

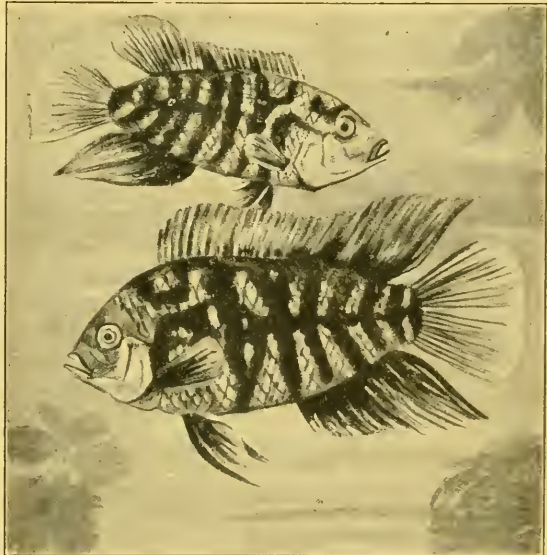
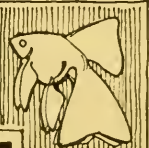




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# THE AQUARIUM

ISSUED IN THE INTERESTS  
OF THE STUDY, CARE AND  
BREEDING OF AQUATIC LIFE



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Fishes

CHANCHITO  
*Heros facetus*—Jenyns  
After Drawing by Schlawjinski

APRIL 1912

Vol. I

PUBLISHED AT PHILADELPHIA, PA.  
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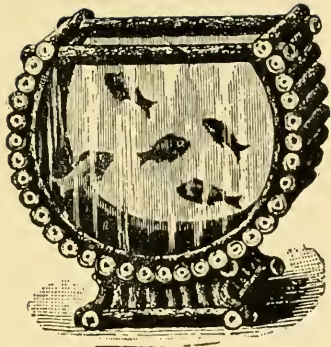
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## Breeding Chanchito

FRANK L. TAPPAN  
Minneapolis, Minnesota

Early last spring I was fortunate in obtaining a pair of little fellows barely two and one-half inches long, so small that I feared they were too young to breed. I placed them into a 30-gallon aquarium. At one end of the aquarium I placed a small terra cotta castle, with a large opening at the base. The fish did not seem to agree very well, and after several domestic disputes apparently separated, the male taking possession of the castle, while the female was usually to be found in the shade of a group of sagittaria at the further end of the aquarium. One day I noticed that the fish had apparently made up and were busy swimming thru and around the castle, inspecting every part of it. Then began the labor of removing the sand from the inside of the castle which took several days, the fish had a peculiar method of throwing the sand out with their fins and tails, with a sort of quivering motion not unlike that of a hen dusting herself. Finally the last of the sand which they were unable to remove in this manner was taken up in their mouths and carried to a distance and deposited in a heap.

Early one morning (July 13th), I discovered that they had spawned, the eggs, glistening like little white pearls, were stuck or glued on the inside edge of the castle. From now on both fish were assiduous in their care and attention to the eggs and young. One of the fish was constantly hovering over the eggs fanning them with his pectoral fins and causing a current of water to flow over them, when one fish became tired the other instantly took its place.

Upon first placing the fish in the aquarium, the water was kept at a depth of eight inches, after the fish had spawned, the depth of water was reduced to six inches, and kept at that depth.



CHANCHITO—*Hero facetus*—Jenyns

After Drawing by Schlawjinski

Early on the morning of the fifth day I found one of the old fish in the castle as usual, but not a trace of eggs or young, and my first thought was that the parent had destroyed them. My attention was attracted by the queer actions of one of the fish at the further end of the aquarium, where the day before I had noticed him excavating a deep hole at the base of one of the water plants, the fish was turning sideways and peering into the hole with first one eye then with the other, in a conical manner. With the aid of a reading glass I discovered a black mass of little wriggling fishes in the bottom of the hole. The little Chanchitos kept up a constant wriggling motion but were unable to swim, and seemed to be helpless and entirely dependent upon the parent fish for care and protection. While one of the parent fish was constantly guarding the little fellows the other fish was busily engaged in excavating deep holes in the sand in different parts of the aquarium, and once or twice a day the little fishes were transferred to a new location, the old fish carrying several of them at a time in their mouths like cats carrying their kittens.

## A Hunt for Darters

TRACY H. HOLMES  
Chicago

On the morning of the ninth day the little Chanchitos were sufficiently developed to leave the sand holes and I found the parent fishes surrounded by a black ball of little fishes which gave them the appearance of being in the midst of a swarm of bees. If any of the little fishes strayed too far away from the others, one of the old fish would gently gather up the little one in its mouth and return it to its fellows. The parent fishes seemd very proud of their family, and it was amusing to see the comical way in which the old fish every now and then would peek into the nest. After the little Chanchitos were able to swim about, the old fish became very jealous of their little family, and would fight like tigers if any one disturbd them, in fact I had to caution visitors not to tease them or approach too close to the aquarium, as several times the fish struck the glass sides of the aquarium with sufficient force to stun themselves.

The little fish requird no food until nine days' old, then they were given the live food until old enuf to eat the artificial food and fresh scraped meat, of which they are very fond. By actual count, there were 285 little Chanchitos and I succeeded in raising 280 of them.

The little Chanchitos are kept with the big ones and the little fellows are the bosses of the aquarium. If the parents happen to get fed first, the young ones appear and get the food out of the mouths of the old ones if they can reach it and the old ones seem to take it good naturedly.

During the breeding season the old fish assumd the most intense colors, the eye is bright red, the body of the fish bright olive green, inclining to bronze, the tail and fins jet black, as are also the seven cross bars on the body, which give the fish the appearance of a zebra. The Chanchito is found in the waters of the La Plata basin, South America, and attains a length of nine or ten inches, it is a hardy, healthy fish, of striking appearance and interesting habits and easy to keep in the aquarium

On one of those delightful October days when the mere suggestion of the approach of Winter adds zest to one's enjoyment of the lingering warmth of Summer, four zealous members of the C. F. F. C. hied themselves out of Chicago into the haunts of wary, little darters which had been discovered in a tiny stream some thirty miles away. After a pleasant hour's ride thru fields of tattered cornstalks and across stubble and pasturelands we dropt off the train to find ourselves in a little village, perched on the side of a hill, along whose base meandered, in serpentine course, a brook of clear, cold water, now babbling over pebbly shallows and again purring in deep holes nestld between banks of green sod.

Donning our hip boots and toting our nets and pails we made a bee-line for a broad shallows visible a hundred yards away just below an old red bridge. Starting in on the lower end of the shallows two of us carried the mimow seine in a crescent line across and up the stream, and, dragging it carefully over the stones, we made a quick sweep up to one shore, keeping the down-stream end of the net snug against the shore while the other end of the net made a circular path out across the stream and back to the shore at a point farther up stream. At first we provd to be too clumsy, for we merely got glimpses of "the fish that got away," but, gaining experience we soon began to find the net sparkling with leaping, flashing fishes. Most of the hauls consisted of "Johnny" darters, but Floyd's practist eyes soon detected more rare and prizd specimens and so Fantail and Rainbow darters were soon being exultingly exhibited by Carl in his pocket globe which he had so thoughtfully brought along.

Again and again we dragged that little



shallows and each time some prize would call forth a shout of joy from the boyishly excited men. In all we tallied six species of darters: Johnny (*Boleosoma nigrum*), Fantail (*Etheostoma flabellare*), Rainbow or Soldier (*Etheostoma coeruleum*), Least (*Microperca punctulata*), Black-sided (*Hadropterus aspro*) and Green-sided (*Diplesion blennioides*).

These strange little cousins of the perch, so changed in their mode of life and in their adaptations for that life, stick to the shelter of the rocks in the few inches of rushing water and do not desert it for the seemingly safer waters of the nearby deep pools. After watching these darters all Winter in the aquariums we readily understand their abhorrence of the deep water, for they are so fitted for scrambling among and under rocks and even for diving under sand that they are practically unfitted for swimming and seem very awkward in trying to get to the top of the aquarium.

Having collected as many darters as the members could properly care for, and having thrown back into the stream all but the choicest specimens, we set out for the deeper and quieter stretches of the stream in a pasture above the bridge. Being shy of boots, John demonstrated his virility by stripping to shirt and "gym" pants and wading in that icy cold water for three or four hours. He was a great help to the expedition but we feared it would be at the cost of a life. Fortunately we can say he did not even take cold. In the muddy, three-foot-deep pools we succeeded in capturing some hog suckers (*Catostomus nigricans*), stone rollers (*Campostoma anomalum*), and some sucker-mouthed minnows (*Phenacobius mirabilis*). The suckers did not seem to adapt themselves to aquarium life for they soon died, but the rest are still thriving in the school tanks. The most exciting episode of this part of the trip was the attempt of Carl to leap across a little creek with two pails of fishes in his hands. Landing on a slip-

pery, muddy bank, his feet playd him false and there was a yell, a floundering fisherman and two masses of flopping fishes. Wildly we scrambled to the rescue, not of Carl, but of those precious darters, rapidly somersaulting down the slippery bank to the beckoning water below. True to fishermen's luck we lost the two rarest specimens, the black-sided and green-sided darters, and no one knows how many extra fine rainbows.

After repairing the damage as best we could, we cut across the fields to a point in the creek about half a mile away where Floyd assured us Red-bellied Dace (*Chrosomus erythrogaster*) were waiting to try our mettle. This haunt was a broad and deep part of the creek just above a narrow, deep channel thru which the water rushed as thru a mill-race. The bottom of the pool was sandy, tho the banks on the deeper side were miry mud. These graceful, aristocratic denizens of the pools of Illinois streams provid almost more than a match for four men, for, in spite of our having two of our party upstream throwing in stones to scare the fishes away from that avenue of escape, we were able to capture, after an hour's seining, only a half dozen of the wary little beauties. Even the beasts of the fields seemd to be in league with the little dace, for just as we got ready to make our hauls, a band of horses in the adjoining pasture dashed thru the stream a few feet away from us, scaring our fishes away and splattering us with mud and water. In spite of the heroic efforts of Carl and Floyd to head them off, these horses persisted in dashing thru the stream, much to our annoyance. And after capturing the dace we found we were not at all sure of our prizes, for the lifting of the pail cover was a signal for all sorts of acrobatic feats that resulted in some of them leaping clear out of the pail and back to freedom in the stream.

(CONCLUDED ON PAGE 7)

# THE AQUARIUM

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*Issued in the Interests of the Study,  
Care and Breeding of Aquatic Life*

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Published monthly except July and August at  
1311 SANSOM STREET, PHILADELPHIA  
by the Aquarium Societies of Brooklyn,  
Chicago, New York and Philadelphia

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Send all manuscripts, exchanges, books for  
review, etc., direct to the Editor-in-chief;  
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EDITOR-IN-CHIEF, EUGENE SMITH  
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VOL. 1                      APRIL, 1912                      No. 1

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## Our Aim

The aim of this magazine is twofold. First, to interest the wider public in an important subject of nature study. Within the last few years the aquarium has gained greatly in public appreciation, tho it does not yet hold the prominent position to which it is entitled on account of the great possibilities it offers of opening one of nature's less known fields. To the scientific student, the fish breeder, the admirer of beauty, or the simple lover of nature, the aquarium becomes an object of value.

This larger point of view will be kept foremost, and while we purpose being scientific we also intend to be popular.

The second purpose is to bring before the members of the several aquarium societies matters which may be of general interest to them as well as of mutual help in the furthering of the art of aquarium keeping. In other words, to combine the scientific and the practical into a harmonious whole. Our call therefor is to all who are interested in the life of the water and of its more immediate surroundings. We cover the domains of river, lake and marsh as well as of the seaside.

The value of mutual help may be best appreciated by a short retrospect of what has been done in the past. Many years ago the editor started out with an aquarium, which was anything but an aquarium except in name. For want of proper knowledge and for lack of experienced counsel he groped his way from point to point, from failure to failure, until he in the long run *discovered* for himself the underlying principles which tho well known to a few, were buried out of sight in scarce and unknown volumes. His experiences were only those of many another amateur plodding by himself, unbeknown of his colleagues.

There was a dearth of information and no source available known.

In this way a number of people gradually worked out success for themselves, tho in complete ignorance of the things others were doing along the same path.

Early in 1893, five persons who had by chance become acquainted, founded a small society which, tho now no longer in existence, was the mother of the present New York Society, which originally embraced a membership from the five New York boroughs as well as from the adjacent part of New Jersey. The New York Aquarium Society is thus the oldest in the field and has had the usual vicissitudes of all pioneer organizations.

The Philadelphia Society, numerically the strongest, was formed independently of New York, fourteen years ago and has up to the present time devoted its energies mainly to goldfish culture.

The Brooklyn Aquarium Society was formed early in 1911, chiefly from the membership of the New York Society residing on Long Island. It too is successful and had established a small monthly bulletin in its own interests.

The Chicago Fish Fanciers Club also is a young and thriving group of people interested in aquatic life.

## The Household Aquarium

SAM'L McCLARY, 3D, M. D.  
Philadelphia, Pa.

If certain efforts turn out successfully we will in the very near future greet a society in Boston as well.

The New York, Brooklyn and Chicago societies are devoted to more general fields as native fishes, terraria, foreign (mainly tropical) fishes, as well as the breeding of rare or specially interesting fishes.

Keenly realizing the benefits of association, it was felt that closer touch with the work of others was needed and mutual help could not be better obtained, than by creating an organ of intercommunication.

This, not only would assist the several societies but would also serve to bring into touch many distant but nevertheless interested persons not connected with any society. The Brooklyn Society very wisely and generously took this larger view of the matter and agreed to merge their bulletin with the present magazine.

To instruct the beginner in the principles of aquarium maintenance is one of the first of our objects. Those who have past the beginner's stage, we wish to encourage in careful study and accurate observation as well as to present to them ever widening fields of interest. We want to help the individual as well as the societies, we want to assist in forming societies in other cities, and we want to reach the libraries and especially the schools. There are many teachers who desire to keep aquaria for their classes, but tho the generous wish be there, the knowledge is often most limited.

We want our readers to tell us of their experiences and of their troubles, in other words we want to help and also want to be helped.

No salaries or profits are paid those who conduct this magazine. It is a labor of love. To be successful it needs the active support of many.

Whether your interest lies in the small fireside aquarium or in more ambitious undertakings we need your help both in articles and in subscriptions.

The proper care and maintenance of an aquarium is an important factor in the keeping of all fishes.

The size best suited for an ordinary dwelling is one containing from thirty to sixty gallons, larger ones are unwieldy and dangerous on account of weight, smaller ones require cleaning too frequently. The framework should be of metal; brass makes an effective adornment for a sitting-room, the brass is easily polished and has a richer appearance than gilding or paint on iron-work. The aquarium should be built so that it has a large air surface, that is, it should be at least as wide as it is high and preferably wider. The same quantity of water will accommodate more fish when there is a large air surface than when the air surface is small. It should not be over twenty inches deep, as fish do better in shallow water in aquariums. The base should be of slate and the sides of heavy plate glass, so joined that practically no cement comes in contact with the water. A good cement formula may be made of the following: One part of white lead, 1 part of litharge, 12 parts of glazier's putty.

The best general soil is a lower layer of pebbles and an upper layer of coarse sand. The pebbles allow the roots of plants more freedom to travel and get nutrition, the sand above makes a more even and pleasing appearance, so that particles of food will not become hidden in the soil and decompose. Most plants will root well in this soil, those that do not may be planted in small pots of earth, and sunk below the sand. The best aquarium plants are *Sagittaria*, *Cabomba*, *Valisnaria*, *Ludwigia* and *Potamogeton*. *Anachoris* is a good oxygenator, but it grows too rapidly and soon covers the surface, thereby occluding the top light which is best for the other plants. *Sagittaria* is about the best oxygenator and most satisfactory all around plant, it

should be used extensively. *Cabomba*, *Ludwigia* and *Potamogeton* are fair oxygenators, but are to be used more for their foliage effect. *Nitella* grows too rapidly and collects around the other plants retarding their growth.

The soil should not be level, it should have one or two depressions in it, and here the humus and precipitate will collect and may be easily removed by the dipping tube or siphon.

I believe it is best to have the soil slope up toward the sides, with a low space in the center. The plants may be arranged in groups, according to their height and foliage, those with the densest foliage should be farthest from the window; so as to allow as much light as possible to penetrate thru from the side of the aquarium.

It makes a better foliage effect to arrange the plants in groups of one kind each. The best light for plants is from the north, but when this cannot be had an east light is fairly satisfactory. I believe that all aquariums should have at least two hours of morning sun.

The scavengers best suited are snails (Japs, Ramshorn and Potomae), mussels and tadpoles. Never put paradise fish in an aquarium with goldfish, altho they are excellent flesh-eating scavengers, they will injure the goldfish. Scavengers should be given a permanganate, then a strong salt bath for a few minutes just as all new fish should have before entering the tank, this kills many of the parasites that infest them. Plants should likewise hav an antiseptic bath before putting them in the aquarium, 5 or 10 minutes in a bath of two gallons of water to which has been added 5 teaspoonfuls of creolin, after which they should be washt for several hours in running water.

The strength of permanganate solution used for fish and scavengers should be so that the color is a light claret red and they should be obsrved closely while in this solution, stronger solutions kill them. A glass

cover over the top of the aquarium is advisable, it need not fit tightly and should be raised slightly from the top by rubber buttons, placed on the upper edges of the frame. This keeps out dust and foreign particles, as well as lessens evaporation. When the fish are added, which should take place after the plants are well rooted and are oxygenating the water, it is well to add a few pieces of old plaster of paris. This neutralizes acidity in the water and furnishes mineral salts, which are essential for the development of the fishes' bony structure as well as the shells of the snails. In the aquarium we should endeavor at least to have it balanced, that is the conditions such, that enough oxygen be supplied to keep the fish from coming to the surface to any extent. I find it a good rule, where there is considerable plant life, to allow one inch of fish body for each gallon of water. In this measurement I do not count the tail.

(TO BE CONCLUDED)

## Feeding Aquarium Plants

S. CHESTER LLOYD  
Brooklyn, N.Y.

After months of experiment and trials I have come to the conclusion that some sort of fertilizer for plants in the aquarium is an absolute necessity. I have found that to a certain extent plants will flourish outdoors in plain gravel, and with nothing more nourishing than atmospheric influence and fish excrement, but I have noticed that such plants do not start growing to any extent for a long period after planting, and then the growth is either very slow or of a condition that runs to length of stem rather than to actual oxygen-giving leaves. Indoors the conditions are sometimes good, but more often the gravel turns black and the roots the same, and the slightest stirring of the gravel means a most unpleasant odor of decayed plant, while the growth of plant is *nil* in some cases; the top remaining green but the bottom almost disconnected from the

root. This is evidently and obviously wrong, and the only remedy I know of is to entirely empty the tank, boil the gravel and allow the plants to float in a shallow dish until the roots lose the black color, which will sometimes take a week. In extreme cases loss of the entire plant may occur. Then, after thoroly washing the boild gravel in running water, lay a half inch of it on the bottom of the aquarium, over this scatter a thin layer of pulverizd sheep manure, covering this with at least an inch and a half of boild, washt gravel. Small holes may now be made with the finger and the plants,—preferably *sagittarin* and *ludwigia*—inserted as thickly as desired, after which the water should be carefully poured in so as to avoid bringing any of the manure to the surface thru a disturbance of the sand. In order to make sure that the manure was not injurious to the fish I experimented by taking a large 25-inch washtub, filling it with water into which I stirred several pounds of manure until it had all settld to the bottom and the water was black, so that a fish could not be seen an inch below the surface. Into this water I floated a lot of loose *Anacharis gigantea*, and put one dozen one and a half-inch young scaleless fringe-tails in good health, and three that were in poor condition from bruising and cold in transit. These fish I left in the tub for three weeks, feeding them daily or every other day as the opportunity arose, and at the end of that time I examined them. All were fat and lively, and of good color, with the exception of one very sick one of the three, the other two were completely cured, and the third on the road to recovery. Proof conclusiv that even the intense heat and excessiv ammonia fumes were not injurious to fine goldfish. The *Anacharis* had grown about a foot and a half on each stalk. I immediately started to dismantle my entire collection of big aquariums, some 22 in all.

(TO BE CONCLUDED)

## A Hunt for Darters

(CONTINUED FROM PAGE 3)

But the few we got repaid us for all the efforts. They are a most beautiful fish, especially when in full courting regalia, and they take very kindly to aquarium life. After one bitter experience in which a beautifully colored specimen leapt to his death on the schoolroom floor it was found necessary to keep the tank covered.

Besides the dace we took a few green sunfish (*Lepomis cyanellus*) and one small-mouth black bass (*Micropterus dolomieu*). On the way back to the bridge we scined some weedy, quiet stretches of the creek and added to our collection a lot of fine top-minnows or killifishes (*Fundulus notatus*). These quiet, social little fellows are very acceptable additions to our finny family and hav fallen in very easily with the ways of the small aquarium.

Getting back to the bridge we sought our coat pockets for the cold bites our wives or mothers had carefully stowd away, and there in the big out-of-doors we munchd our sandwiches and talked over the experiences of the day. By the time we had divided our spoils and cared for our pets the afternoon train came puffing up and we departed for our homes in the city, vowing to return at the first opportunity in the Spring.

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Watch your snails carefully, the vegetable feeders may prove dangerous, especially to soft tissued plants which are frequently destroyed by the snails. Snails having covers (opercles) are not dangerous, they are mostly carnivorous.

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You can do nothing more important than to interest your friend in the homely doings of nature; one way is to present him (or her) with a year's subscription to the *AQUARIUM* magazine.

## SOCIETY BULLETINS

### Brooklyn Aquarium Society

Regular meetings are held on the Fourth Friday in every month except June, July and August, at Fairchild Building, 702 Fulton St., at 8 P.M.

Initiation Fee, \$1.00  
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*April 26th Lecture:* "Persuading Highly-Developed Male Goldfish to Breed"—by S. CHICHESTER LLOYD  
Also: Competitive Exhibit of Live-Bearing Fishes

At the Second Monthly Competitive Exhibit of Scaleless Goldfish, March 12, 1912, the following Ribbons were awarded: 1st Prize (Blue Ribbon), H. F. QUICK, for Squartail Telescope; 2d Prize (Red Ribbon), S. CHICHESTER LLOYD, for Ribbontail Telescope; 3d Prize (White Ribbon), HARRY ROESSELE, for Calico Comet.

At the First Monthly Competitive Exhibit of Fringetail Goldfish, February 13, 1912, 1st, 2d and 3d Prizes (Blue, Red and White Ribbons) were awarded to S. T. SMITH for Calico Broadtail Telescope, Calico Veiltail Telescope and Large Humpback Fringetail Comet, respectively.

### Chicago Fish Fanciers' Club

Regular meetings are held on the Second and Fourth Wednesday of each month, at 729 Stock Exchange Building, La Salle and Washington Streets, at 8.30 P.M.

Initiation Fee, \$1.00  
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*April 24th Lecture:* "The Aquarium"; discussion led by WILLIAM KOPP

*May 9th Lecture:* "Aerating Devices," by F. S. YOUNG and CARL FOSSETTA.

### New York Aquarium Society

Regular meetings are held on the Second Thursday at the German-American School, Sherman Ave., Jersey City, and on the Fourth Friday at the American Museum of Natural History, 77th St. and Central Park West, New York, each month except July and August.

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*April 26th:* New York Meeting

Lecture: "The Freshwater Molluscs of the Vicinity of New York City," by SILAS C. WHEAT

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*April 24:* Competition—Fringetails Under One Year

Stereopticon Lecture—"Varieties of Tropical Aquarium Fish," by ISAAC BUCHANAN, President New York Aquarium Society.

AWARDS (Telescopes Under One Year) MARCH 27, 1912

Scaleless Fringetail Telescopes, (Blue Ribbon), CHAS. HALDEMAN; (Red Ribbon), CHAS. HALDEMAN; (White Ribbon), FRED SCHAEFER.

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The members of the Chicago Fish Fanciers Club extend their hearty greetings to the members of the eastern clubs in this, the first issue of our united efforts. We sincerely hope that this magazine will create and maintain a fraternal feeling between the members of the several clubs, both collectively and individually, and we, as individuals, solicit correspondence with our eastern brothers. It will be a pleasure for us to exchange with members in the east by sending native species from our streams or exotic varieties raised by our members.

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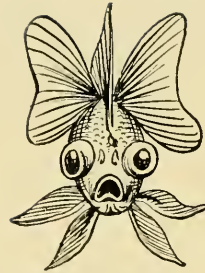
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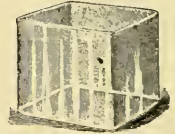
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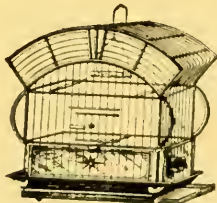
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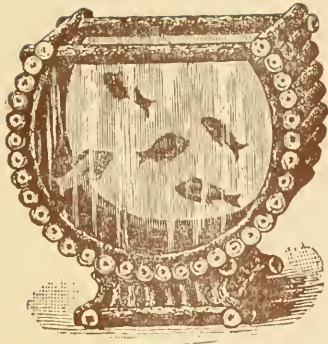
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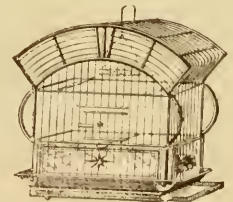
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