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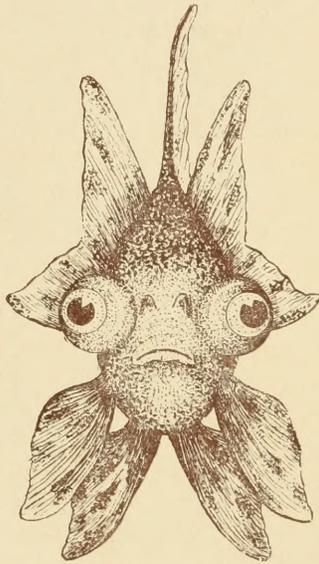
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THE AQUARIUM

VOLUME II

JANUARY, 1914

NUMBER 8

History of Goldfish

By R. W. SHUFELDT, M. D., Washington, D. C.

It would seem to be a matter beyond question, at the present time, that the common or simple form of goldfish had its original habitat in certain parts of China. Our earliest records appear to establish the fact that some of these, probably about the year 1500, were imported into Japan and received at a small town not far from Osaka. This importation was followed by numerous others, not only from China, but from Korea as well. In both of these countries goldfish had long been under cultivation, the history of which dates back to and beyond recorded history.

Fancy goldfish were even cultivated in Japan many years prior to 1700, and some of those very early establishments are still in existence, continuing the work commenced by the ancestors of the present proprietors or others associated with the enterprise since. The goldfish farms of Japan stand among her most important industries, and several very extensive ones have grown up in the United States, for the culture and sale of these fish is a very profitable business.

Although not belonging in the same genus, the common goldfish is related to the carp of Europe, the scientific name for the first being *Carassius auratus* and the second *Cyprinus carpio*.

The carp, with the varieties artificially bred from it, are all very interesting fishes with a history, but space will not

admit of referring to them here. In Figure 1, however, I have given a good illustration of the Common Carp of Europe in order to show its resemblance to the wild goldfish, a figure of which is given below it. Many have gained the idea that the goldfish is a sort of modified carp, or in other words that it may be traced back to the common carp from which it was bred at an early date in China. There is no truth in this tradition and nothing in history to substantiate it. The Japanese goldfish, particularly the variety known as the Wakin, will, in a few generations, revert to the form of the wild fish if it happens to escape into open waters. This has already occurred at Washington, D. C., where, several years ago, the goldfish got out of the Government carp-ponds during a flood and escaped into the Potomac River. They flourished in their new environment, and are now taken in numbers by the local fishermen, who, unfamiliar with their origin, sell them in the city markets as "sand perch." They have lost all their gold color, though they are far from being a "perch."

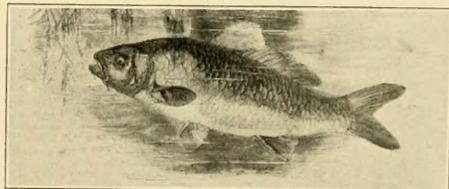


FIG. 1. Common Carp of Europe (*Cyprinus carpio*),
By the author from an old English woodcut

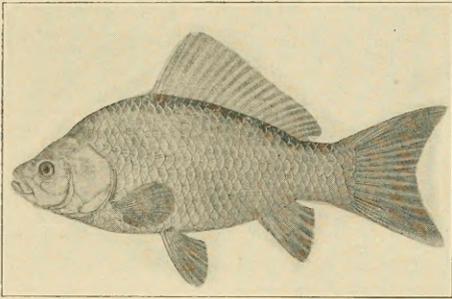


FIG. 1 B. The Wild Goldfish (*Carassius auratus*).
By the author after Goode. (Drawn by H. L. Todd)

There is no question but what goldfish have a strong tendency towards albinism; and perhaps many of the forms, from which the cultivated varieties have been bred, were either entirely lacking in dermal pigment—completely albinistic—or else largely lacking in it. When the latter condition has prevailed the fish has a whitish appearance instead of being dark; sometimes it is yellowish or reddish. Concentration of these colors with some of the darker tints has resulted in *blotched* individuals, or even spotted ones with some of the color areas of purer tints. It has been with such fish that the skillful Japanese and a few others have carried on their breeding experiments, and through intelligent selection have produced some of the most remarkable looking fishes in the world to-day. This has required four or five centuries to accomplish in some cases, while at the present time a few new varieties have been produced with somewhat greater dispatch. Where morphological abnormalities are present they are to be explained in much the same way. While breeding for color varieties it is likely that some changes in form would also occur, and when sufficiently pronounced to attract the attention of the breeder,

they have been seized upon and, through careful, selective breeding, emphasized in the descendants; so we now have immense triple tails, carunculated heads, and other monstrosities.

In my opinion these are more extraordinary in appearance than in any way beautiful. Many of the varieties have their eyes bulging out of their heads; some have no dorsal fins; others are so deformed as to be hardly able to swim and can only wiggle through the water. To me, their only redeeming feature is, in many such cases, their brilliant and variegated color-patterns, and the interest they have with respect to varietal production through artificial selection and crossing. As a matter of fact, as the late Professor John A. Ryder once pointed out in one of his works, the several varieties of goldfish produced by man's ingenuity in such operations "are the most profoundly modified of any known race of domesticated animal organisms."

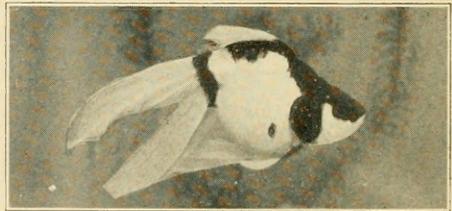


FIG. 2. An Imported Ryukin.
Photographed from life by the author from a specimen at the Bureau of Fisheries, Washington, D. C.

By far one of the best books we have on this subject is by Doctor Hugh M. Smith, the present United States Commissioner of Fisheries at Washington; it is entitled "Japanese Goldfish, their Varieties and Cultivation" (W. F. Roberts Company, Washington, D. C.), and is a most excellent treatise on the subject with which it deals. Several of the illustrations in the present contribution

are from that work, the plates of which, in some instances, are colored ones, rendering photographic copying of them a little difficult.

There are several varieties of goldfish bred in this country, both major and minor forms, which have been designated as "Japanese rarities;" but as a matter of fact they are entirely unknown to those people. Thus far, only *ten* stable modifications or varieties of the common goldfish have been produced in Japan, and these are all known to their trade.

American breeders have bestowed names upon these which are most cumbersome and unmeaning, while their Japanese appellations are, in all cases, very expressive. They are known as the Wakin, which is the stock variety of Japan; the Ryukin (see Fig. 2); the Ranchu (lion-head), occasionally called the Mamko; the Oranda shishigashira, a name for the Dutch lion-head; the Demekin, or the one with the *protruding eyes*; the Deme-ranchu—a ranchu that has protruding eyes; the Watonai (a new one); the Shukin or autumn brocade goldfish; the Shubunkin or the variegated vermilion goldfish, and the Kinranshi or the brocaded goldfish. Three or four of these are shown in my illustrations to the present article; but they only give us the form of the several varieties and we miss their magnificent color variations. These have all been minutely described by Doctor Smith in his work, and he also presents us with a "family tree" of the pedigree of *six* of the varieties, where their derivations have been made out with great accuracy. We have quite a literature upon this phase of the subject alone—indeed, there are a great many papers and treatises on goldfish extant.

For many generations at Koriyama, Japan, the goldfish breeders have practiced making designs on the backs of certain varieties by the use of acid. It renders the parts to which it is applied practically white—that is, the body, for it cannot be employed in the case of the head or fins. I only mention this in that it may be condemned. In all other cases only natural methods have been employed by the Japanese in any part of the empire.

My attention has been called to *The Technical World Magazine* for December, 1913, page 517, where a brief description is given of how the "Japanese adepts" graft additional *tails* upon certain varieties of so-called "bush-tailed goldfish." This "art" is not mentioned in Doctor Smith's work, and I believe I am safe in saying that no such operation is ever practiced by any goldfish breeders, Japanese or American. To be sure the "tail" or caudal fin in these artificially bred varieties of goldfish is perhaps the structure most responsive to the laws of selection, and some very marvelous forms of it have been produced, as may be seen in Fig. 1 of this article.

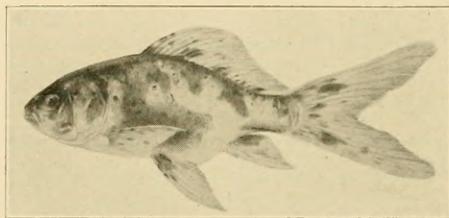


FIG. 3. The Shubunkin or Speckled Goldfish. By the author after the colored plate of S. Matsubara in Dr. Hugh M. Smith's work on "Japanese Goldfish"

A word now as to the coloration of the goldfish shown in my figures. As to the wonderful imported Ryukin, shown in Fig. 2, the parts in *black* are brilliant



vermilion in life, while the rest of the fish is chalk white.

Passing to Fig. 3, we have a normally shaped fish bred for peculiarities in color; it is a mottled form presenting great individual variation. Characteristically, it is spotted on both body and fins, and a single specimen may comprise in color blue, purple and vermilion, as well as black and white. Some specimens are all of a purple shade which is unique and truly remarkable.

In Fig. 4, the Ranchu is generally a bright red fish with short, rounded body, and three-lobed, short tail; conspicuous red, or whitish red *warts* on its head (except lower jaw), and a complete absence of the dorsal fin. Of this variety there are some extraordinary examples, but their descriptions would carry me far beyond the legitimate limits of this article; this applies, too, to my furnishing any descriptions of the varieties not here figured. Dr. Smith gives all this information in great detail.

With respect to the Kinranshi of Fig. 4, we have another black, red and white variety that lacks the dorsal fin. This is the latest addition given us by the breeders of Japan, and the history of its production forms an interesting chapter in goldfish literature.

A veritable monstrosity is seen in the Deme-Ranchu (lower cut, Fig. 4); for what beauty can there be in a fish that possesses enormous pedunculated, protruding, upturned (90°) eye-balls, a shortened body, no dorsal fin, and a triple tail, so large as to be out of all proportion to the rest of the body of its owner? In color this variety may be black or orange or the two colors combined in all manner of patterns and varying areas. These creatures, when

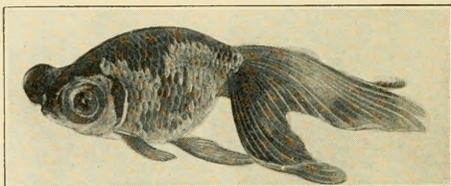
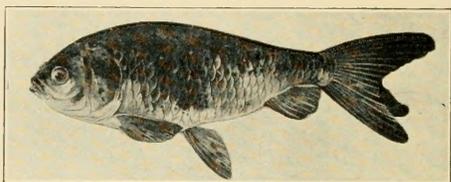
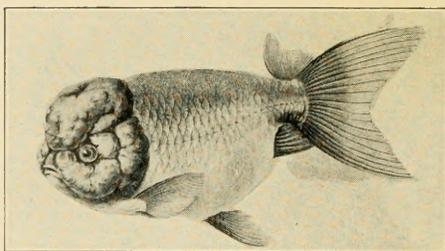


FIG. 4

(Upper cut) The Ranchu or Maruko (Corean Goldfish)
(Middle cut) The Kinranshi or Brocaded Goldfish
(Lower cut) The Deme or Pop-eye Ranchu.

By the author after the colored plates
of S. Matsubara in Dr. Hugh M. Smith's work
on "Japanese Goldfish"

bred to the greatest refinement, can hardly swim; moreover, they are of low vital power and often sterile, being sluggish in all their movements on the bottom of either pond or aquarium, where they live out their inert existence.

One of the most beautiful of these varieties is the Watoni or Fringtale Wakin, it being a large fish, parti-colored (brilliant vermilion and white), with all the fins highly developed, the caudal one of great size and bifid.

We are confronted with a big subject when we come to study goldfish culture for profit, for it is an industry that is taking on very large growth in this country at the present time. The demand

for the fish is far in excess of the supply, a fact that may be emphasized by stating that Japan sells more than half a million dollars of them annually. Dr. Smith says that in order to convey some idea of the actual relative values of the different varieties of goldfish, the following average wholesale prices per 1,000 fish are taken from the operations of a Tokyo breeder a few years ago: Demekin, 1 year old, \$10; Wakin, 3 years old, \$22.50; Ryukin, 3 years old, \$100.00; Oranda shishigashira, 5 years old, \$750.00; Ranchu, 2 years old, \$75.00; Ranchu, 5 years old, \$2,500. Sometimes single pairs of fancy varieties fetch wonderful prices—from fifty to seventy-five dollars, for example.

The breeding of goldfish is full of interest, not particularly difficult for intelligent people, and any old farm with water on it (in ponds, etc.), in any part of the United States, is available for the purpose. The management of goldfish aquaria is by no means an unimportant subject, but its treatment does not properly fall within the scope of the present article.

Heat Regulation

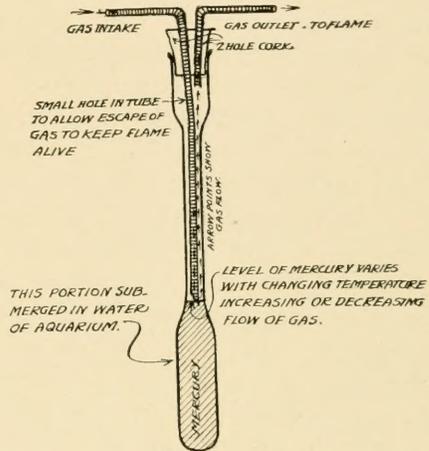
By L. M. DORSEY

The article presenting various methods of heating recently illustrated in this magazine leads the writer to offer a method of automatic control of temperature where a gas flame is the heating medium.

The heat regulator or "thermostat," as it is called, is to be had in various forms of any dealer in laboratory equipment, and with slight modification can be adjusted to the needs of the aquarist.

The trouble with most of those of

stock pattern is that they are set to allow a much greater flow of gas than is ever necessary to maintain the proper 65 or 70 degrees of the aquarium.



The accompanying illustration is self-explanatory. The apparatus will greatly repay those taking the pains of installation, for once properly established it will relieve the aquarist of all concern regarding the important essential of temperature.

Last winter I had two aquaria under control by this method—one beside a window in my sleeping room which was always kept cold at night, the temperature frequently dropping 30 degrees and more, yet the thermometer continually registered the 70 degrees that it was set to maintain and remained in satisfactory service throughout the entire winter.

Concluded from page 81

fish spawned as far as we could see; however, as the brook was not put in operation until about the middle of June, we hope that an earlier start will bring us better success next year.



AERATION

Installing the Conductors

By FLOYD S. YOUNG.

Lead pipe will, in the long run, prove cheaper and more satisfactory than iron pipe or rubber tubing. Iron rusts to such an extent as often to completely fill the orifice; besides, it must have screw connections, made with great care. Rubber quickly rots out and must be replaced. Lead pipe having an inside diameter of 3-16 in., and an outside diameter of 5-16 in. is about right for use with electric or hydraulic compressors.

Soldered connections, although they have been a bugbear to many, are in reality not difficult to make. I have known plumbers to spend an entire day in putting in a line which should have been installed in two hours. They are accustomed to handle pipe $\frac{1}{2}$ in. or more in diameter. Then, too, the proper handling of the lead-pot and soldering iron requires more skill than is possessed by the average amateur, besides, such an outfit is not adapted to small work. Soldering irons apply the heat too much in one place, melting the lead tubing. Gasoline or other torches are too rapid; one cannot control the heat. An alcohol lamp such as druggists use is ideal for this work. The heat is mild, and the solder is given time to thoroughly run into the joints.

To make a good joint procure a piece of brass tubing of such size as to fit snugly inside the lead pipe. Clean the outside of the brass tubing with emery paper and cut it into two-inch pieces. Turn a knife-blade or file tip around a few times in the ends of the lead pipe to brighten the inner surface. Then insert one of the sections of brass tubing

into the ends of the pipe, pushing the ends together; apply a little tinner's acid to the joint. Hold the joint above the flame of the alcohol lamp until the solder held against the top of the pipe melts and runs in. Wire tin solder should be used. Bar solder, being thick and heavy, requires too much heat.

In case no brass tubing is available, a joint may be made by spreading one of the ends of lead pipe so that it will fit over the other. A large nail worked round and round will accomplish this. The other end should be whittled down a trifle, so that it will fit snugly into the spread end. The soldering is done as in the first case. Care must be taken to make the joint fit snugly, else the solder may run into the pipe and obstruct it. In the first method the brass prevents this. All the soldering should be done before the pipe is hung, otherwise one will have trouble in keeping the ends together while a joint is being soldered.

Lead pipe of this size can be handled and bent as readily as wire. It can be made almost invisible by being run along the top of the picture-moulding; where the line runs from one room to another a hole can be bored over the door-casing where it will not show.

450,000,000 Eggs Taken by Fisheries

At a time when the scarcity of eggs is one of the chief topics of public concern, a report comes from the United States Bureau of Fisheries, Washington, D. C., showing that already this season it has taken 450,000,000 whitefish eggs in Lake Erie, by far the largest ever made. This is 13,000 quarts of the tiny eggs.



The Transportation of Live Fish in a Frozen Condition

Fishes belong to the class of animals that have variable body temperature, depending on the temperature of their environment. In extreme cold they assume a rigid condition, in which all of the vital functions are suspended, while life still remains present. During several months of each year some of the great rivers of Siberia are frozen solid to the bottom, but many of the fishes imprisoned in the ice retain their vitality and resume their active life when the ice melts in spring.

This fact has suggested experiments in the freezing of live fish for transportation, which are discussed in the *Fischerei Zeitung*. Many years ago the celebrated physicist Pictet of Geneva put fresh water fishes into a tub of water, which he kept liquid at the freezing point for 24 hours, and then allowed to freeze slowly into a solid block of ice, which afterward was cooled gradually to -20 deg. Cent. (-4 deg. Fahr.). When the ice was melted a month or even two months afterward, the fishes began to swim as briskly as they did before freezing, and showed no symptom of ill health.

Similar experiments have recently been made in France. The fishes are placed in water which is kept near the freezing point for a few hours, then at the freezing point for 15 to 18 hours, and finally frozen by immersing the vessel into a freezing mixture, producing a cake of ice a few inches thick, in which the frozen fishes are imbedded. This cake is wrapped in cloth and surrounded with a heat-insulating packing, to prevent melting during transportation. It

is necessary to thaw the ice very slowly and to keep the water near the freezing point for several hours, in order to preserve the life of the fishes. Even those which do not survive are in a perfect state of preservation.

In the markets of Irkutsk, Siberia, fish are displayed for sale in the frozen state piled up like cordwood. Fish in cold storage are preserved frozen in slabs of ice. The latter method is now applied in the shipment of live fish. The method of shipping live fish in water is not feasible on account of the expense, as from 1 to 4 gallons of water are required for each pound of fish, according to the variety. Since the discovery by Pictet that fish may be frozen in blocks of ice without being killed, and that they will become as lively as ever after they are thawed out, a method has been devised for preparing them for shipment in ice. The method is described in the *Scientific American*. The fish in a large amount of water are placed in a closed tank, and oxygen under pressure is supplied. The greater portion of the water is then drawn off. The fish remain in good condition on account of the abundant supply of oxygen. The vessel containing the fish is then placed in a freezing tank and the fish are frozen into the ice formed. The blocks of ice containing the fish can then be piled up in the ordinary refrigerator car. On arrival at their destination the fish are put through a slow thawing process lasting ten hours, when they return to their normal state of active animation.

The fishing line will soon be the popular chord.



Notropis Chrosomus

By WM. T. INNES, JR.

Specimens of this fish which appeared in the Eastern market some time ago, under the names *Rhinycthyus gloriosus* and *Chrosomus superbus*, have been recognized, and a few words concerning this variety will doubtless be of interest.

The *Notropis Chrosomus*, discovered by Jordan in 1876, is a desirable inhabitant of the cold water aquarium. It was found in Georgia and is common in clear brooks and outlets of springs throughout the drainage of the Alabama Basin. A closely related variety, *Notropis Metallicus*, is so similar that it is difficult for the amateur ichthyologist to distinguish one from the other. When identification of specimens is in the least doubt, it is much the best plan to submit them to a competent ichthyologist. Errors of identification soon get well-rooted and become veritable weeds to the scientific worker, who is put to great unnecessary labor in running down false trails. Identification by competent ichthyologists is nearly always possible and, if a new fish has to be named, let it be done by one who can also make a proper classification.

The following description is taken from the works of Jordan. The original specimen is in The Academy of Natural Sciences in Philadelphia.

Notropis Chrosomus (Jordan) Red-lined minnow, head 4; depth $4\frac{3}{4}$; D 8; A 10; scales 38 in lateral line to caudal base, and two more on latter; 7 scales above lateral line; 4 scales below lateral line; 22 scales before dorsal; snout 3 1-3 in head; eye $\frac{3}{8}$, maxillary $2\frac{7}{8}$; inter-orbital 2 4-5. Body elongate, well compressed, rather slender. Head moderate, compressed. Snout convex, slightly abrupt in front, length 4-5 its width.

Eye rounded, mouth inclined, rather large; lower jaw slightly protruding and upper protractile; maxillary reaches eye. Interorbital rather evenly convex. Gill-rakers 7 short points of which 2 on upper part of arch. Pharyngeal teeth 2, 4-4, 2, hooked, with grinding surfaces. Scales rather small and well exposed. Lateral line complete, decurved. Insertion of dorsal midway between eye-center and caudal base. Anal inserted about opposite last third of dorsal base. Caudal well forked. Pectoral reaches $\frac{3}{4}$ to ventral; latter inserted well before dorsal and reaches vent. Color hyaline—green with bluish tints. Belly silvery. Head above and vertebral line golden; light narrow scarlet streak from opercle above to caudal base, and below this a silvery line. Row of black dots along lateral line, forming into small distinct caudal spot. Scarlet bar across anal, caudal base and dorsal. Spring males with muzzle and top of head tuberculate, and finer tubercles before dorsal. Length $2\frac{1}{2}$ inches. Known from the Alabama Basin and is common in clear brooks and outlets of springs.

The writer has kept six specimens of *Notropsis Chrosomus* for several months in water of moderate temperature, and their active habits and gentle nature, combined with the attractive coloring of the fins and the copper and dark stripes along the sides make them, indeed, a delightful aquarium fish.

The fact of their coming from the South at first led aquarists to treat them as tropical fish. Under these conditions they died rapidly. Since it has become known that they inhabit cool, spring-fed brooks we now keep them in moderate to cool aquaria, where they do well, particularly with aeration.



An Outdoor Aquarium

By CHARLES THOMAS

While spending last summer near Lake Champlain in northern New York, it occurred to me that an artificial brook stocked with such wild fishes as I could find would be well worth the labor of construction, and would afford an opportunity of observing these fish under very nearly their natural environment. Accordingly, for my own amusement, I set to work to prepare an interesting variation of the household aquarium.

About two hundred feet from our house was a small spring which flowed down to a brook, some little distance away, at the foot of a hill. Just below the spring, and a little to one side of the rivulet flowing from it, I dug a trench about forty feet long, varying in width from three to five feet and about twenty inches deep. The ground was hard and clayey. The end of the ditch was finished off square and here a tight dam of boards, with a row of one-inch augur holes a little below the level of the bank, served to keep the water in the artificial brook at a constant level. The holes were covered with wire cloth.

It was a simple matter to divert the flow from the spring into the new course and the next morning I found the ground had become thoroughly saturated and my brook was filled, the water flowing off nicely through the holes in the upper part of the dam. I soon found it necessary, however, to reinforce the sides of the dam, where the boards were driven into the bank, with a few bricks and a little cement. The bottom of the brook I covered as much as possible with mossy stones and gravel and transplanted such water plants as I could find nearby to create the appearance of nature.

To be absolutely truthful, the actual construction which has just been explained very strongly resembled work, and spelled with a capital W, too, but the pleasurable difficulties I had in stocking the brook and the fun I derived from watching its inhabitants afterward more than made up for the labor. Nature does not allow us to study her, as a rule, without a good deal of exertion on our part.

I soon enlisted the aid and enthusiasm of a friend, and together we explored the brooks and streams for miles around in search for a variety of specimens. We used a small seine that two could handle and during the summer netted a large quantity of fish, though not a very great variety. We even explored the shallow waters on the edge of the lake. All fish except those we wished to put in our brook were promptly liberated.

The only varieties of small fish we found within a radius of five or six miles of Westport, N. Y., were the Black-nosed, Long-nosed and Horned Dace, the Straw, Spotted-tail and Red-fin minnow and the Tesselated Darter. All of these fish we found to be quite common in the streams we explored except the Black-nosed Dace, of which we found but two, and these on our first exploring expedition in the stream near our house.

All of these fish seemed to live together in peace and good understanding. The pleasure of watching their habits amply repaid us for our efforts.

Hoping that the Horned-Dace would build their gravel nests, we provided them with gravel of various degrees of coarseness at the head of the stream, but much to our disappointment they failed to take the hint. In fact, none of the



THE AQUARIUM

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

Published monthly except July and August at Chicago, Illinois, by the Aquarium Societies of Brooklyn, Chicago, New York, Philadelphia, Boston, Milwaukee, Minneapolis.

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VOL. II JANUARY, 1914 No. 8

In following the hobby or fad of collecting various varieties of fish suitable for aquarium purposes or of breeding and raising from adult specimens, it is surprising to note the latent qualities that will come to the surface and unconsciously be developed in one's disposition.

Very few, indeed, are the fanciers who have made any money out of this hobby. So it is generally the case of everything going out and nothing coming in and if a fancier is inclined to be prodigal in money matters and can afford to do so, there is scarcely any limit to the amount of money that can be invested even in a medium or small collection.

On the other hand a very satisfactory collection of both goldfish and tropical

varieties can be brought together for a very modest sum.

No fancier was ever successful without acquiring the habit of close observation which discloses an unlimited amount of detail in the housing, feeding and caring for his subjects.

He soon discovers that it is difficult and unsatisfactory to direct someone else in doing this, that, or the other small job in connection with this pastime and it naturally follows that he will do these things with his own hands and even though he has no mechanical training he soon finds that he can do these things and the satisfaction he will get out of it is much greater than it would be otherwise.

The high-strung nervous business man can get what he needs as a "let-down" or relaxation from the business tension when he gets home in the evening and can spend an hour or so, preferably before dinner, with his pets.

While the whole family can enter into and enjoy the cultivation of fish as a hobby, it is advisable that the feeding be under the supervision of one person who will see to it that no more food will be placed in the tanks than will be consumed daily, thereby guarding against its decay and contamination of the water.

Tanks can be obtained at prices from a few cents to many hundred dollars, but without question the one that will be appreciated the most by the owner will be the one that he has made with his own hands. At least that particular tank will be the one he will point out to his guests and say "I made it," illustrating that trait or qualification in his disposition that indicates a well-balanced mind, viz., that of producing something with his own hands.



Brooklyn Aquarium Society

The annual meeting of the Brooklyn Aquarium Society was held on the evening of January 13, 1914. There was a very large attendance, and notwithstanding that it was the coldest night that Brooklyn has witnessed in the past twelve or fourteen years. One of the most interesting parts of the evening's meeting was the reading of the reports of the several officers and the chairmen of the committees.

The report of the president, Dr. Frederick Schneider, was received with a great deal of pleasure and enthusiasm by every one present. The showing for the year was such to make him and all the members proud. The increased membership showed that there were about sixty per cent additional members enrolled during the past year, making the past administration the best in the history of the society. Dr. Schneider's report was studded with many instructive and interesting remarks appertaining to the welfare of the society, and the work in general. Great strides had been made for the better scientific management of aquariums and fish culture.

The secretary's and treasurer's reports show that the Brooklyn Aquarium Society can now boast of a good financial condition, and the outlook is such that the members feel the funds of the association warrant some entertainment, which most probably will be in the form of an annual dinner to be held during the month of March.

The reports of the different committees were very gratifying and were also received with great applause. After the reading of the reports, the election of officers for the ensuing year

began, and the following gentlemen were unanimously elected to their several offices:

President, Dr. Frederick Schneider, 64 Grove Street.

Vice-president, Joseph Froehlich, 11 Francis Place.

Secretary, Harry Roessle, 116 Harman Street.

Treasurer, Theodore P. Fritz, 805 Halsey Street.

Librarian, Seymour H. Ripin, 915 Franklin Avenue.

Local Editor, Seymour H. Ripin, 915 Franklin Avenue.

Every one of the above accepted with the assurances that they would do all in their power to make the new administration a successful and prosperous one.

The society expects to make great progress during the coming year, and if the hopes of all the officers and members are only half realized, the Brooklyn Aquarium Society will be second to none in this country.

Seymour H. Ripin,
Local Editor.

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—*John Fiske in a memorial lecture on Charles Darwin.*



Index to Vol. I, 1912

A	PAGE	H	PAGE
Aeration Apparatus. A Simple....	14	Hearing of Fishes. Note on.....	21
African Flies. What are.....	37	Heating the Aquarium. A Simple Device for.....	79
Amœba. On the.....	44	Hydra. The.....	89
Aquarium. The.....	82-87	L	
Aquarium. The Household.....	5-12	Labyrinth Fishes.....	49-56
Aquarium Exhibit. The.....	42	Letter Box.....	37
Aquarium Management. Practical	39	Lion Head Goldfish. The.....	45
Aquarium Notes.....	29	Little Fellows With the Wheel. The	34
Aquarium. Possibilities of the Home	25	M	
B		Mechanical Helps.....	17-36
Ball Fish. The.....	9	Mollienisia Latipinna.....	85
Brackish Water Aquarium.....	67	Morris Canal. Along the.....	15
Breeding Goldfish.....	62	Mouth Breeders. The.....	77
Breeding Tank of Wood. How to Construct a.....	80	N	
Brook Silverside. The.....	69	New York Aquarium. The.....	75
C		O	
Catfish. A Year with a.....	68	On New York Killies.....	61
Cement. An Aquarium.....	66	Our Aim.....	4
Chanchito Breeding.....	1	P	
Chromosus Erythogaster.....	19	Paratilapia Multicolor.....	77
Comments and Queries.....	73-91	Plankton.....	23
D		Plants. Feeding Aquarium.....	6-13
Dañio Rerio.....	65	Plants Worth Cultivating.....	20-32
Daphnias.....	45	Plants in Aquaria. The Function of.....	58
Daphnia. Pointers on Propagation.	24	Preserving Fish Specimens.....	59
Darters. A Hunt for.....	2	Public Aquaria in America.....	55
Don'ts for Beginners.....	64	Public Interest in Aquaria.....	72
Dogfish. The.....	78	Q	
Duckweeds. The.....	20	Quillwort. The.....	32
E		R	
Embryology of the Goldfish.....	86	Red-Bellied Dace.....	19
F		Red Tirtion. The.....	29
Feeding Goldfish.....	83	S	
Fishes' Fins. On the Uses of.....	56	Snails.....	37
Fish Food. Aquarium.....	15	Society Statistics.....	15
Fish Food. A General.....	37	Spawning Net. The.....	17
Floating Fern. The.....	20	Surgical Case. A.....	21
Florida Swamp. Fish Life of a....	30	T	
Formaldehyde.....	46	Tadpoles.....	27
Frog Fish. The.....	9	Tropical Fish. Where From.....	37
G		V	
Gill Trouble. A Cure for.....	88	Veiltail Telescope. The.....	11
Glass Cleaner. A New.....	36	Violet in Aquaria. The.....	76
Goldfish. Types of.....	11	W	
Goldfish. Sex of.....	33	Water Poppy. Growth on the....	52
Goldfish. The Docile.....	84		
Good Light Important.....	52		

SOCIETY BULLETINS

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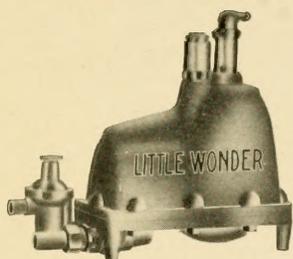
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