EDITORIAL

I am certain that every member of the AKA will join with me in thanking Glen Collier for the great job he did while editing **JAKA-KN** during the last months. Glen will now have the time to complete his doctor's degree and make his move to Texas without carrying the reponsibility of editing the magazine. As for myself, for however long I remain as editor, I encourage the co-operation of every member in writing articles for advanced and beginner hobbyists. Please send all material for publication to me and let's make 1976 a banner year for **JAKA-KN**.

* * * *

If you have been a keeper of killifish for any length of time, you probably enjoyed the satisfying experience of raising a batch of colorful fish to maturity. You carefully went through the process of picking the eggs, providing an adequate environment for their incubation, finding a suitable container for the fry and then feeding them two or more times a day until finally they sexed out and came to fu11 maturity. When you were able to sell or give a pair to a friend, you, no doubt, had a sense of accomplishment - pride in your success. There are a dedicated few in the AKA who accomplish this regularly and go one step further than most; they advertise in the Fish & Egg Listing. This latter effort is one that is especially helpful to the membership and deserves our special appreciation.

It is true that the people who offer the fish for sale are receiving money for their efforts, but frequently the motive is one of service, a chance for other members to obtain fish that may be otherwise difficult for them to obtain. Anyone who has gotten up early, packed several boxes of fish, taken time off from work to get to the post office during the morning hours, courteously replaced fish that did not survive equipment and waited in vain for a note from the recipient, or at least have the box returned every once in awhile, knows that listing in the F&E Listing is an act of faith and, at times, courage. The important role these dedicated members play is greatly appreciated by anyone who has ever eagerly awaited for fish to arrive in the mail and has been delighted with the results. There will be disappointments from time to time, squabbles will occur, but most of us are willing to overlook these exceptions. If you have the time, you should offer fish once in awhile and in the satisfaction of making new friends and of distributing fish that you have raised to maturity. Hats off to those who list in the F&E, you are much valued by all of us!

Roger Langton

The History of the Genus *Roloffia*

E. Roloff
Karlsruhe, Germany

This history started in 1959 when I presented by Danish friend, Ove Larsen, with a pair of *Nothobranchius rachovii.* This beautiful fish had disappeared from Europe during the last war, but I was able to find it again in 1958 in Mozambique. My friend Larsen then passed on the pair of N. *rachovii* to Col. J. Scheel who shortly afterwards sent me his **Killie-Letters** and suggested a collaboration. Our collaboration became quite extensive over the next few years. During that time Scheel frequently received killifish from West Africa from the Danish zoologist, Stenholt Clausen, who had been living there for some years. Scheel had taken on the task of studying these fish, of crossing them, etc., thereby helping to prepare Clausen's scientific works concerning these fish. Upon the suggestion of Scheel, I also sent killifish from my Sierra Leone expeditions to Scheel so that Clausen could identify them and, if necessary, describe them as new species. At that time I was also very much involved with rare and new species of other genera. I was eagerly looking forward to rewarding scientific results from our teamwork.

In 1962 and 1963 1 was also able to bring back from Sierra Leone several populations of the "golden pheasant." Clausen was very happy about this. He had determined that it could not be identical with the species which Boulenger in 1915 and Myers in 1933 described as *Aphyosemion sjoestedti* (L nnberg, 1895). After some research it was decided that the "golden pheasant" represented an as yet undescribed species and that *Aphyosemion coeruleum* (Boulenger, 1915) was a junior synonym of *A. sjoestedti.* Through my pinpointing of the exact places where this fish had been found, Clausen was able now to describe the "golden pheasant" as a new species: *A. occidentale* (Clausen, 1966). Already some time before this description Scheel and Clausen had come to the conclusion that *A. occidentale* and related species differed so much from the other *Aphyosemion* species that the establishment of a new genus was necessary. They wanted to name this new genus after me but I repeatedly declined.

Only when Clausen personally wrote a very nice letter to me from West Africa and also mentioned that already as a schoolboy he had read my articles with great interest I agreed to the generic name *Roloffia*. Clausen had returned from West Africa at the end of 1966, suffering from bilharziasis and two types of filariasis. His condition finally worsened so much that he had to give up his work. I continued his research on the Roloffia-species, went on several more expeditions to West Africa and described, alone or in collaboration with Prof. Dr. Ladiges, further new *Roloffia*-species. I could not have known that this idealism on my part would create ill-will in some quarters. In August of 1969 1 gave a talk and slide-show during the Convention in Palo Alto. All the friends of the AKA were extremely nice to me and according to the **Killie Notes** of Sept.

1969, my talk was well received. Myers gave a brief talk about *Aphyosemion* during the convention. He never made any mention of the Roloffia-species, however. When one of the members asked him at the end of his talk about Roloffia, he answered:

> "As far as I'm concerned, there are no such thing as *Roloffia*, they are all *Aphyosemions. "*

Only three months later did I come to understand the reasons that lay behind this. At that time Myers asked the International Commission on Zoological Nomenclature for a ruling to designate *A. occidentale* (Clausen, 1966) as the type-species of *Callopanchax* Myers, 1933 and to declare the genus *Roloffia*, which would now be deprived of its type-species, as invalid. He stated as the reason for his request that he had made a mistake in 1933 when he created the subgenus *Callopanchax.* At this time he had confused *A. sjoestedti* (L nnberg, 1895) with the "golden pheasant," *A. occidentale. As* one can see, however, from the article entitled **To the Problem of the Identification of *Roloffia* and *Aphyosemion* in JAKA-KN,** March 1974, by Dr. H. Grimm (Hamburg University), Clausen had done such excellent work in creating the genus *Roloffia* that it could not be challenged by any arguments. Scheel also affirmed in a letter of 11-22-65, that the genus *Roloffia* would continue to be a valid one in the future. Under these circumstances Myers had no other recourse in his request to the Commission than to admit that he himself had made a serious mistake. He had described his type-species *A. sjoestedti* after studying only one aquarium-specimen of unknown origin and without having studied L nnberg's type-material. He had listed for his type the rays in D. with 17-19 which also agrees with L nnberg's description of *A. sjoestedti.* Clausen, however, had listed the rays in D. for his *A. occidentale ("golden* pheasant") with "up to 23 and frequently 21" based on the examination of more than 70 specimens. Furthermore the area of distribution that Myers listed for his "sjoestedti:" "Sierra Leone to South Cameroon" is wrong. The "golden pheasant" is found in Sierra Leone, but not, however, in Cameroon, whereas it is the opposite with *A. sjoestedti:* it is found in Cameroon, but not in Sierra Leone.

Cases in which the type-species has been misidentified have been presented to the Nomenclature Commission. This Commission has plenary powers to declare that species as a type-species which best serve stability and universality in nomenclature. When Myers presented his request to the Commission in 1969 the genus *Roloffia* had long since attained stability and universality. In contrast to this the subgenus *Callopanchax which* Myers created in 1933 only existed in one single species, namely the misidentified *A. sjoestedti.* In this case according to article 70 (a) of the Rules of the Nomenclature Commission *A. occidentale* should have remained with the genus Roloffia which then would have continued to be a valid one. The fact that the Commission surprisingly decided differently with its opinion 1010 was for the following reasons:

1. From Myers request it could not be seen that only one misidentified species belonged to *Callopanchax which* was created in 1933 and that the name *Callopanchax* has not been used any more since 1933.

2. In Myers request the stability and universality of *Roloffia* was not mentioned.

3. Clausen was not able to object to the request because he was so seriously ill.

4. The members of the Commission were able to vote only for or against Myers request because of the type of voting papers and therefore did not have the possibility of applying the principle of stability and universality.

From opinion 1010 can be seen that several members of the Commission strongly vetoed the request made by Myers. They remained, however, in the minority since the other members were not informed about the different aspects of the case.

In his letter published in **JAKA-KN,** April 1975, Myers suggests that killifish keepers forget both *Roloffia* and *Callopanchax and* refer all the species to *Aphyosemion.* He furthermore maintains that even Scheel agrees with him that the species referred to as *Roloffia* are not distinct enough from the species of *Aphyosemion* to justify placing them in the separate genus *Roloffia*. This statement, however, stands in complete contrast to what Scheel says in his letter of 11-22-1965, and to the previously mentioned article of Dr. Grimm. Myers had also forgotten to inform the readers of **JAKA-KN** that he based his request to the Commission merely on his own mistakes.

In his request, Myers did not consider in any way that he was destroying the extremely valuable scientific work of Clausen. This work came to fruition after years of research in West Africa and at the expense of Clausen's health.

In the meantime a request for revalidation of *Roloffia* to the Nomenclature Commission has been drawn up. It is well substantiated and is supported by well-known scientists. The Commission will now have to come to a new decision according to its own rules considering at the same time and impartially all the information. It will have to come to a decision which is above personal or political considerations, if it is to maintain its reputation. Otherwise the Commission will become a sort of Nomenclature "UNO." After having considered all the different aspects of the revalidation request, the Commission will surely be able to come to a just decision.

Facts About the Nitrogen Cycle

Prepared by the staff
of the Kordon Corporation,
Dr. Robert Rofen, President

The terms Nitrogen Cycle and Nitrogen Sequence are used to describe the transformations of nitrogen compounds in an aquatic environment. In nature, the various nitrogen compounds follow a defined pattern of transformations, but alternative interactions maintain a rough equilibrium between the different forms. The main pattern is not only sequential, but cyclical. In a simplified description, nitrogen might enter the water as protein from a food source. This food is eaten by a fish which excretes nitrogen as a waste product. The waste product breaks down to ammonia, which is oxidized by a set of bacteria and converted into nitrite. Nitrite is oxidized by another set of bacteria and transformed into nitrate. Nitrate is then utilized by aquatic plants. The plants, in turn, provide food for the fish or food for organisms which the fish feed on. Again, in nature, nitrogen compounds exist in a balance which prevents the extremely toxic forms from reaching a level dangerous to either fish or other aquatic life.

This natural equilibrium is virtually impossible to establish within the limits of a home aquarium. The major concern of the aquarist is to encourage the transformation of the toxic nitrogen compounds, ammonia and nitrite, into less harmful substances. This part of the Nitrogen Cycle is usually what most aquarists think of when they consider the term Nitrogen Cycle, and we will also use it in that vein.

Toxic forms of nitrogen originate primarily from fish and animal waste products and from decomposing flesh and food. Although some of these substances are toxic, they usually break down quickly into ammonia (NH_3). Ammonia is also excreted by the fish, and in the un-ionized form (NH_3), ammonia, even in slight concentrations, is extremely toxic to fish. The most effective way to remove ammonia is through ***biological filtration***, whereby bacterial populations are used to oxidize ammonia into nitrite (which is also extremely toxic), and then oxidize nitrite into nitrate. The major difficulty with biological filtration is that it requires a certain period of time before an effective bacterial population can be established in a new or "fresh" aquarium. This development is generally known as the "conditioning period" and radical water quality changes occur during this time. These water quality changes can be extremely detrimental to all fish living in the "unconditioned" environment.

The Nitrogen Cycle Showing the Mechanisms and Patterns Which Maintain an Equilibrium

Reprinted from "Chemical Analyses for Water Quality published by the Environmental Protection Agency

Although there are many questions about the Nitrogen Cycle which are still unanswered, current research findings are casting more and more light on the subject. These facts are a summary of what is known at this time.

The Nitrogen Cycle:

1. The Nitrogen Cycle, in an aquarium, refers to sets of bacteria which convert ammonia (NH_3) into nitrite ($N0_2^-$), and nitrite into nitrate (NO_3^-).

2. In an aquarium with an average temperature of 77¡F. and filtration, it requires about 33 days from the time the first fish or aquatic animal is introduced for the Nitrogen Cycle to become established. If the temperature is higher, it takes a few days less time. If the temperature is lower, it takes longer (e.g., an average of 60 days at 45¡F.).

3. Nitrogen-cycle bacteria have to be introduced into an aquarium. This usually occurs when fish or aquatic animals are added to the aquarium. The bacteria are carried on their bodies.

4. Nitrogen-cycle bacteria colonies can be established somewhat sooner in an aquarium by maintaining a water temperature of 86¡F. and an alkaline pH, preferably about 8.0.

5. Ammonia is largely derived from fish waste products. The more fish and the more they defecate, etc., the greater the amount of ammonia produced.

6. In water, ammonia exists in two forms: ionized ammonia (NH_4 which is also called ammonium, and un-ionized ammonia (NH_3). While the un-ionized ammonia is very toxic, even very high concentrations of ionized ammonia produce no adverse effects on fish.

7. Whether ammonia exists in one form or the other depends directly on the pH (acidity/alkalinity) of the water. At a pH of 6.0, almost all ammonia exists in the ionized (safe) form. As the pH becomes more alkaline, some of the ionized ammonia changes into the un-ionized (toxic) form. At a pH of 7.4 enough toxic ammonia may be present to be of danger to the fish.

8. The conversion of ammonia into nitrite is accomplished by a set of nitrogen-cycle bacteria known as Nitrosomonas. These bacteria can convert ammonia only when it is present in the un-ionized form (NH3).

9. The rate at which ammonia is converted to nitrite is affected by the pH of the water. At a pH of 6.0, almost all the ammonia is in the ionized form and conversion is very slow. At a pH of 5.5 or below, it ceases completely.

10. The conversion of ammonia (NH_3) to nitrite ($N0_2^-$) releases hydrogen ions (H^+) which, in an unbuffered aquarium, increases the acidity of the water and may cause the pH to decrease to 6.0 or even slightly lower.

11. In an aquarium with an average temperature of 77¡F., ammonia reaches a peak concentration approximately 7-9 days after the nitrogen-cycle bacteria have been introduced. The decline in the level of ammonia indicates that the Nitrosomonas are becoming established in the aquarium. Usually after about 15 days from the time the nitrogen-cycle bacteria has been

introduced, the Nitrosomonas are established and ammonia is present only in slight amounts at less than toxic levels.

12. Nitrite ($N0_2^-$) is extremely toxic and is one of the major causes of death in an "unconditioned" aquarium. Its toxicity is not affected by pH.

13. In an aquarium with an average temperature of 77°F., nitrite reaches a peak concentration approximately 15-18 days after the nitrogen-cycle bacteria have been introduced. The decline in the level of nitrite indicates that another set of nitrogen-cycle bacteria, known as Nitrobacters, are becoming established in the aquarium. They are usually well established about 33 days from the time nitrogen-cycle bacteria were first introduced to the aquarium, and nitrite is reduced to below the safe level.

14. To introduce the nitrogen-cycle bacteria and "condition" the aquarium, **only a few hardy fish,** such as tetras in freshwater or damsels in a marine aquarium, should be kept in an "unconditioned" aquarium.

15. Nitrogen-cycle bacteria develop their most effective colonies in the filtering layer nearest to the filter intake. The best material available for this first filtering layer is a non-compacting, coarse, stiff, spacious, porous, positively-charged stoneware such as Kordon's Bio-Mech.

16. Nitrogen-cycle bacteria benefit from a periodic rinsing of their filter materials. By removing the slime produced by the bacteria (their waste product), the contact between the surface area of the filter material and the water is increased. This encourages the development of the bacteria population.

17. When rinsing the filter materials, use aquarium water, if possible, because a large variance in water temperature or quality may adversely affect the nitrogen-cycle bacteria. If tap water is used for rinsing, be sure it is about the same temperature as aquarium water.

18. Any disruption to the Nitrogen Cycle, particularly affecting the bacteria population, can result in a new "conditioning" period when the nitrogen-cycle bacteria must re-establish an effective population which can remove toxic nitrogen compounds before they reach dangerous levels. This disruption should be avoided.

19. Medicating an aquarium may disrupt the Nitrogen Cycle. Methylene blue is known to adversely affect nitrogen-cycle bacteria.

20. Nitrogen-cycle bacteria require the presence of dissolved oxygen in the water to oxidize the nitrogen compounds. If the level of dissolved oxygen drops below 1 part per million, the bacteria cease functioning. If this insufficient level is maintained for more than 15 minutes, the bacteria start to become dormant. After 8 hours of inadequate levels of oxygen, all of the nitrogen-cycle bacteria have become dormant or died and the cycle has been disrupted.

21. Nitrate (NO_3^-) is the end product of the Nitrogen Cycle in an aquarium. In nature, plants and algae utilize nitrate for nourishment, however, an average aquarium would require a large algae culture vat to remove the nitrate normally produced. Fortunately, nitrate is not as toxic as either un-ionized ammonia or nitrite and can usually be kept at a safe level by regularly (about once a week) exchanging part of the aquarium water for new water. Although not a substitute for regular water changes, there are ion exchange resins which will remove nitrate.

Have You Asked A Friend to Join the AKA Lately?

Convention Time Will Be Upon Us Before You Know It! Are You Ready With the Fish You Plan on Sending?

Aphyosemion gardneri (Makurdi)

Ray Mecca
Hackensack, New Jersey

In September of 1974 1 had the good fortune of being the host to Fred Wright during his stay in the States. Fred brought along eggs of the Makurdi form of *Aphyosemion gardneri,* this being the first introduction of this variety into America. Originating from Makurdi on the Benue River in Nigeria, this is one of the more beautiful forms of the *gardneri* superspecies. I would like to express my most sincere thanks to Fred for his generosity and for making this lovely little fish available to American aquarists.

In appearance this little gem has the typical *gardneri* shape, but the similarity ends there. The sides of the body are a brilliant metallic blue-green, liberally spotted with red, and this coloration extends through the central portion of the caudal fin. The upper and lower edges of the caudal fin are bright orange, submargined in red, and are drawn out into short filaments. The central rays are elongated and extend past the rear edge of this fin. The dorsal and anal fins have the same color pattern as the body, this pattern extending two-thirds the length of these fins outward from the base. The outer borders are bright orange, submargined in red, the pectorals are amber colored, and the ventrals are yellowish-orange. The overall effect, when viewed under the proper lighting conditions, is electrifying.

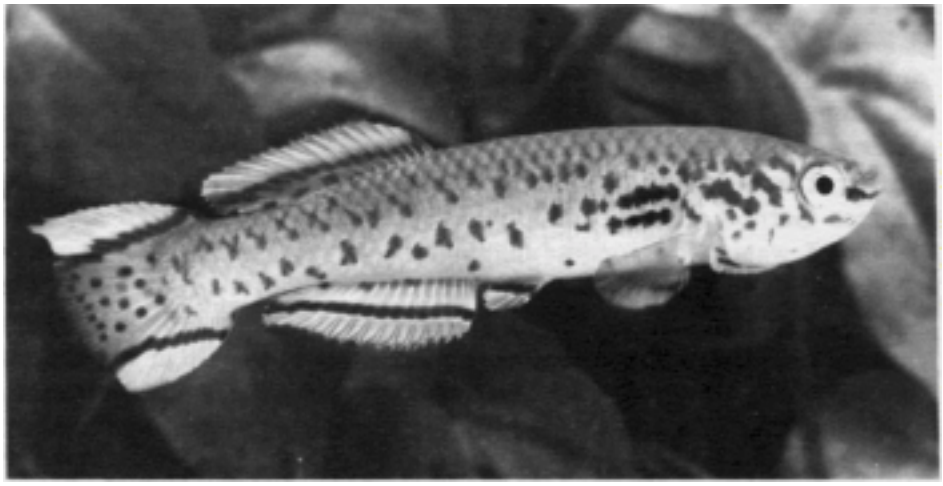
Care and maintenance pose no problems, as they are quite hardy and eagerly accept all dried, frozen, and living foods. Their exact limits regarding water conditions are unknown to me and, hopefully, will be determined by someone who has the time and tank space to pursue this further. I keep my fish in water that has a pH of 6.2 and a hardness of 6 degrees German. I also add one teaspoonful of non-iodized salt per gallon of water. The males are eager spawners, but are not overly aggressive, and they can be kept in pairs without fear of losing the females. Mine are kept in 31/2 -gallon tanks, one pair per tank, with a few floating plants and a mop. Eggs are picked from the mop at the rate of approximately 10 per day and God alone knows how many more are in the plants! Suffice it to say that young are now swimming about with the adults and doing very well. So-another plus-they can be "community" bred if one so desires.

The eggs are small, about 1mm in diameter, shrink slightly during development, and the incubation time varies considerably. The eggs from Fred were forced-hatched after an incubation period of 30 days. However, they are equally liable to hatch normally in 14 days or to take as long as 70 days before hatching. It seems that the safest course to

follow would be to force them when they appear "ripe" and to keep a daily check on the remaining eggs, lest some hatch early and the fry starve before being noticed.

The fry are tiny when first hatched but are able to consume all the normal killi-fry foods, micro worms the first day, baby brine shrimp the next, etc. They grow fairly rapidly, are one inch long in four weeks and begin to show color in the fins at this time. Sexes can be determined in 5 to 6 weeks, and they are sexually mature when two months of age. At this stage they are approximately one and three quarters inches total length though the full intensity of color is not apparent for another month or so. I have no idea as to what constitutes full size. My breeders are two and three quarter inches overall and are just four months old. Since these were raised in 31/2-gallon tanks it seems reasonable to expect larger fish at this age provided they are given more spacious quarters.

Easily maintained and bred, and most attractive, *A. gardneri* Makurdi is a most desirable killie. Hopefully they will become well established and not share the fate of other killies that have become popular for a time and then faded into obscurity.



Aphyosemion gardneri (Makurdi)

Some Spanish Friends

Paul Labhart*
Switzerland

Two killifishes live in Spain: the Valencia killie, *Valencia hispanica* and the Spanish killie, *Aphanius iberus*. I have been the lucky owner of these species for quite some_time and they are fast becoming my favorites. The reasons they are becoming my favorites will probably not be evident by this article. One should keep them himself, at least once, to know.

I received both of these species as eggs from Jose Arredondo who lives in Madrid. The *Valencia hispanica* egg is about 2.6 mm in diameter, perhaps twice as large as those from *Aphanius iberus.* The development of the embryo proceeds without delay and the young fish hatch after 8-14 days. The fry are 7.5 and 4.5 m_ long respectively. After the yoke sack is used up, which is still needed, they are ready to eat freshly hatched *Artemia*. After the first few days the *Valencia* young have a dark longitudinal band. They develop quite rapidly into longish, plain brown, lively fish, which initially, when they explore a new tank, show some inclination to form schools. After two weeks (2cm) they eat anything and readily take dry food. One can differentiate between the sexes after 3-4 months when the males show dark edges on their fins and they are fully colored and sexually mature at 6-7 months (4-5 cm). The Valencia killie is powerfully built and eventually reach a length of 81/2 cm.

A. iberus grows slower but colors up more rapidly than *V. hispanica*. The young fish develop the high-backed-fish outline sooner. After 2 months one can pick out the males by their cross stripe while the females have spots. I have observed them spawning for the first time at the age of 3-31/2 months. The maximum length of the Spanish killie is 5 cm. In both species the females are slightly smaller than the males.

The Valencia killie has a brown body with blue and green sheen and dark bordered yellowish fins. The markings on the body and the fins of the Spanish killie are dark blue, almost black; on the body these dark stripes alternate with light blue stripes. Also, over the cross stripes there are blue spots. Their stomachs are yellowish colored.

The females are more or less brown with colorless fins. The Valencia females can, however, be quite variable. Many show, as with the males, cross stripes, yellowish fins and/or dark fine edges, but these markings are less pronounced. Both live longest in suitable tanks with sunlight, many plants, and algae. They eat everything that their size allows. The Spanish killie does have some difficulty consuming fruit flies *(Drosophila).* I have made this observation with *Jordanella floridae* also. Apparently fruit flies have an unpleasant feel in their mouth. *A. iberus* needs additional vegetable food which can be given to them in the form of spinach, shredded lettuce, dry food and the like, if no algae is available.

Both species, naturally, are at their best in a single-species tank. When one combines the Spanish killie with other species it is usually at their expense. I can report, however, that one can successfully keep them together with other *Aphanius* species. Conversely, in the case of the rather aggressive Valencia killie, one can place them with all species without experiencing losses. For example, I have kept successfully young specimens in the same tank with species of *Aphyosemion* for a long period of time. However, when I placed a male *Epiplatys dageti* in with them, I found it a day later torn to pieces and floating on the surface. Perhaps they didn't like the black cross stripes. At present I keep the grown fish together with *Jordanella floridae* and this works well. I have not tried to keep both Spanish species in the same biotope since the *Aphanius* are still too small.

Both species are not fussy about temperature (15-30¡C.). Fish kept cool over the winter give better breeding results. The water should be rather hard and mildly alkaline. I accustom them in pure fresh water in unheated tanks. *A. iberus* is found in brackish water also. Both species are somewhat shy.

In the free natural state, they have a spawning pause during the winter. Spawning resumes in the spring and summer months. In the aquarium, they will spawn in all seasons. *V. hispanica* has a long spawning pause during which no eggs will be laid. Spawning fishes can be detected at once by their colors. The upper half of the bodies are much darker and two light bands extend from the mouths to the dorsal fins. During copulation and in favorable courting, they push their fins together frequently, even posing perpendicular with the male s head just under the female. They lay adhesive eggs on fine leaved plants near the upper water surface. The Valencia killie is not very productive; a female will lay 20 eggs per spawning.

In the case of *A. iberus,* spawning proceeds actively to and fro. During copulation the male swims above the female and stands trembling with his head nearly against hers. One cannot compare this with the "mounting" of the bottom spawners, for he soon swims away, turns his head toward the female and waits. He again swims over to the female and repeats the process until she is ready. Then the male shoves himself against the female and an egg will be fastened to the plants. Generally, several pairings follow since the female sometimes swims forward and then waits. The partners thereby remain, at times, only a short time in a parallel position. Upon the approach of another male the spawning pair will generally drive him away. I have, however, seen a whole cluster of males (4) swimming behind a female.

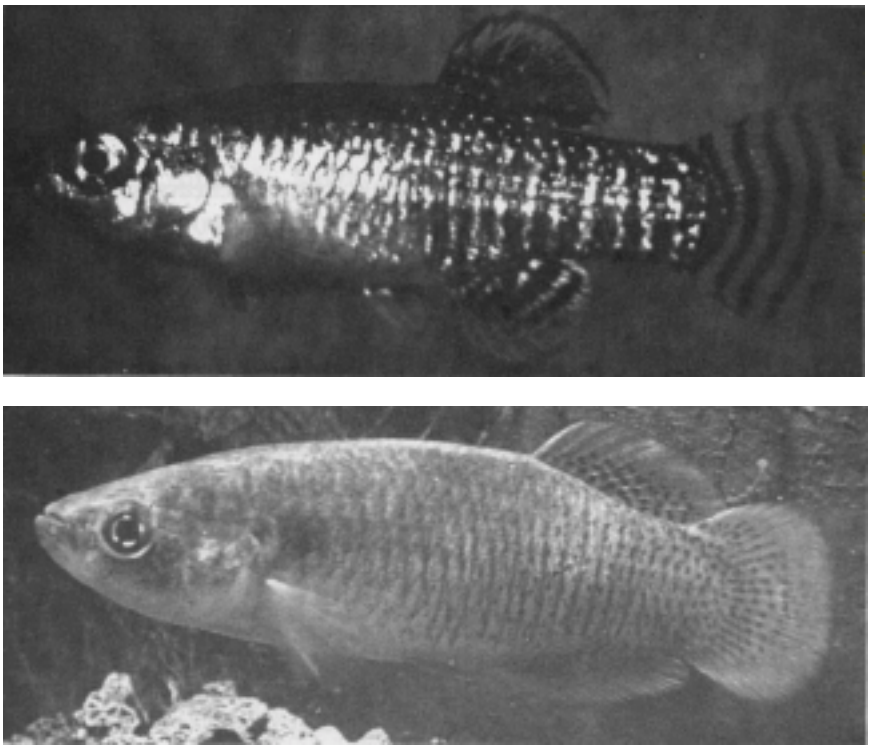
The Spanish killie is more productive than its compatriot. I collected 80 eggs from one female during a week. I could not discern a spawning pause as I found them spawning each day. The female is not injured by the males. I keep 1 female and 4 males in a 30 liter tank.

I could, under these conditions (4 males, 1 female) occasionally and only during spawning, observe territorial behavior. One male occupied 3/4 of the tank, the second the remaining portion. The other two males hid or

were chased from one region to the other. The territorial boundaries were generally maintained by both of the "rulers." The owner of the region in which the female found herself would spawn with her. When she swam across the border the male remained in his territory and the other one began to chase her. The spawning males were generally paler than the non-spawning ones.

As I initially tried to breed these species, I encountered the same problem with both; they went on strike in a bare spawning tank that contained only a mop and heater. For that reason, I prefer to seek out the eggs in the plants in the maintenance tanks. *A. iberus* has a preferred media (java moss with algae). I search there only to cover my need for eggs. Very few of the eggs fungus and they seem to be resistant to injuries due to transport.

The range of distribution of both these species overlaps in Spain where, unfortunately, they are endangered (refer to **DATZ** 1964, p. 173 and **DKG Journal** 72/9). However, *A. iberus* still occurs in Morocco *and V. hispanica* in Greece (Island of Cofu). Both species were described by Cuvier and Valenciennes in 1846. *Valencia* and *Aphanius* hybrids are, according to Villwock, viable but sterile.



Top*: Aphanius iberus.* Bottom: *Valencia hispanica*
Photos from slides by Dr. Froehlich

Raising *Aphyosemion gulare*

Ken McKeighen, Jr.
Muncie, Indiana

Aphyosemion gulare is an annual killifish from southwest Nigeria. It inhabits temporary ponds and streams. In areas it is sympatric with the smaller *Aphyosemion filamentosum*.

The color of the *A. gulare* male is outstanding. The basic body color is bluish to purple with a darker dorsal and a white throat and belly. One of the main identification marks is a red or vermillion throat stripe. The sides and dorsal fin have large blotches and spots. These extend into the upper half of the caudal fin. The anal fin has a vermillion median stripe that is continued in the lower part of the caudal fin. The first few rays of the dorsal and anal fins are extended into filaments. The females are brownish with a few spots and no elaborate fins.

The way I spawn A. gulare is to place a pair or trio in a 5 to 10-gallon tank. I use "Bubble-up" filters in my big breeding set-ups with no charcoal. The pH is kept at 6.4-6.0 and calcium DH about 0 to 0.1. Temperature is kept between 66 and 70¡F.

I then place boiled peat in plastic cottage cheese cartons (if available) with a hole cut in the top. Round "betta bowls" may also be used. I put about 1/2 to 1" in the containers as *A. gulare* are ploughers. I put two containers in the tank and stagger the collecting dates one week apart.

The collected peat is dried till it's just damp and stored in labeled plastic bags. I keep the eggs in a drawer. Storage is for 21/2 to 3 months.

When the big day arrives, I place the peat in a quart drum bowl and add some aged water from a healthy tank. The fry hatch almost immediately and can take newly hatched brine shrimp. I feel their growth is average for an annual. *A. gulare* must be sorted for size or the fast growers (usually males) will devour the smaller fry (usually females). They start sexing out between 8 to 12 weeks of age.

A. gulare doesn't seem to exist in any great quantity in the hobby. Perhaps it's their aggressive nature. The males seem to get more aggressive towards their mates if they're isolated. *A. gulare* is a beautiful and fascinating fish and is well worth the time and patience needed for raising it.

The Problem Page

QUESTION: After trying unsuccessfully to locate anyone who has successfully spawned *Aphyo-semion bivittatum*, I was advised by a friend to write to you. I have read numerous publications and articles in regard to the conditioning, breeding and raising of this beautiful specimen of killifish, but no two people seem to agree.

I would like to know if you would be able to relate from your many years of experience what methods you have found to be helpful in spawning A. bivittatum. I am interested in not only finding out some helpful facts about fish, but also where I might be able to obtain a breeding trio. The local stores in the San Diego area do not carry a very selective line of killies and no one seems to know where they are available. I would appreciate any help you might be able to give me in regards to this matter and thank you for your help.

ASKED BY: Alfred D. Smith, San Diego, California

ANSWER: *Aphyosemion bivittatum* is one of the easier killifish to breed. Since they are top spawners, you can keep a pair in a small tank, have it well planted, especially with floating plants and don't forget a well fitting cover glass because they can jump. Add a pair of *A. bivittatum* to the set-up and you are all set. They lay one egg at a time on the floating plants, normally they do not eat their eggs. These eggs will hatch in about 14 days. So leave the adult pair in the tank for about 10 days, then remove them to a similar set-up and 5 or 6 days later you should see the first babies swim between the plants or on the surface of the water. If you leave the spawning fish in the tank for a longer period, then the first hatched fry will eat the younger brothers and sisters if they differ to greatly in size. The parent fish would also eat them.

This is the simplest way to go about it. But, in using this method one needs many tanks and most people don't have them. For this reason most breeders use spawning mops. Jacob Scheidnass had the brilliant idea many years ago. He figured that when fish lay their eggs into floating plants they might also deposit them in neutral fibers such as nylon fibers. After a bundle of these fibers were in the tank with the breeding fish for several days, he removed the fibers, squeezed the water out, and picked the eggs out of the mop with his fingers. The eggs are hard-shelled and can take it without damage. These eggs are then put in flat dish with water from the breeding

tank and two weeks later you will have young A. *bivittatum* swimming around. These should be fed with fine food for the first few days such as infusoria, from then on they can eat newly hatched brine shrimp.

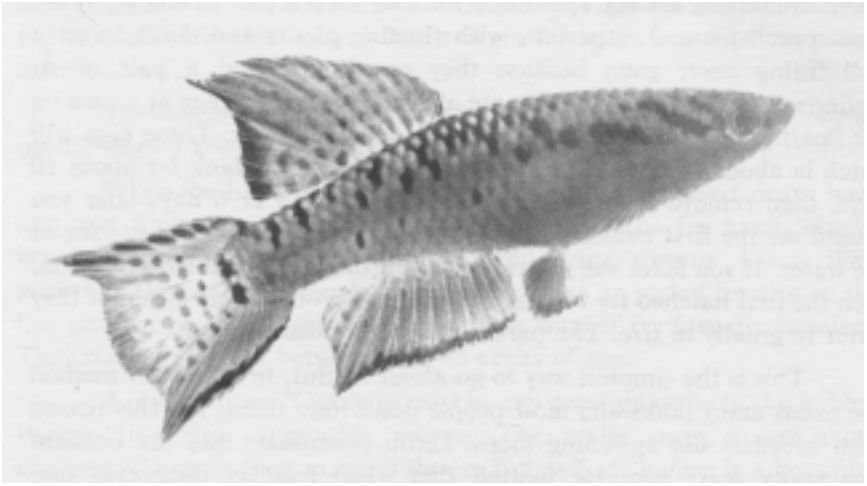
You mention that you have heard confusing reports concerning the breeding of these fish and this is understandable. Every breeder develops his own method and if he has success then he is on the right track.

Here you have the basic principle in breeding these fish, but I cannot tell you where you can buy a pair or trio. Because too many fish breeders were in the same boat you are in, we formed this organization The American Killifish Association. If you are interested in this fish family then you should join this group. Each month they publish a fish and egg listing in which members that have fish or eggs to sell may advertise. This list goes to every member each month.

If you should be interested in this group I will enclose the name and address of our membership chairman: Jerry and Bev Sellers, 1908 Bryan Road, Brandon, Florida 33511. Drop them a note and they will fill you in on what is needed to become a member.

Hope this note will be of help to you.

NOTE: Questions for the Problem Page should be sent to George Maier, Chairman of the Beginner's Committee, 1411 Irving Park Road, Chicago, Illinois 60613. Please include a stamped, self-addressed envelope.



Aphyosemion bivittatum from Nigeria. Photo by J.J. Scheel.

THE AMERICAN KILLIFISH ASSOCIATION, Inc.

REPORTS - BUSINESS - SERVICES - ANNOUNCEMENTS

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Chairman's Report

Although a few days late, I would like to wish all of you a happy New Year and welcome you into the 16th year of the AKA.

I would like to express my thanks to my fellow BOT members for electing me Chairman for this year. I would also like to thank those of you who elected me to the BOT in the first place. I appreciate your vote of confidence and I hope I live up to your expectations.

As this year's Chairman, I will do all that I possibly can to make this year one to be remembered as one of the best in the history of the AKA. Of course, I will need the help of the entire BOT as well as you, the membership in general. I will be receptive to all criticism but, naturally, constructive criticism is always more easily accepted. Along these lines may I invite all of you who would like to become involved in some of the committees to write to me, or your nearest BOT member, and make us aware of your desires. Maybe you don't have a particular interest but you would like to do something for the AKA; just tell us about it and we will surely be able to find a spot for you. There is lots of work to be done.

We are beginning this year with a few less members; perhaps due to the mix-up last year and the late delivery of **JAKA-KN.** The few missing members are most likely those who are only half-hearted killie buffs who would have dropped out for various other reasons anyway. I won't say that the AKA will be better off without them, but I'm sure that the Association will survive.

One thing you will hear a lot from me about until June is the convention. This year it will be held in Michigan and I will be taking a personal interest in its success. I would like to ask all of you to make every effort to attend and help make it the best convention ever. With Michigan being fairly centrally located, it will be somewhat easier on some of you economically to get there. This time plan to bring your whole family with you, it at all possible. Plans are being made to provide something for those not interested in killies. During past conventions these plans have always fallen through; this year things **WILL** be different. For example, how often will your family get the chance to visit Greenfield Village of the Henry Ford Museum? We will have such trips planned for anyone interested. Other side trips will also be organized but, rather than go into detail here, read the monthly reports by the convention Chairman, Dave Perry. Just plan on being in Michigan on May 28th. Save your money and get those special fish into show condition.

Until next month, good luck and good health to all. May the new year bring nothing but good fortune.

Fred

JUDGING CLASSIFICATION FOR 1976 CONVENTION

The Board of Trustees has approved a new set of judging classifications and rules to be put into effect for the 1976 convention. Tony Terceira and Al Castro are responsible for the changes in the point system. Now that there will be more chances for winning at the

convention, it is hoped that everyone in the AKA will make an extra effort to prepare those prize-winning fish for the show in 1976. The new classifications and rules are:

I. North and Central America (except *Rivulus)*

II. South American Non-Annuals (all *Rivulus)*

III. South American Annuals
  A. *Cynolebias, Simpsonichthys, Campellolebias*
  B. Other South American Annuals

IV. *Nothobranchius*

V. *Aphyosemion*

A. *arnoldi, batesi, cinnamomeum, filamentosum, gulare, gul. schwoiseri, kribianum, robertsoni, rubrolabiale, seymouri, splendidum, walkeri* and related soil spawners.

B. *gardneri* group *(gardneri* strains and *mirabile* strains), *scheeli, marmoratum, exiguum* complex *(exiguum* and *bualanum* strains), *bamilekorum, oeseri, ndianum, puerzli,* and related species

C. *bivittatum* group *(riggenbachi, loennbergi,* etc.) *calliurum* group *(calliurum, ahli,* and *australe* strains), *cameronense* group *(cameronense, obscurum* and *raddai) franzwerneri, wildekampi, celiae* and related species.

D. (Congo and Gabon) *elegans* group *(elegans, lujae, christyi, schoutedeni, cognatum* and *melanopteron), striatum* group *(str. striatum, str. ogoense* and *str. microphthalmum) labarrei, georgiae* strains, *cyanostictum* and related species.

VI. Blue Gularis

VII. *Roloffia (Callopanchax)*

A. Large (adult size) including, but not limited to *occidentalis, toddi, guineensis* and *monroviae*
B. Small, including, but not limited to *geryi, petersi, chaytori, bertholdi, liberiensis, viridis,* "caldal," *roloffi, maeseni*

VIII. *Epiplatys, Pseudepiplatys* and *Aphyoplatys*

IX. Other African

X. Eurasian

X1. Matched Breeding Pairs (2)- (provisional in 1976)

METHOD OF JUDGING

A. No trophy or ribbon will be awarded to any fish receiving less than 70 points, regardless of the total number of entries in that particular class.

B. All entries will be judged on individual judging slips which will be
I. made available to each entrant upon request.

C. The name of the person whose entries appear in the show shall be displayed on the tank after the judging is completed. Fish submitted for auction only may have the donor's name on the tank at his option.

APPROVED POINT SYSTEM
Proposed Revised Point System:

FINS		BODY		COLOR	15
Caudal	10	Size & Shape	5	SIZE	15
Dorsal	7	Condition	5	HEALTH	10
Anal	8		10	DEPORTMENT	10
Others	5			COMPATIBILITY	
	30			(male/female)	___
					60

TAPE PROGRAM

Effective at once: all cassette tapes from the Tape Program will cost $2.75 each. This is for a C-60 Cassette and includes insurance and postage.

Four (4) new pre-recorded tapes are currently available. All of these were made by Wayne Lewis. They are available at the cost of $2.75 each. (Please note that these tapes are available only with the programs listed. Please don't ask for them in any other way.) Order by number:

Mini-Workshop Series #1, #2, #3, or #4.

Mini-Workshop Series Index

Tape #1 Introduction & the 251 Sponge Filter / Divided Tank Breeding Technique

Tape #2 The 250 Brine Shrimp Hatcher / Killi Trash Can / Plastic Funnel-Undergravel Filter for 25c / Sears & the Diatom Filter / Leaky Air Valves

Tape #3 Glass Rod Bed: Breeding Technique / Acclimation of Newly Acquired Fish / Psychology of Mop Picking / Air Supply for the Aquarium

Tape #4 Closed End PVC Pipe Undergravel Filter / Simple Grid PVC Pipe Undergravel Filter / Multiple Grid PVC Pipe Undergravel Filter / PVC Pipe Airstone Aerator

Dave Machell
Tape Chairman

Your 1976 Renewal Form

. . . contained a statement which was misinterpreted by many, so, I offer this explanation: With our application for Second Class postage rates we are under some new Federal regulation requirements, one of which requires that a certain amount of our dues be used only for the publication of **JAKA-KN** and nothing else. We have determined this amount to be all of the dues except for 500.

When I printed the 1976 renewal forms I changed the dues amount, but carried the $8.00 figure for **JAKA-KN** from 1975; it should have been $9.50. A person *cannot* receive a years subscription to **JAKA-KN** for $9.50 - the dues are $10.00.

AKA BULLETIN BOARD

The Thomas Cahalan Memorial Fund is being established to insure that an award will be presented annually in his name. The BOT has approved an award to be called: "The Thomas Cahalan Memorial Award for the Best Roloffia." This award will be presented annually at the AKA convention. Any donations will be placed in an account that will draw interest, and from this, the annual award will be purchased. If you feel that you would like to make a contribution, make your check payable to Joseph Rieco and send to: Mr. Joseph Ricco, 326 Lassenpark Circle, San Jose, California 95136. Thank you.

The Board of Trustees has authorized Mike Komiensky to order patches with the AKA symbol. The patch measures 3" x 5" and has a white background with a gold border. The Blue Gularis has five colors; dark blue, light blue. brown, orange, and kelly green; the words, "The American Killifish Association" are in red. A rather striking patch that all of you will wish to own.

Persons wishing to order the patch can do so by sending a check for $2.25 (includes postage) to: Mike Komiensky, a5725 Garner, Romulus, Michigan 48174.

A special award, THE BEST FOREIGN ENTRY , will be presented in memory of Horst Latzel at each convention. We urge our foreign friends to enter the competition.

Dave Machell has put together a memorial tape containing the contributions of Horst Latzel to the tape program. It contains 4 programs totaling about 40 minutes. The cost is $ 2.00 and all proceeds will be donated to the Horst Latzel Memorial Fund. Send your orders to Dave Machell and make your checks payable to Joe Ricco.

Anyone wishing to obtain a free index of articles on killifish should send a stamped, self-addressed envelope with 200 postage on it to: Duane Tutaj, 17 W 661 Loraine Ave., Addison, IL 60101.

Copies of any these articles will be made for 150 per page. I will provide envelopes and postage. If there are any further questions, please write.

Bob Bostrand has requested that any AKA member who is handy with a camera to help him with the slide sale program. Bob needs all the help he can get in order to put out quality slides for sale each month

AREA KILLICLUB ANNOUNCMENTS

The Southern California Killie Club meets the 3rd Wednesday of each month at 7:30 PM in the Community Room of the Community Savings and Loan Association, 15359 Paramount Blvd., Paramount, Calif. For further information contact Ray Mitchell at 213 860-4311.

The BAKA (San Francisco) meets the third Saturday of each month at the American Savings and Loan Association Building, located between 'A' and 'B' Streets in Hayward, at 8 PM. For further information call George Randolph at 415 996-9219.

The Milwaukee Area Killie Club meets on the second Sunday of every month at the homes of its members. Please contact Tom Wojtech, at 414 445-3581 for more information.

The Chicago Killifish Association meets the third Friday of each odd-numbered month at 8 PM in the Internationsl Motor Inn., 4201 N. Mannheim. More info from Jerry Blazejak. -

The Delaware Valley Killifish Association meets every third Friday at 8 PM in the Community Federal Savings and Loan Building at State and Sproul Roads, Springfield, PA. For information call Lee Harper at 215 566-2098. -

The No. Ohio Killifish Association meets the second Sunday of each month at 7 PM in a member's home. Contact Ed Kray, 216 641-0081, or Jim Hutchings, 216 281-0255.

The MAKA meets the fourth Thursday of each month at the Albert Stier Real Estate Building, Rt. 3 and Bollinfield Ave., Clifton, NJ at 8 PM. For more information call Hank Voss, 201471-9235.

The Long Island Killifish Association (LIKA) meets once a month in the homes of its members. Meetings alternate between Nassau and Suffolk Counties. Details from Bill McNiff, phone 516 472-3120, or write 495 North Bayport Ave., Bayport, NY 11705.

PNKA meetings are held at different members homes on the 2nd Sunday of each month. For more info contact Steve Lloyd at 761-3416 or Sue Behurst at 287-9231.

The Michigan Killifish Association meets the first Thursday each month at 8 PM at 1400 Chrysler Bldg., Detroit. For further information contact Mike Komiensky at 728-1498 or Alex Thiermann at 311-0298.

The Hudson Valley Killifish Association meets the third Firday of each month in the homes of its members. For more information phone Bill Holubis at 914 669-5030 or Henry Fries at 914 628-4885.

The Western Pennsylvania Killifish Associa~ tion meets the second Thursday of each mont
in the homes of its members. Contact Larry and Karen Miller at 814 838-7041