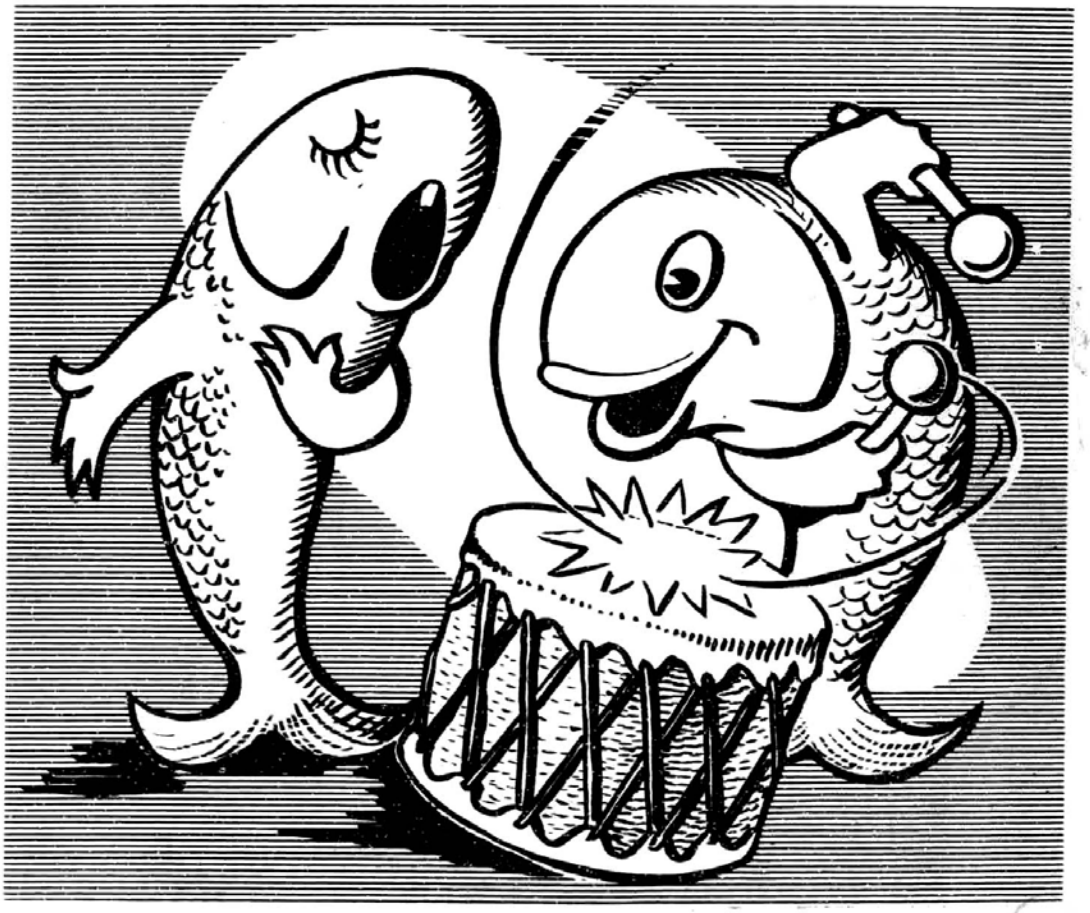
The DRUM and CROAKER

A Highly Irregular Journal for the Public Aquarist



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CHICAGO

Unexcelled scientific excellence is the only way to describe the Chicago meetings of the Aquarist Section of the ASIH. Two days of meetings convened at Shedd Aquarium on Sunday, June 13, finishing on Monday afternoon with a luncheon as guests of Brookfield Zoo, followed by a demonstration at the Seven Seas Panorama which, incidentally, was the first porpoise show using synthetic brine. The Sunday luncheon as well as the cocktails and dinner that evening were sponsored by Trustees of Shedd Aquarium, and to them a mellow vote of thanks is extended from all Aquarists, as well as to Bill Braker and his staff and the Brookfield staff for making the entire group feel at home. The papers presented were as follows.

Sunday: "New England Aquarium, the proposed sea water system." D. Miller

"A progress report on the extension to the Vancouver Public Aquarium." W. F. Penfold

"A planned one-level aquatic animal system for the Cleveland Aquarium." D. H. Moreno

"A review of the plans for the National Fisheries Center and Aquarim." Wm. Hagen

"The Aquarium of Niagara Falls." W. E. Kelley

"The Public schools educational program at Scripps Aquarium." D. Wilkie

"Some newly developed educational aids." B. Clark, Miami Seaquarium

"Underwater cleaning of large expanses of glass." W. West, National Fisheries Center and Aquarium

"The use of Quinaldine as a diving-collecting anesthetic." V. F. Penfold

"Capture of a lemon shark, Neqaprion brevirostrus, and its maintenance in a closed-system, inland aquarium." D. Wilkie

Monday.- "The decline and demise of Vancouver's killer whale, 'Moby Doll.'" V. F. Penfold

"Microbiological water study." W. Zeiller, Miami Seaquarium

"The nitrogen sequence in fresh water and sea water aquaria." J. V. Atz, American Museum of Natural History

Next year's meetings (1966) move to Miami, usually scheduled for the third week in June, with the Aquarium Symposium probably scheduled for the day ahead of the meetings. We understand that Burton Clark, Bill Gray and Warren Zeiller are already at work with plans to convince all professional aquarists that Seaquarium is the greatest!

Earl Herald

THE DECLINE AND DEMISE OF VANCOUVER'S KILLER WHALE "MOBY DOLL"

Vince Penfold

The Vancouver Public Aquarium's Orcinus orca "Moby Doll" lived in captivity in a seapen in Vancouver from July 17, 1964 to October 9, 1964 and was the world's first orca to be maintained for an appreciable time, allowing for considerable observation and study.

During these twelve weeks, the animal fasted for eight weeks, commencing to eat on September 9. Subsequent consumption of fresh frozen Gadus macrocephalus averaged about 150 pounds per day (in one or two feedings). There was never any indication of aggressiveness by this animal, even when it was hungry.

Antibiotics and vitamins were injected on four occasions before September 9, and multivitamins and calcium were given regularly after that date in the daily food.

Much weight was lost (resorbed) during the fast, as evidenced by a marked depression between the skull and dorsal fin.

About the middle of August 1964, grey, raised plaques appeared on the surface of the skin and these steadily progressed in size and number until a large area was involved. These lesions were pulpy looking and would slough off material when rubbed. A culture made from skin specimens collected in September, grew an unidentified fungus.

The animal swam consistently in counterclockwise circuits inside the pen, causing the dorsal fin to lean to the left due to water pressure from the right.

On October 9, 1964, "Moby Doll", during the feeding, ate three fish in a desultory fashion, then was seen to give a sub-surface blow and sink to the bottom where it drowned. The animal was lifted from the pen by crane and was weighed 2,280 pounds, and measured 15'6" in length. Male sexuality was confirmed.

An autopsy was immediately performed by a team of Vancouver pathologists headed by R. A. English, M.D., who reported no definite single factor as having caused the demise. However, important findings were a generalized mycotic (Asperpillus fumigatus) infection, especially in the lungs and lymph nodes, and Stap hlococcus aureus and Proteus sp. infections in the same sites. There was a heavy Nematode in festation (Anaskis simplex) in each of the five stomachs, which is somewhat normal for Odontocetes.

The brain was surprisingly large, being 6,450 gm. in an animal 467 cm. long. The brain of a Californian killer whale, female, reported by Caldwell and Brown in 1964, was 4,500 gm. in a body 521 cm. long.

Low salinities in the seapen due to influx of Fraser River runoff water, was thought to haw been instrumental in the growth of fungus on the whale, and in possibly increasing energy drain from lessened buoyancy. This, in conjunction with debilitation from the prolonged fast, no doubt contributed to the expiration of the killer whale "Moby Doll", after three months in captivity.

NEW ENGLAND AQUARIUM -THE PROPOSED SEA WATER SYSTEM

Dave Miller

The proposed systems supporting the marine exhibits at New England Aquarium can be divided into three major and essentially independent sections.

The first segment is concerned with the intake and processing of raw harbor water, and backwash supply. Dual intake lines running some 300 feet out into the harbor are proposed for alternate use to avoid fouling problems inherent in the area. The intake pumps (maximum capacity of 2,000 G.P.M.) will supply raw water for backwashing the sand filters connected with the other two systems. During processing, water will be pumped into two 18,000 gallon tanks, aerated and filtered through two vacuum D.E. units until acceptable water clarity is obtained. Water will then be transferred to a 55,000 gallon storage tank which supplies the make-up for the ocean tank, and exhibit tank systems. Run at maximum capacity the treatment system can supply the two exhibit systems with 100,000 gallons of sea water per day. Normal make-up is estimated at 25,000 gallons per day.

The ocean tank system, straightforward in concept, is a sand-filtered, semiclosed unit (200,000 gallons) with maximum make-up proposed at 10% of the entire volume per day. Water is pumped from the basement to a fourth level gravity tank which feeds into the centrally located 170,000 gallon display tank. This tank drains to rapid sand filters on the basement level. The main recirculating pumps return the filtered water to the gravity tank. Filter area is designed so that filtration rates of one gallon per square foot per minute can be achieved at maximum pumping capacities. Filtration and pumping capabilities are considered to be generous and it is hoped that the system can be run at less than full capacity, allowing a considerable safety margin and hopefully minimum labor and maintenance requirements.

The exhibit tank loop is again a semi-closed system and distinct from the ocean tank. Exhibit and reserve tanks are autonomous, self- sand-filtered units supplied from a separate gravity tank. Make-up for the gravity tank comes directly from the treatment systems already described. Capacity for water replacement of 10% of the total volume per day is provided. With each tank as an independent system we will hopefully have the flexibility of heating, cooling, or treating the various tanks without regard to their placement within the building.

Details of materials, piping, valves, heat exchangers, pumps, coatings, glazing compounds, etc., have been carefully studied but have not been commented on here.

THE NATIONAL FISHERIES CENTER

Wm. Hagen

The plans for the Fisheries Center were reviewed, including the exhibits to be included, as well as the research, administrative and operational spaces.

The Fisheries Center structure will be approximately 300’ by 500’, located in East Potomac Park, Washington, D. C. The larger portion of the structure will be occupied by a cetacean pool 85' by

THE NATIONAL FISHERIES CENTER (Continued)

100'; a mountain watershed, waterfall, stream, river, bayou and delta, running approximately 300' in length; two 35' diameter community pools, one salt and the other fresh; approximately 400' of so-called galleries, including many tanks of various sizes.

The research space is about 20,000 sq. ft., which will house the permanent scientific staff and approximately twenty office-labs for visiting researchers. Administration, operations and mechanical requirements will occupy the balance of the building.

It is expected that the architects will have completed plans and specifications by April, 1966. Thereafter, bids and construction will require approximately twenty-six months, resulting in completion of the Fisheries Center in the summer of 1968, with probable opening in the fall of 1968.

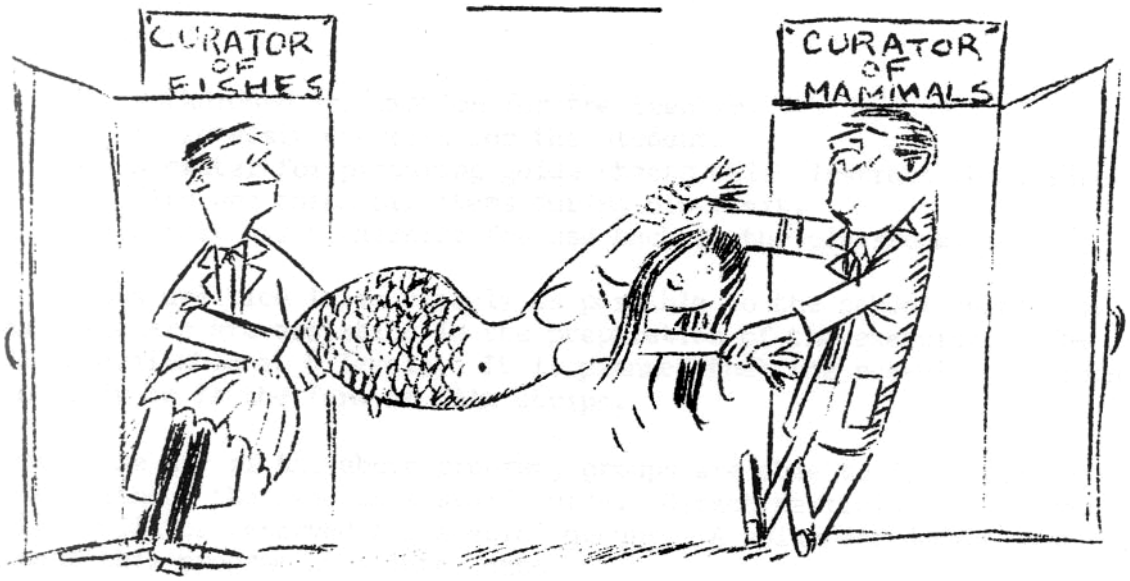
AQUARIUM OF NIAGARA FALLS

William E. Kelley

Aquarium of Niagara Falls, a new, privately-owned, $1-1/2 million "inland oceanarium" in Niagara Falls, N. Y. is described. A three-level circular building totaling 33,000 square feet under roof houses some three dozen exhibits of 200 to 100,000 gallon capacity. Dolphin and electric eel demonstrations emphasize the performance of these animals in nature.

The use of air-lift pumps to move up to 5,000 gallons per hour of water is explained. All systems achieve turnover rates through filtration better than once per hour. Fiberglass is used in the construction of coral and rock formations for dioramic backgrounds.

Tank arrangements inhibiting "queuing up" of people in display areas have been successful. Photographic facilities for each tank are built-in key-operated. Emphasis is on marine creatures and they are presented in artificial sea water.



CAPTURE OF THE LEMON SHARK (Negaprion brevirostrus) AND ITS MAINTENANCE AT PHILADELPHIA (a closed system inland aquarium)

D. W. Wilkie

Several young lemon sharks were captured near Marathon, Florida in April 1964 with the aid of a local fisherman. Pompano nets were set at night during the outgoing tide to capture the fish as they left onshore flats.

Four specimens were transported 1360 miles to Philadelphia by tractor-trailer. Approximately 0.15 lb. of fish were carried per gallon of sea-water. Temperature varied between 67 and 85˚ F during the 48 hour trip.

At Aquarama the fish were placed in a B-I-F diatomaceous earth filtered-system. One shark died of unknown causes after six days.

To start the sharks eating, fish were poked into their mouths as they swam about the tank. After about 3 weeks they fed well without persuasion. Nose bumping against the sides and glass occurred only initially.

In spite of water quality which indicated by clarity pH and ammonia, the sharks were still doing well after 9 months in captivity.

Availability, hardiness, behaviour and reputation seem to make the lemon shark a good representative of the man eating type of shark to exhibit in inland aquaria.

THE EDUCATIONAL PROGRAM FOR SCHOOL GROUPS

T. Wayland Vaughan – Aquarium-Museum
Scripps Institution of Oceanography

D. W. Wilkie

A series of prepared lesson sheets is being developed to help insure that school group visits to the aquarium-museum are a genuine educational experience.

These include:

1) Background information for the teacher.
2) A pre-visit exercise for the student.
3) A master for preparing guide sheets which instruct the visitor to find and check off items during his visit.
4) A post visit exercise for use back in the classroom.

The lessons are tied in as closely as possible to the school curricula. Several local teachers are assisting in the preparation of the exercises. The lessons will be available at 8 levels. It is planned that the pre-visit lessons will eventually be in the form of film strips.

Through the use of the above program, groups are able to fully utilize the exhibits without the need of a staff guide. Direct participation by aquarium staff members will be reserved for special groups. A volunteer docent system may supplement this program at a later date.

SOME NEWLY DEVELOPED EDUCATIONAL AIDS

Burton Clark, Director, Miami Seaquarium

Over five years of work at Miami Seaquarium has produced what is probably the most complete set of color slide identification photos of marine fish and invertebrates of South Florida and the Bahamas.

These slides will all be reproduced in a 32-page Identification Guide being printed in four colors. The descriptive text will be as complete and as accurate as possible.

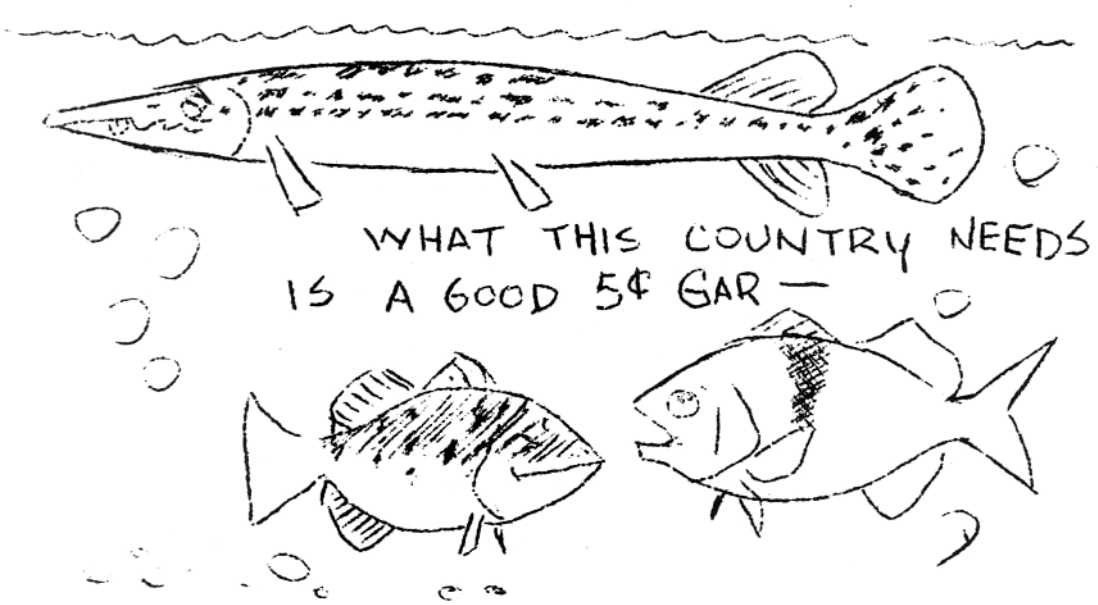
The Guide will be made available at an estimated cost of about 50¢. Qualified persons and institutions will be able to get a number of copies of the Guide, together with complete sets of duplicate slides, at cost plus about 10% for handling. For example, a set of slides plus about 50 Guides should cost $100.00 or less.

Three film strips with the usual LP record are now being made from our slide file. We are selecting those which will make a strip on "Dangerous Marine Animals." This one will have its emphasis on the fish and invertebrates that might be encountered by someone wading the flats, swimming, or shallow-water diving, and which should be of interest to fishermen.

The second strip will deal with the creatures of the tide flats, as well as the intertidal zone of a rocky shore line.

The third will be on dolphins and porpoises and will cover their history, position in modem marine ecology, physiology, and a very light touch on their comparative intelligence and ability to communicate.

These film strips will be available at the current low cost for such items through biological supply houses and others who furnish comparative material to schools and to individual students.



THE NITROGEN SEQUENCE IN FRESHWATER AND SEAWATER AQUARIA.

James W. Atz, Aquarium Systems, Inc.

In the management of aquarium waters, the most important parts of the nitrogen cycle are the ones that concern mineralization and nitrification, with assimilation and denitrification playing lesser and, sometimes at least, insignificant roles. Ammonia is the principal waste product of aquatic invertebrates and fish, and it is also the principal nitrogenous end-product resulting from the bacterial decomposition of nitrogen-containing substances such as proteins. Because ammonia is acutely toxic as well as virtually omnipresent in aquaria, it must be carefully controlled. Filtration that makes use of nitrifying bacteria is the most efficient and economical way of keeping ammonia within the very low tolerable limits. As a result of nitrification, nitrates accumulate in aquarium water, but whether these, or some other end-products of nitrogen metabolism, are responsible for the gradual deterioration of "old" aquarium water is net definitely known. Dilution is the only infallible way yet found to get rid of excess nitrates, although claims for the efficacy of bacterial denitrification or assimilation by growing green plants have been made. The proper type of charcoal filtration undoubtedly removes same harmful metabolic end-products.

For all these reasons, quantitative determinations of the ammonia and nitrate in aquarium waters ought to become routine.

MIAMI SEAQUARIUM MARINE MICROBIOLOGICAL SURVEY

Warren Zeiller, Curator of Fishes, Mimi Seaquarium

A program to determine numbers of three specific bacterial groups in eleven major areas of Seaquarium was undertaken. Included were Coliform, Heterotrophic, and Proteolytic groups: each may be said to be an indicator for the presence of given undesirable elements. An additional area of "near oceanic" water was sampled as a norm.

Areas sampled were discussed as to flow rate, total sea water capacity, and population.

A detailed account of equipment and procedures were included to permit duplication of the survey by others. Results were graphed for each area in powers of ten (10^X) bacteria per 100 ml. of sea water for each group. Coliforms were identified by gems, species, and variety.

A final comparison of the year - long study was made of areas within the Seaquarium filtering system with those outside the system. Comparisons were also made of the "near oceanic" area and the filter bed with all other areas tested. Affects of water temperature and turbidity were noted.

Recent Literature: The Principal Diseases of Lower Vertebrates. H. Reichenbach-Klinke and E. Elkan, Academic Press, London & New York 1965. This book of diseases is certainly the most comprehensive gathering of data of these types in the English language. Not only are the principal diseases described but a "trouble shooting" chart to aid diagnosis is included as well as recommended treatment.

J.P.

A PLANNED ONE-LEVEL AQUATIC ANIMAL SYSTEM FOR THE CLEVELAND AQUARIUM

D. H. Moreno

Money has recently been made available for the construction of an addition to the Cleveland Aquarium.

Although the plans are still in the early preliminary stages of development, the architect and the aquarium staff feel confident that certain features will be adopted in the final plans.

One of the important features will be the arrangement of all tanks and equipment on one floor.

The building will be octagonal in shape, with six large hexagonal tanks nested together and facing outward, toward six of the inside corners of the building. This radial arrangement will spread the visitors viewing each tank into a roughly fan-shaped area, which will not overlap that for the adjacent tanks.

Individual, pie-shaped reserve tanks with air-lift operated biological filters will be located directly behind the exhibit tanks they serve, with provisions for running them independently or in tandem with the exhibit tank.

Service for these tanks and filters will be from catwalks running just above the water surface.

All tanks and filters will drain waste water directly into a common sewer located on the floor in the center of the building.

The octagon will be attached to the existing building by means of two wings, one of which will provide a new entryway, public rest rooms, ticket-taking and sales area, and the other wall-hung museum-type exhibits and mall tanks.

PROGRESS REPORT ON THE EXTENSION TO THE VANCOUVER PUBLIC AQUARIUM

Vince Penfold

The sod-turning ceremony in Stanley Park on March 17, 1965 commenced a longawaited program of construction which will take until approximately June 1966 to complete. To date, the excavation has been done, fresh and sea water pipelines rerouted, footings and lower walls poured, and the base of the reservoirs laid. The outline of the additional area is evident, and at 28,000 square feet, will result in a tripling of the existing aquarium area. Funds are not yet available for the completion of the planned expansion in its entirety and certain parts, such as an outdoor porpoise pool, have been postponed.

The new exhibits, when opened to the public, will show representative aquatic fauna of B.C. arranged in a geographical sequence commencing with the open Pacific Ocean and leading to sheltered coastal waters, estuaries, river systems and interior lakes and streams.

A MECHANICAL DEVICE FOR CLEANING THE INTERIOR SURFACES OF LARGE AQUARIUM TANKS

Walter L. West, National Fisheries Center and Aquarium

The National Fisheries Center and Aquarium has incorporated within its tank design expanses of glass paneling which make it necessary to develop new interior cleaning techniques. This, of necessity, will eliminate the use of divers and diving gear for that purpose and, instead, incorporate rapid chemical/mechanical procedures.

To effectively clean the surface, buffing action combined with a powerful cleaning solution is required. Also, the cleaning slurry will have to be contained. The mechanical cleaner developed does this by having its only open face adjacent to the glass and sealed on all sides. By withdrawing water from the interior of the container, the outside, or head pressures act to keep the unit against the surface to be cleaned. Horizontal or vertical movement is obtained by peripheral crawler belts guided at the top by a trolley traveling along the rim of the pool. The induced vacuum within the chamber draws the cleaning solution into the rotating brushes. Any sudden break in vacuum will stop the inflow of the cleaner. At the end of each path the unit is raised and reversed internally. This operation, in time, will be automated.

(Ed. Note: This abstract was accompanied by an excellent drawing. I regret mass reproduction was not possible. For those interested we can make a Xerox copy on request.)

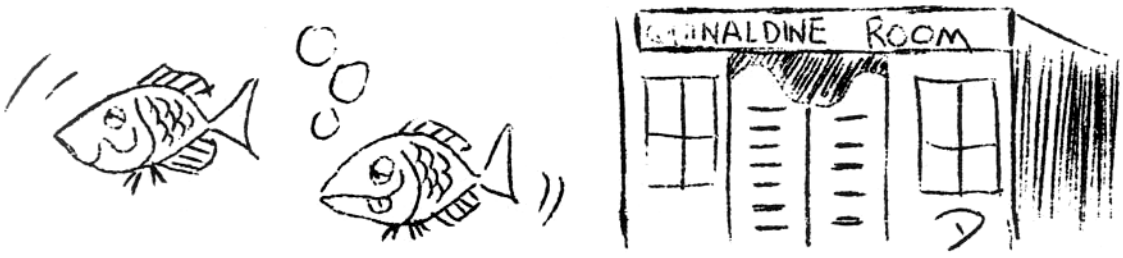
USE OF QUINALDINE AS A DIVING - CONNECTING ANESTHETIC

Vince Penfold

A rapid acting fish anesthetic suitable for underwater use, quinaldine is a valuable tool for collectors to use in capturing specimens from inaccessible locations such as rocky reefs or caves. Quinaldine is a heavy, oily, acrid drug, insoluble in cool water in which it forms a brown precipitate. Dilution in acetone (1:4) or isopropanol (1:10) is recommended, and the mix carried below in a plastic squeeze bottle fitted with a one-way valve.

The anesthetic acts as a CNS depressant and quickly affects equilibrium. Respiration is slowed or stopped, but recovery is usually rapid when the fish is placed in untreated water. Toxicity appears to be low, although certain long-lasting effects such as dulling of lateral line sense in sharks, is known, which might limit the use of the drug in experimental animals.

Quinaldine is available from Matheson, Coleman and Bell in 100 gm and 500 gm bottles.



MARINELAND, MORECAMBE, ENGLAND

Ken Denham, Curator

Some of you in the Southern States may have heard or read of the Flying Noah's Ark that Captain Gray organized during May 1964 when he accompanied 15 tons of livestock from the Miami Seaquarium to Marineland in England. The journey was a huge success and the eight dolphins arrived in excellent condition and only a few fish and invertebrates were lost.

At the time they arrived the building was incomplete and, although actual building had been going on for some nine months and planning long before that, we were in poor shape to be able to cope with all this stock. Tanks that we hoped to have ready for fish such as Lookdowns and Triggers we had only been able to fill 36 hours earlier. These were new concrete tanks. The result was inevitable and we lost most of the fish and all the invertebrates. However the dolphins did well and although we have lost some of them, the others are doing routine training such as jumping for fish and retrieving balls and rings. Marineland was the first adventure of its kind in Europe and although it is very small by American standards, we had plenty of problems. No one in England had built an Oceanarium and very few people had seen one, and so the Architect had to rely mostly on letters and notes supplied by others, and he visited a few aquariums for comparative work.

Heating was quite a problem as the dolphins were to be kept in an open arena on a jetty in the sea and English weather could not be compared with Miami in any way. Also, the filtration problems were new and after the site had been chosen and the plans all drawn up, it was decided that sand and gravel filters would need too much room and that candle filters of the diatomaceous earth type should be used. Both the filtration and heating have not been a great success but we have learned a lot the hard way and are now in the process of putting right all the mistakes that the builders made. Some of the exhibits were based on Frankfurt Exotarium and we have a Crocodile Beach with a tropical rainstorm (thunder and lightning included), an Arctic Penguin exhibit, and Flamingos.

At the moment there are only 24 fish tanks which include tropical and temperate marine and fresh-water sections. The tanks were designed by a non-aquarist and need an army of midgets or trained chimpanzees to service them! It seems likely that the gremlins that haunt aquarium designers are international!

The fish tanks vary in size from 150 gallons to 4,000 gallons (English) and are circulated through pumps or air lift systems. The filter boxes placed above the tank contain pebbles and plastic foam (as used for bed mattresses). Although this system works pretty well, it requires regular attention, but at the height at which the filters were placed it was impossible to use sand and gravel.

Our part of the coast has mainly a shallow, flat, sandy bottom, and therefore fishes other than flatfishes are not plentiful and we have to get them from other parts of the coast. Tropical fishes, both marine and fresh-water, are sent to us through dealers in Holland and Germany, and therefore American coastal fishes am rarely on the lists.

The arena which seats approximately 1,000, has two pools, one of 40,000 gallons and one 100,000 gallons (English). One pool housed performing sea lions for a few months but they would not perform to order and had to go. This year we are hoping to run both pools with dolphins so that we spread our numbers out and allow for more party tricks.

MARINELAND, MORECAMBE, ENGLAND (Continued)

Algae is a tremendous problem in our pools and manual scrubbing seems to be the best answer, but this is difficult on a concrete surface which is just painted and not tiled, although I would appreciate suggestions. Last summer we ran about 7 training sessions a day but in winter we cut down to three.

Five members of the staff, including myself, were at the London Zoo prior to our appointments here at Morecambe. Other members of the staff are being trained here.

There are a number of other projects of a similar nature being planned for Europe including, Holland, Germany, Italy, but having watched Marineland in the making and seen some of the problems, it seems likely they will not be started for quite some time.

INTERIOR DEPARTMENT NAMES HEAD OF RATIONAL FISHERIES CENTER

Fish and Wildlife Service
Bureau of Sport Fisheries and Wildlife

Secretary of the Interior Stewart L. Udall announced the appointment of Dr. Warren Jensen Wisby, 43, associate professor of marine biology at the University of Miami in Florida, as Director of the new National Fisheries Center and Aquarium in Washington, D. C. He will assume the post about September 15.

The $10 million aquarium, scheduled to be built in East Potomac Park by 1968, will be one of the world's largest and most complete installations for exhibiting and studying aquatic life. The Aquarium will be operated by Interior's Bureau of Sport Fisheries and Wildlife.

Dr. Wisby has been associated with the University of Miami's Institute of Marine Sciences since 1959 as a researcher, teacher, administrator, and as a designer of its new laboratory building.

As a researcher he has been concerned primarily with the study of the behavior and sensory physiology of marine organisms. His research projects have included hearing and color vision in the lemon shark, hearing and allied senses in fishes, and behavioral changes in fish resulting from simulated weightlessness. His shark projects and. his work in oceanography were subjects of national and local television programs.

From 1952 to 1959, he was with the University of Wisconsin as a research associate, directing graduate students studying the behavior of fresh-water fish and salmon.

A native of Denmark Dr. Wisby earned his bachelor of arts degree in 1948, his master of arts degree in 1949, and his doctor of philosophy degree in zoology in 1952, all at the University of Wisconsin. He is the author of many publications. His wife, Audra, teaches at Miami-Dade Junior College.

During 1943-45, Dr. Wisby served in the Armed Forces in Africa and Italy.

INTERIOR DEPARTMENT NAMES HEAD OF NATIONAL FISHERIES CENTER (Continued)

The National Fisheries Center and Aquarium will display in natural surroundings more than 1,000 species of fish, amphibians, and invertebrates. There will be a trout stream, a Gulf bayou, and tanks designed especially for tropical fish and dolphins.

The installation will have facilities and specimens to aid aquatic research in such diverse fields as fish diseases, behavior of aquatic organisms, nutrition of fish, and medical values of antibiotics produced by marine animals.

The Fisheries Center is distinctive among Federal institutions because it will repay both construction and operational costs by nominal admission charges.

DIAGNOSIS AND TREATMENT OF FISH DISEASES

J. W. Atz

Fishery Biologist Erwin W. Steucke, Jr. of the Bureau of Sport Fisheries and Wildlife has prepared a particularly useful chart and bibliography on the recognition, treatment, and prevention of the commonest diseases and parasitic infestations of fresh-water fishes. Entitled “A Diagnostic and Treatment Chart for Some Fish Diseases,” this 17 x 22 inch item contains essential data on the cause and symptoms of each disorder, its treatment and control, and the ways of avoiding it. Never before has so much practical information on this subject been gathered together in such a simple, accessible form. Requests for copies of the chart should be addressed to the Regional Director, Bureau of Sport Fisheries and Wildlife, 1006 West Lake Street, Minneapolis, Minnesota.

USEFUL NEW PUBLICATION ON FISH ANAESTHESIA

J. W. Atz

An extremely handy pamphlet on substances that anaesthetize fish has recently been made available by the Fisheries Research Board of Canada. It was written by Gordon R. Bell of the Biological Station at Nanaimo and is entitled "A Guide to the Properties, Characteristics, and Uses of Some General Anaesthetics for Fish." It was published as the Board's BULLETIN NO. 148 with the date of 1964. In one great table, 24 by 16 inches, it lists the properties, dosage, special precautions, source of supply, cost, and toxicity (to both man and fish) of eleven chemicals, including M.S. 222, quinaldine, and tertiary amyl alcohol. The four-page pamphlet can be purchased from Canadian Government Bookshops, which are located in the Daly Building, Corner Mackenzie and Rideau, Ottawa, in the Mackenzie Building, 36 Adelaide Street East, Toronto, and in the Aeterna-Vie Building, 1182 St. Catherine Street West, Montreal. The cost is fifty cents and remittance should accompany your order.

The cornerstone of the $1,250,000 Osborn Laboratories of Marine Sciences at the New York Aquarium at Coney Island was laid on June 29, at a ceremony attended by New York City officials, representatives of government agencies, universities, scientific institutions and trustees of the New York Zoological Society. Construction of the laboratories was begun in May and should be completed by next summer. The building is immediately adjacent to the present Aquarium.

NOTES AND OBSERVATIONS

Earl Herald

Steinhart Personnel Changes

Assistant Curator David Powell, in charge of marine fishes and invertebrates, has moved to San Diego Seaworld as Curator of Fishes. Dennis Sullivan, formerly at Seaworld, has received temporary appointment as Aquarist. Bill Light, formerly at Scripps, is now Aquatic Biologist. Karl Switak has been named "herpetologist" and Earl Herald, Bob Dempster and Glenn Burghardt continue as Superintendent, Assistant Superintendent, and Acting Senior Aquatic Biologist respectively.

The Amazon Calls

As this issue of D & C goes to press, that inimitable group from Niagara Falls Aquarium wings its way down to the Amazon by way of Paramount's C-47. Bill Kelley heads the group with Win Brady, Jay Smith, and photographer Stan Waterman; and from Steinhart, Earl Herald. Fred Cochu is going along to make sure the boys look in the right places to see fishes, dolphins and other such goodies. Ports of call will include Georgetown, Manaus, and Leticia; trip time three to five weeks.

San Diego is not to be outdone and Seaworld veterinarian David Kenney expects to be in various parts of the Amazon before the December rains set in. This man is really phenomenal - the recent pair of fresh-water dolphins they received had white counts up to 60,000 and double pneumonia -- but he pulled them through.

Comments on Killer Whales

Three killer whales have now been in captivity --the first captured in Newport Bay, southern California, and kept alive for 36 hours at Marineland (death was due to athrosclerosis). The second was Moby Doll of Vancouver Aquarium fame, and the third, NAMU, is the animal now in captivity at Seattle Aquarium. (It is a pleasure to note from the grapevine that Ted Griffin has apparently recouped the $60,000 or so dollars in the project.) All three of these animals have been docile, and lacking in the renowned ferocious nature of killer whales. In fact, Griffin is reported to swim with the animal routinely and to scrub his back with a brush. On the other hand, the pigmy killer whale captured near Honolulu and kept alive for 20 days by Sealife Park personnel, showed all of the documented aggressive traits of the killers -- even snapping at people standing on the side of the tank. This beastie, Faresa attenuata, is not well known but it now appears from the Pryor, Pryor and Norris article in the Journal of Mammalogy (Vol. 46, No. 3, pp. 450-460, 1965), that it may not be uncommon in the Hawaiian Islands. So the big question resolves itself -- can some of the records of killer whale activity more correctly be attributed to the pigmy (Feresa attenuata) rather than to the regular killer (Orcinus orca). Both of these animals are similar in appearance.