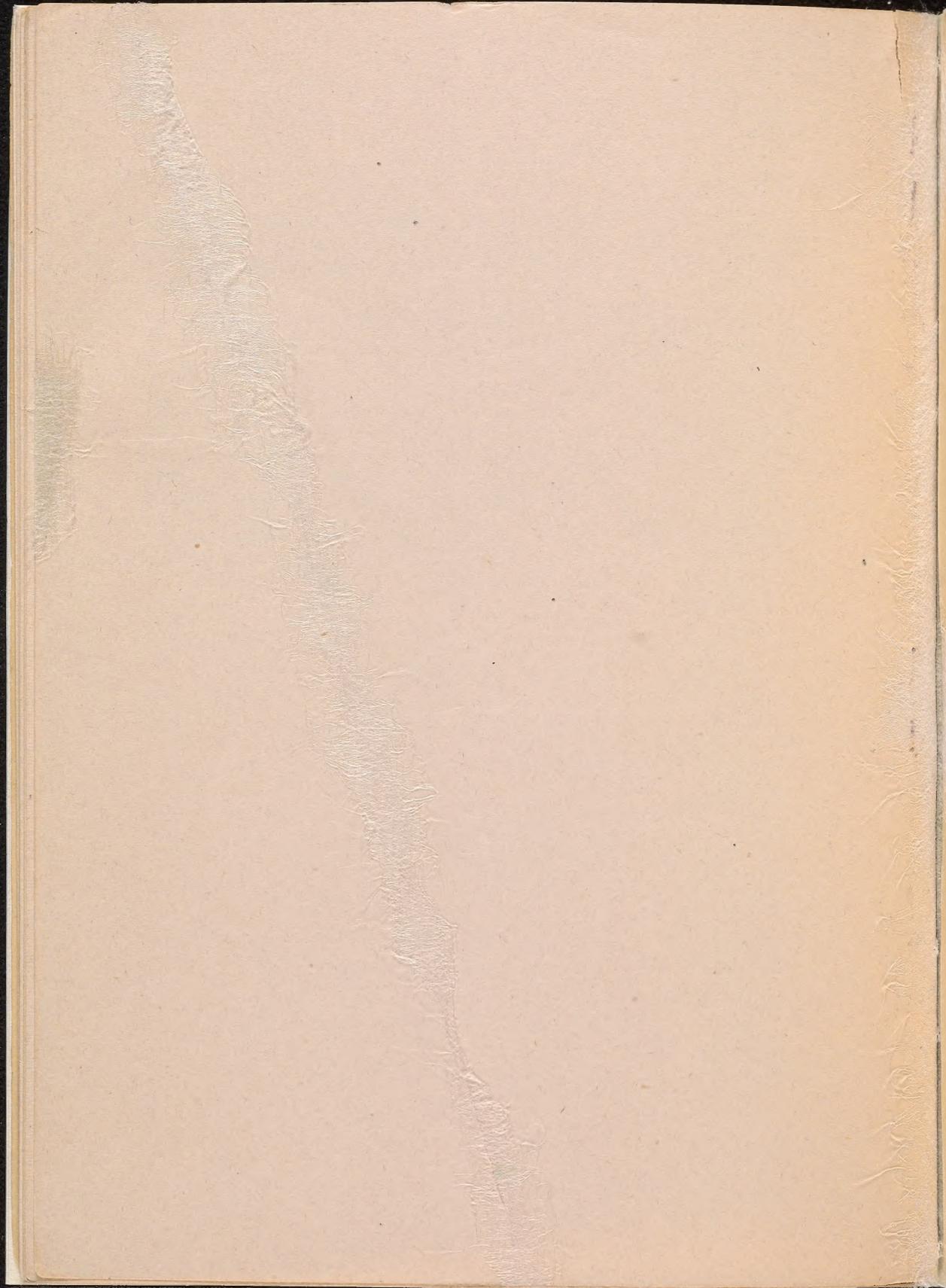
**OLD STONE MILL.**—In September of 1885 the Old Mill showing signs of decay, the City ordered it to be put in thorough order. I secured from the mason having the work

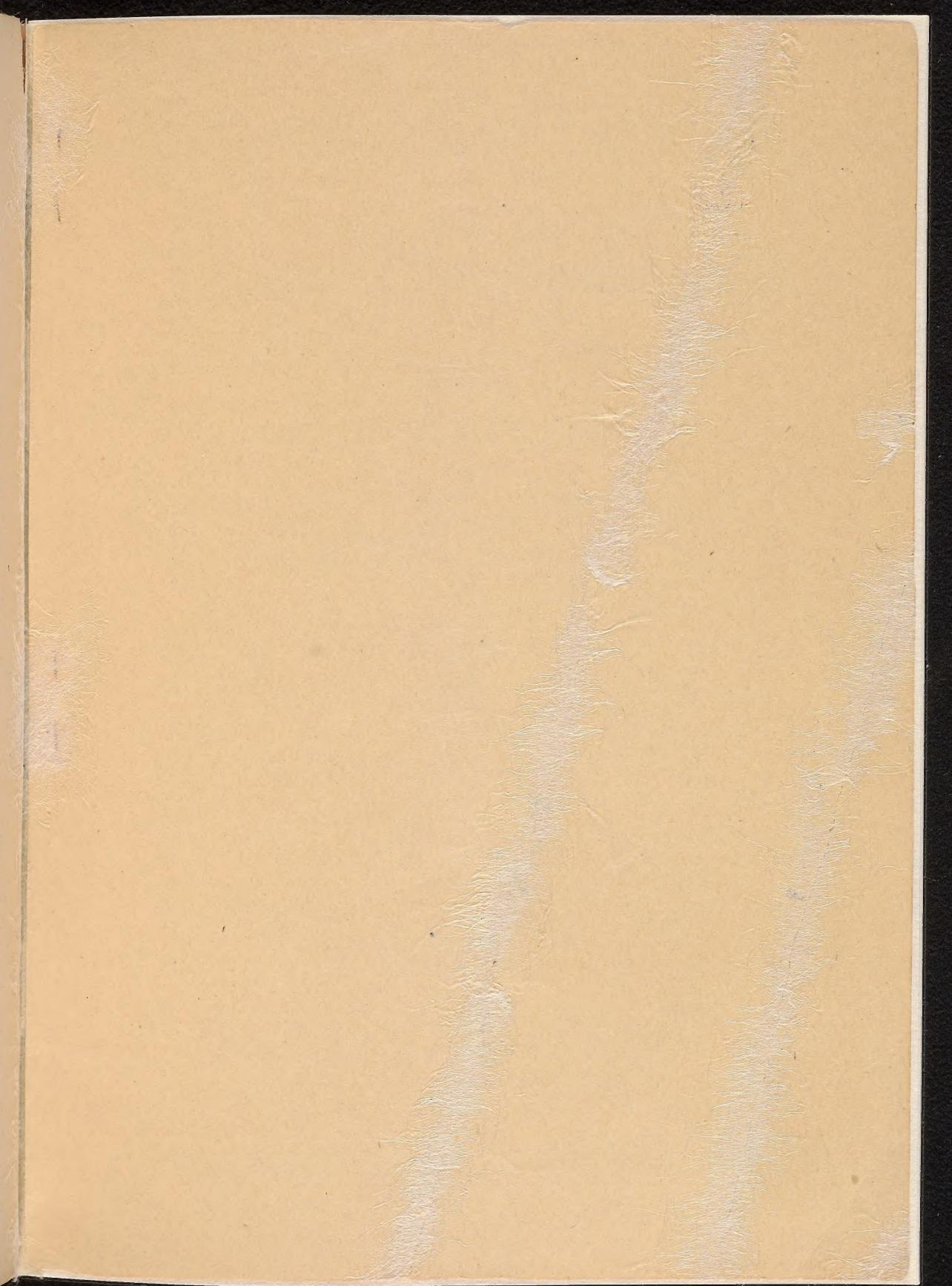
in hand, what old cement and stone was taken off the Mill. I now have it in nice small boxes, with a label showing the Old Mill and giving a full account of the repairs. Price 25 cts., by mail 30 cts.

**O**DDITIES, NOVELTIES AND CURIOSITIES.—There being no regular supply of a great many articles that I carry in stock it is next to impossible to catalogue many things. It often happens that I receive specimens of one of a kind, duplicates of which cannot be had at any price,—I find it useless to catalogue these. There are a great many who advertise an immense stock of goods, very few of which they carry in stock and take refuge under *substitutes*. This system I am very much adverse to, and in no case will anything be sent which is not ordered,—and I again repeat that I will refund money in every instance, less amount of postage, where anything is not satisfactory.









—THE—  
**Rhode Island Historical Magazine.**

*A Quarterly publication devoted to the History, Genealogy,  
and Biography of the State of Rhode Island  
and Providence Plantations.*

Terms, \$2.00 per annum, in advance.

**T**HIS Publication is now in its sixth year, having gained in public favor since its commencement. It is invaluable to the Historian and Genealogist, covering a field not occupied by ordinary periodical literature, and is in every way an admirable table companion for the scholar and for all persons of literary and antiquarian tastes. It has met with general approval and already forms a storehouse of material not accessible in any other form.

Abstracts from the Jamestown, R. I., records and also from the records of Trinity Church and the Society of Friends, of Newport, R. I., were commenced in the April number, 1885.

In the July number (No. 1, Vol. 6, 1885), was commenced a very interesting diary kept by Lieut. John Trevett from 1774 to 1782. The same number contained the will of Gov. Benedict Arnold of Newport, made in 1678, in which he mentions his "*Stone-built Wind Mill.*"

The October number contains an interesting paper on the Jewish Cemetery at Newport, the will of Gov. Nicholas Easton and many historical and genealogical notes of interest.

In the January number (1886), we hope to commence the republication of "*Bull's Memoirs of Rhode Island,*" 1638—1783, with additional notes.

The first and second volumes of the Magazine have become so scarce that they can be supplied only as odd numbers can be picked up here and there. The publishers will receive orders for them, however, which they will endeavor to fill as rapidly as possible, and in the order in which they are received.

Vols. three, four and five can be furnished on demand.

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