

FISH HEALTH SECTION

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NEWS LETTER



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Volume 8, Number 4

OCTOBER-DECEMBER, 1980

PRESIDENT'S ADDRESS, 1981

I wish to begin by thanking you for electing me to preside over the Fish Health Section for 1980-81. I pledge to do my best to successfully complete the challenging duties of the office and to make this year a progressive one for the Section.

I wish to continue by asking you, even challenging you, to actively participate in the Section and to contribute whatever you can toward achievement of FHS goals. I am open to your suggestions regarding improvement of the FHS and how we can best proceed. Below is a listing of officers and committee members I urge you to contact to volunteer your services in areas of interest or concern to you. Your elected officers can do little more than keep the organization viable, but you, as actively participating members, can assure accomplishment of FHS objectives.

Our annual workshop and meeting will be held at Starkville, Mississippi, on July 21-22, 1981. This will be a joint meeting with the Eastern Fish Disease Workshop and our program chairman, Dr. Tom Wellborn, is planning a program aimed at practical aspects of disease control. Tom is also planning an interesting social hour and banquet you won't want to miss. I hope you will make plans to attend and participate in this workshop. A Section business meeting will be conducted and all standing and ad hoc committees will be expected to furnish reports of committee activities.

Our Executive Committee voted to accept an invitation from the Fish Culture Section to hold our 1982 workshop and meeting jointly with them. Our program co-chairman, Dr. John Schachte, will make announcements in this newsletter as time, place, and program information become available.

I see the Fish Health Section's most pressing issue at this time to be our Fish Pathologist certification program. Those of you who attended the 1980 business meeting in Seattle are aware that we have problems with this project. Considerable concern was expressed over the title of the certification, the application forms used, and the guidelines given the Board of Certification to evaluate applicants. I have, therefore, put this certification program on hold and directed the Professional Standards Committee to study the problems and to recommend solutions to me by February 1, 1981. I want to inform everyone who has applied for this certification that reaccreditation may be required when this program is again underway. Our Fish Health Inspector certification is not affected and I urge all of you who perform inspections to apply for this certification.

I've appointed an ad hoc committee, chaired by Dr. Roger Grischkowsky, to pursue recognition by agencies and the private sector of our Fish Health Inspector certification program. To my knowledge, FHS is the only organization in North America that has set standardized, objective qualification criteria for fish health inspectors and I feel it is time we made fisheries agencies and individuals aware of this program and actively seek acceptance of it. I consider this a very important FHS function for 1981.

Another ad hoc committee I view as extremely important for 1981 is the Fish Health Evaluation committee, chaired by Ron Goede. For several years, many of our members and officers have been concerned that the FHS is too concerned with infectious diseases and hatchery reared fish and that we've neglected the areas of nutritional, genetic, physiological, toxicological, and environmental problems. I share this concern as I've been hearing from many of you that we do have need to develop and publish standard methods for investigating and solving such problems. Therefore, this committee (formerly the Non-Infectious Diseases committee) has been expanded and charged with determining the fish health evaluation needs of the fishery resource field and proposing ways to meet those needs.

I have restructured another ad hoc committee for this year by changing the former Taxonomy of Bacterial Pathogens committee to the Emerging

Problems and Taxonomy committee. This committee is charged with investigating new disease problems, either infectious or non-infectious, and determining if they are serious enough to warrant FHS recommendations to agencies for control and to agencies and universities for research studies on the nature and control of them. This committee, chaired by Dr. Emmett Shotts, is also charged with investigating problems with taxonomy of fish disease agents including viruses, bacteria, and parasites.

It is my opinion that, if the Fish Health Evaluation and Emerging Problems committees can become established during this year, they should both become standing committees by 1982.

Membership and Balloting Chairman Paul Janeke is currently working on a membership directory. This will, hopefully, be ready for mailing to members by the first of the year. It will include a history of officers and committee members of FHS as well as a list of current officers and committee members and current bylaws of the Section. Members who've joined since October 1980 will not be included in this directory, but all members for the 1980-81 year will receive free copies.

I look forward to an active year for the Fish Health Section and hope you do too. Again, I encourage your participation. Please contact your officers or committee chairmen to express opinions and your willingness to serve. I hope to see you at Starkville at what I'm sure will be an excellent workshop.

Dennis E. Anderson
President

1981 FHS OFFICERS and COMMITTEES

Dennis Anderson, President
Bill Klontz, President-Elect
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Dave McDaniel, Chairman
Don Amend
Bill Rogers
Trevor Evelyn
Glenn Hoffman

AWARDS

Bill Patterson, Chairman
Rowen Gould
Diane Elliott

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AD HOC COMMITTEES

FISH HEALTH EVALUATION

Ron Goede, Chairman
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Carl Shreck
Ray Simon
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PROGRAM (1981)

Tom Wellborn, Chairman
Tom Bell
Richard Hidalgo
Randy Robinette (ex-officio)
Tom Schwedler
Tommy Taylor
Paul Bowser

TECHNICAL MODULE for
1981 AFS MEETING

Dick Heckman, Coordinator

PROGRAM (1982)

John Schachte, Chairman
(others to be announced)

TAVOLEK CLOSSES

As of December 31, 1980, Tavolek, Inc. closed its doors. Johnson & Johnson, Tavolek's parent company and financial backer, has abandoned the fish health industry after an attempt spanning several years to show profits in the fish bacterin and fish pharmaceutical fields.

"It was a financial decision," says Dr. Don Amend, Director of the Seattle-based company. "The market opportunity was smaller than originally anticipated."

Among the marketing disappointments cited by Amend is the sluggish growth of salmonid pen culture on both the Pacific and Atlantic coasts. Failure of both the Federal and state governments to adopt anadromous salmonid vaccination programs for *Vibrio anguillarum* was another disappointment.

Tavolek's successful ERM bacterin was a good start for the fledgling company; but the market simply wasn't large enough to impress its J & J backers. "The ERM market is very localized," says Amend. "We did a lot of business in Idaho, but nowhere else."

In addition to their proven *Vibrio* and ERM bacterins, the Tavolek researchers had just received a licence for a Furunculosis bacterin and were in the process of obtaining another for BKD as well. Although eagerly awaited by North American salmonid culturists, the market projections for both products were still not sufficient to save Tavolek.

Many potential fish pharmaceuticals have been studied at Tavolek during its brief existence. The final data was all ready to submit for clearance of a new, non-foodfish anesthetic which Amend describes as superior to MS 222. In addition, Tavolek had obtained partial clearance for an anthelmintic drug which offered hope to southern farmers who are experiencing external monogenetic trematode resistance to Masoten.

The company's closing leaves a research staff of 10 unemployed. Of the scientists at Tavolek, only Dr. Don McCarthy is being retained by Johnson & Johnson — although he will be leaving the fish health field entirely. McCarthy will be transferred to Pitman-Moore, another J & J subsidiary, to work in the animal health field.

Tavolek's passing leaves just two firms — Wildlife Vaccines, Inc. and Biomedical Research Laboratories — in competition for the licensed fish vaccine market in the United States. "I certainly hope that Wildlife Vaccines and Biomed will carry on and be able to survive," says Don Amend, "because I think we all need them."

When asked what the over-all impact of Tavolek's shutdown will be on the industry, Amend responded, "I feel that this is a setback for the whole fish health field because I think it will be a number of years before another major company will again get involved."

DIAGNOSTIC SERVICES LIST

The 1980 revision was recently published in *Aquaculture Magazine*. We plan for a 1981 revision also. So if your name has been omitted or there are any corrections to be made, please contact Dr. G.L. Hoffman or A.J. Mitchell, Fish Farming Experimental Station, USFWS, P.O. Box 860, Stuttgart, Arkansas 72160.

**ACANTHOCEPHALAN INFESTATION
IN CULTURED TROUT**

The Illinois Department of Conservation's Spring Grove Fish Hatchery at Spring Grove, IL has some Jacko River strain rainbow trout from Arlee, Montana which were imported as specific pathogen free eggs in the fall of 1978. The trout did very well inside and no problems were encountered. They were intended for use as brood stock.

In 1979, the rainbows were transferred outside to an earthen pond to make room for chinook salmon rearing during the fall and winter. This pond had previously been used to overwinter largemouth bass and bluegill breeders. After the chinook salmon were stocked out in May, 1980, the trout were brought back inside.

Mortalities began several days later with clinical signs like those of bacterial gill disease. The morts were examined by the state fish pathologist to determine the cause of death. This was subsequently traced to a change in holding time and sieve tower aeration of the well water which allowed H₂S to build to toxic levels. With the restoration of a normal water supply and a treatment with 2 ppm Hyamine 3500, mortalities ceased.

During the necropsy, however, the trout were found to be heavily infested with an Acanthocephalan worm which could be expressed in the feces. Intestines were preserved in 10% formalin for 24 hours and shipped to Dr. Glenn Hoffman at the U.S. Fish & Wildlife station at Stuttgart, AR who identified the worms as *Acanthocephalus jacksoni*.

Glenn can't "recall such an incidence from any other place." This should teach us not to mix warm water and cold water fishes.

Contributed by: Rodney W. Horner, Fish Pathologist, IL Dept. Of Conservation, Fisheries Division, P.O. Box 398, R.R. #3, Clearview Estates, Manito, Illinois 61546.

**FLORIDA PRIVATE FISH
HEALTH LAB OPENS**

A new, privately-funded fish health facility was opened in Brandon, Florida in July, 1980. Dr. Dale Meryman, a parasitologist and President of the new diagnostic and research laboratory, announced that the Fish Doctor Clinical Center, Inc. is now serving Florida's petfish industry as well as the local shrimp and fishing industries.

The newly opened, six man laboratory actually constitutes the first of three planned phases in the center's construction. Phase I consists of a research lab, treatment room, X-ray facility, microsurgery facility, holding tanks and a large library. Phases II and III will consist of a diagnostic computer center and a hatchery and breeding facility.

Meryman reports that his lab is already involved in a number of research studies in several different areas of fish health.

BOOK REVIEW

Reichenbach-Klinke, H.-H. 1980. *Krankheiten und Schädigungen der Fische*. (Diseases and injuries of fish.) 2nd ed. Gustav Fischer Verlag, Stuttgart and New York. 472 pp., DM 148.

The first edition of this well-known text on diseases of fishes was published in 1965. The English version, co-authored by E. Elkan and published in England in 1965, also included diseases of amphibians and reptiles. This jointly-authored book was republished in the United States by T.F.H. Publications. The first German edition was translated into English and revised by Dr. Marsha Landolt. It was published by T.F.H. in 1973.

This edition has been considerably revised and brought up-to-date. The text is written mainly by Reichenbach-Klinke, but there is a chapter on viral diseases by Ahne and Wolf and a chapter on bacterial diseases by Popp. Also, there are short contributions on fish behavior and the influence of the environment by Spieser, another on immunology by Ollenschläger and one on therapy by Negele.

The text is divided into general and special fish pathology. The general section (53 pp.) contains chapters entitled *Healthy fish and Fish suspected of diseases*. These two chapters describe in detail the methods for diagnosis of fish diseases. This is followed by brief chapters on resistance and immunity, maintenance of health, handling, prophylaxis and therapy.

The second part of the book (345 pp.) contains descriptions of diseases caused by viruses (49 pp.), bacteria (24 pp.), fungi and algae (28 pp.) and protozoan and metazoan parasites (134 pp.). This is followed by chapters on diseases (injuries) caused by physical and chemical agents (104 pp.) and fish zoonoses (12 pp.).

The text is supplemented by appendices containing host-parasite lists, multilingual fish name vocabularies and a very valuable collection of photographs illustrating normal (or nearly normal) histology of fish. There is also a detailed subject index.

Progress in the field of fish diseases since 1965 is shown by the chapter on diseases caused by viruses. This subject was covered on 2 pages in 1965; but, in the second edition, about 30 viral diseases are described by Ahne and Wolf on 49 pages. This detailed and up-to-date section includes methods used in the study and diagnosis of viral diseases. Reference lists are complete; the reviewer, however, notes the absence of the monograph on fish viruses by McAllister (1979).

In regard to the diseases of fishes caused by bacteria, there is some confusion due to recent changes in bacterial taxonomy. Popp expertly handles this by presenting a table of names of fish pathogenic bacteria listed in the 8th edition of *Bergey's Manual* (1974) and their taxonomic equivalents before 1974. This chapter is concise, lucid and very informative.

The section on parasitology (159 pp.) includes most of the freshwater fish parasites encountered in fish disease work in Europe. Also included are a few marine and aquarium fish parasites. It is well illustrated with 227 drawings and photographs. The reader will have little difficulty in identifying the more common parasites, but there are no keys to genera and species. For the researcher it would have been helpful to know the year as well as the author, of the photo credits. *Dermocystidium* was placed in the fungi; but most researchers consider it a protozoan. It is still controversial. *Ichthyophonus* was given more than normal space. Figures 4.93 and 7.69 (p. 146) are out of place (presumably because of being in the color plate). In some photos, such as Figure 2.5, it would be helpful to know the stain used. The external biflagellates of fish listed here as *Bodomonas* are now considered to be *Cryptobia* with the blood-inhabiting ones being *Trypanoplasma*. *Bodomonas concava* is considered to be *Cryptobia branchialis*. The authors mention the use of Neguvon for ectoparasitic protozoa, but we have found it ineffective in the United States. The legends for 1 - 10 of Figure 2.87 are missing. The generic names *Glossatella* and *Scyphidia* (in part) have been corrected to *Apiosoma* and *Ambiphrya* respectively. The various *Trichophrya* species have been reduced to synonymy under *Trichophrya piscium*. Dipterex (Masoten) is not mentioned for *Gyrodactylus* treatment. *Lernaea cyprinacea* (*Lernaea elegans*) is a very serious parasite in many parts of the world, but Figures 5.2 and 5.7 make identification difficult. Illustrations of helminth eggs are lacking in other fish parasite texts, so those included on page 267 are a welcome addition. Therapy is included for only some species, but there is a separate chapter on the subject. The above criticisms are minor. The section is well illustrated and will be helpful to students and diagnosticians.

About one-fourth of the book deals with diseases (injuries) caused by environmental factors - pollutants, toxicants, various chemicals - and physical factors - light and temperature, neoplastic diseases, etc. This section is divided into more than 80 short parts dealing individually with many injurious factors and agents. Most of these articles are followed by pertinent references.

References are listed at the end of most articles. Exceptions are the sections on bacterial diseases and parasitic diseases caused by protozoans, helminths and crustaceans. There is no general system for grouping references.

The short chapter on therapy of fish diseases by Negele was apparently written without consideration for information presented elsewhere in the book. Commonly used drugs - oxytetracycline (Terramycin), sulfamerazine, potentiated sulfonamides and ni-furpirinol (Furnance) - are not mentioned. Some of the drugs are listed under regional trade names making their identification difficult.

It is remarkable that a book consisting of less than 500 pages contains so much information, 744 good illustrations and well over a hundred reference lists.

In general, this book is a valuable contribution to world literature on the diseases of fishes even if it is, as stated by the author in the introduction, written chiefly for conditions existing in freshwater fish culture in Central Europe.

Submitted by:

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and

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Intussusception is, according to the Dorland Medical Dictionary, the invagination or indigitation of a portion of the intestine into an adjacent portion.

Four of four 8-inch channel catfish from a pond of diseased fish were found to have very severe intussusception with 55% to 80% invagination of the gastrointestinal canal. No cause of disease could be found. Apparently the cause of human intussusception is not known either and, of course, is never epidemic.

Submitted by Hoffman, Mitchell and Rodgers, Fish Farming Experimental Station, Stuttgart, Arkansas 72160.

THE TALE OF THE SCHMOO

For two years the identity of the cause of chronic proliferative kidney disease of pen-reared coho salmon in Pacific waters has eluded North American fish disease experts. The causative agent - a *shmoo-like* parasite - is unlike any known salmon pathogen. Its body is unlike any protozoan spore from salmon. Its eyes reminded workers of myxosporean capsules, but polar filaments could not be seen. Independently, Vic Sprague and Bob Kabata proposed that it is most like *Parvicapsula asymmetrica* (Myxozoa: Myxosporidia: Bivalvulida: Eurysporina: Parvicapsulidae) described by S. Shulman (1953) from the urinary bladder of *Cyclopterus lumpus* in the White Sea, USSR. During its development in the coho salmon, the *shmoo* destroys large areas of the epithelium of kidney tubules, obviously causing pathogenicity. Electronmicrographs are being prepared to attempt to demonstrate the presence of polar filaments and a suture line - both being necessary to relate to *Parvicapsula*.

For further information, contact (in alphabetical order) Domsea's Technical Staff, Lee Harrell, Glenn Hoffman, Bob Kabata, Marsha Landolt, Leo Margolis, Terry Otto, Steve Newman, Vic Sprague, Tosh Yasutake or any other schmooophilous fish pathologist.

Submitted by Glenn Hoffman

IS NOTHING SACRED?

Of course changing names is confusing. Correcting names is also confusing. In complying with the code of Zoological Nomenclature, however, changes must be made. During the past 20 years, the following fish parasite names have been so corrected:

Amphileptus branchiarum Wenrich, 1924 is *Hemiphrys branchiarum* (Wenrich, 1924). The genus *Hemiphrys* was described by Wizesniowski, 1870. *H. vorax* (Davis, 1947) is considered a synonym.

Bodomonas concava Davis, 1947 is *Cryptobia branchialis* Nie in Chen, 1956 (see Ergens and Lom, 1970).

Colponema agitans Davis, 1947 and *Cryptobia agitata* Chen, 1956 is *Cryptobia carassii* Swezy, 1919.

Costia necatrix Henneguy, 1883 is *Ichtyoboda necatrix* (Henneguy, 1883) Pinto, 1928 (see Ergens and Lom, 1970).

Cryptobia, biflagellate of the blood, is *Trypanoplasma* Laveran and Mesnil, 1901. (see Ergens and Lom, 1970) and external *Cryptobia* remains *Cryptobia*.

Glossatella Butschli, 1889 is *Apiosoma* Blanchard, 1885 (see Ergens and Lom, 1970).

Myxosporidia (class) Butschli, 1881 is Myxosporidia Levine et al, 1980.

Octomitus salmonis (Moore, 1923) is *Hexamita salmonis* (see Kudo, 1946).

Pleistophora is *Pleistophora* Gurley, 1893 (see Sprague, 1977).

Scyphidia Dujardin is, in part, *Ambiphrya* Raabe, 1952. *S. ameuri* (Thompson, Kirkegard, John, 1946) and *S. macropodia* (Davis, 1947) are *Ambiphrya ameuri* (see Hoffman, 1967).

Trichodina bulbosa (Davis, 1947) is *Tripartiella bulbosa* (see Lom, 1959).

Trichodina bursiformis (Davis, 1947) is *Tripartiella bursiformis* (see Lom, 1959).

Trichodina californica (Davis, 1947) is *Tripartiella californica* (see Bogdanova & Stein, 1963).

Trichodina myakkae (Mueller, 1937) is *Trichodinella myakkae* Lom, 1963.

Trichodina symmetrica (Davis, 1947) is *Tripartiella* (see Lom, 1963).

Submitted by Dr. G.L. Hoffman, Parasitologist, Fish Farming Experimental Station, P.O. Box 870, Stuttgart, Arkansas 72160.

1980

FISH PARASITES: IDEAS FOR LEGISLATION AND CONTROL

Editorial comment by:

G. L. Hoffman
U.S. Fish and Wildlife Service
Fish Farming Experimental Station
Post Office Box 860
Stuttgart, AR 72160

Perusal of Dr. Robert Olson's 1978 summary of fish disease regulations indicates that 15 states legislate against *Myxosoma cerebralis*, 16 against *Ceratomyxa shasta*, 5 against *Branchiomyces*, and 3 against *Sanguinicola*. More recent information cites two states legislating against *Henneguya* of catfish also. *Branchiomyces* is an aquatic fungus which becomes a fish pathogen only when the organic matter in a pond becomes very high, the temperature is above 20° C and when other, presently unknown, environmental factors come into play (Bauer et al., 1969 and FHS Newsletter 6(4):10). Therefore its transmission in fish transportation is of little consequence. Only one of the six species of *Henneguya* is considered dangerous (see FHS Newsletter 7(3):10). In the last 5 years I've seen hundreds of catfish disease epizootics, but *H. postexilis*, the interlamellar form, was considered serious only several times and none of the other 5 species was considered serious. None of us who work with catfish diseases knows of a source of stock that could be guaranteed free of *Henneguya* spp.; therefore, legislative restrictions at this time would be meaningless. If the catfish farm can boast of no troubles from interlamellar *Henneguya postexilis* in recent years, an importer need have little fear of *Henneguya*.

After 31 years in this business I can make the following list of parasites that, if I were raising fish, I would not like to have brought into my fish culture establishment, providing they were not already present:

PROTOZOA: *Ceratomyxa shasta* (salmonids), *Chilodonella* spp., *Glugea hertwigi* (smelt), *Henneguya postexilis* (catfish), *Hexamita* sp. (trout, tropicals), *Ichthyophthirius multifiliis*, *Ichtyoboda* = *Costia*, *Mitraspora cyprini* (goldfish), *Myxosoma cerebralis* (salmonids), *Myxidium* spp. (eel), *Myxobolus notemigoni* (golden shiner), *Oodinium* sp. (aquarium fishes), *Pleistophora cepedianae* (gizzard shad), *Pleistophora salmonae* (salmonids), pathogenic *Trichodina* spp.

Some thought should be given to some potentially serious protozoa such as *Myxobolus argenteus* (golden shiner), *Sphaerospora carassii* (goldfish) and *Pleistophora ovariae* (golden shiners).

HELMINTHS: *Acanthocephalus jacksoni* (trout, if isopod host present), *Camallanus ancyloides* (guppy), *Cleidodiscus* spp. (catfish fry), *Dactylogyrus* spp. (goldfish), *Bothriocephalus acheilognathi* (golden shiner, fathead minnow, grass carp, common carp), *Diplostomulum spathaceum* (lens), *Discocotyle salmonis* (salmonids), *Eustrogyliodes* sp. (tropicals and small baitfishes), *Gyrodactylus* spp., *Ligula intestinalis* (baitfishes), *Myzobdella lugubris* (catfish), *Piscicola salmositica* (salmonids), *Proteocephalus ambloplitis* (black bass), *Sanguinicola* (trout, if snail host present).

PARASITIC COPEPODS: *Ergasilus arthrosis* (catfish), *Ergasilus labracis* (striped bass), *Lernaea elegans* = *L. cyprinacea*, *Salmincola californiensis* (salmonids), *Salmincola edwardsi* (salmonids).

MISCELLANEOUS: sea lamprey.

Because there are over 1,000 species of North American freshwater fish parasites and because there is a possibility of any one of them becoming established in fish culture, it is not wise to introduce parasitized fish into fish culture unless the parasite has been proven to be harmless. The fish to be transferred should be examined by a trained fish pathologist. I do not recommend that we legislate against the above parasites, but it is appropriate to reduce their transfer by surveillance and common sense.

(Space will be provided to members with opposing views or additional comments. Ed.)

FISH PATHOLOGY SERVICE ANNOUNCED

A marine pathology laboratory has been established by the Maine Department of Marine Resources at Boothbay Harbor as a service to the aquaculture and commercial fishing industries and to diagnose diseases in marine fish and shellfish. Some of the current work involves identification of the diseases and parasites of shellfish populations along the Maine coast to prevent the transfer of potentially harmful organisms from one area to another. The lab also examines imported marine species to assure that they will not be hazardous to native species or the environment; diagnoses diseases in fish, shellfish and crustaceans submitted for pathological examination and is continuing studies of a blood viral infection in cod and herring which causes massive red cell destruction in those species. There is a current investigation of a new disease in deep-sea scallops that causes abscesses in the muscle and viscera and makes the scallops unmarketable. The disease has been found in 15-20% of the deep-sea scallops sampled from the Muscongus Bay and Harpswell Sound areas.

The pathology lab is staffed by Stuart Sherburne, with 20 years' experience in both medical and marine biological laboratories, and by Laurie L. Bean with 3 years' experience at DMR assisting in the investigation of V.E.N., a viral disease endemic to marine fish off the Maine coast.

The lab has contributed several type slides of a new viral disease in cod to the National Parasite Collection at Beltsville, Maryland for future reference by other investigators. In addition, scientific papers on new research discoveries have been published; the most recent of which was on the incidence and distribution of two diseases in rainbow smelt from the Gulf of Maine.

(Excerpted from Maine DMR's *Commercial Fisheries News*, October, 1980)

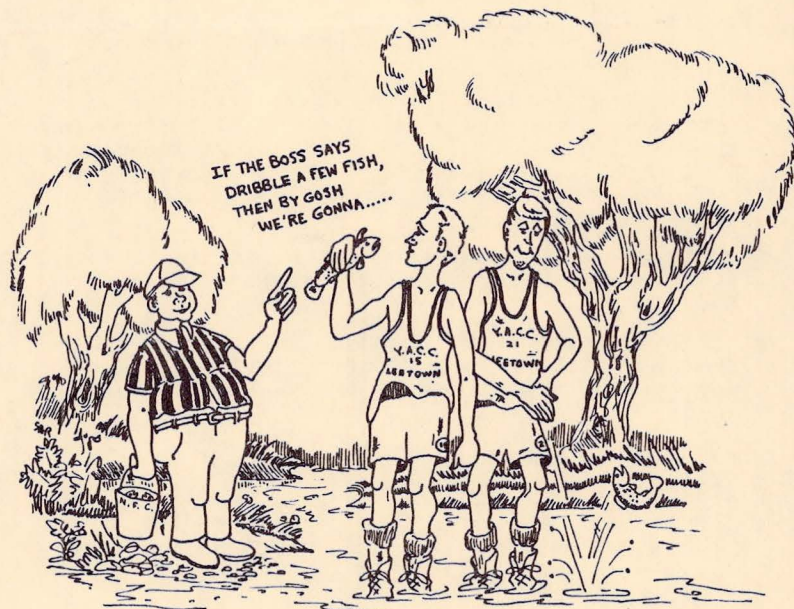
McDANIEL RECEIVES FAUX PAS AWARD

The editorial staff announces that Leetown's Dave McDaniel is the recipient of the first (and perhaps last) FHS Faux Pas Award for his recent admission to a reporter that West Virginia's Opequon Creek receives a few extra trout prior to President Jimmy Carter's fishing trips.

"We always dribble in a few more fish than usual before his visits," Dave was quoted by the Associated Press in an article that received nationwide distribution and attention.

Word has it that Dave's statement has earned him the nickname "Fish Dribbler" in certain circles.

Congratulations Dribbler!



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In regard to the diseases of fishes caused by bacteria, there is some confusion due to recent changes in bacterial taxonomy. Popp expertly handles this by presenting a table of names of fish pathogenic bacteria listed in the 8th edition of *Bergey's Manual* (1974) and their taxonomic equivalents before 1974. This chapter is concise, lucid and very informative.

The section on parasitology (159 pp.) includes most of the freshwater fish parasites encountered in fish disease work in Europe. Also included are a few marine and aquarium fish parasites. It is well illustrated with 227 drawings and photographs. The reader will have little difficulty in identifying the more common parasites, but there are no keys to genera and species. For the researcher it would have been helpful to know the year as well as the author, of the photo credits. *Dermocystidium* was placed in the fungi; but most researchers consider it a protozoan. It is still controversial. *Ichthyophonus* was given more than normal space. Figures 4.93 and 7.69 (p. 146) are out of place (presumably because of being in the color plate). In some photos, such as Figure 2.5, it would be helpful to know the stain used. The external biflagellates of fish listed here as *Bodomonas* are now considered to be *Cryptobia* with the blood-inhabiting ones being *Trypanoplasma*. *Bodomonas concava* is considered to be *Cryptobia branchialis*. The authors mention the use of Neguvon for ectoparasitic protozoa, but we have found it ineffective in the United States. The legends for 1 - 10 of Figure 2.87 are missing. The generic names *Glossatella* and *Scyphidia* (in part) have been corrected to *Apiosoma* and *Ambiphrya* respectively. The various *Trichophrya* species have been reduced to synonymy under *Trichophrya piscium*. Dipterex (Masoten) is not mentioned for *Gyrodactylus* treatment. *Lernaea cyprinacea* (*Lernaea elegans*) is a very serious parasite in many parts of the world, but Figures 5.2 and 5.7 make identification difficult. Illustrations of helminth eggs are lacking in other fish parasite texts, so those included on page 267 are a welcome addition. Therapy is included for only some species, but there is a separate chapter on the subject. The above criticisms are minor. The section is well illustrated and will be helpful to students and diagnosticians.

About one-fourth of the book deals with diseases (injuries) caused by environmental factors - pollutants, toxicants, various chemicals - and physical factors - light and temperature, neoplastic diseases, etc. This section is divided into more than 80 short parts dealing individually with many injurious factors and agents. Most of these articles are followed by pertinent references.

References are listed at the end of most articles. Exceptions are the sections on bacterial diseases and parasitic diseases caused by protozoans, helminths and crustaceans. There is no general system for grouping references.

The short chapter on therapy of fish diseases by Negele was apparently written without consideration for information presented elsewhere in the book. Commonly used drugs - oxytetracycline (Terramycin), sulfamerazine, potentiated sulfonamides and ni-furpirinol (Furnance) - are not mentioned. Some of the drugs are listed under regional trade names making their identification difficult.

It is remarkable that a book consisting of less than 500 pages contains so much information, 744 good illustrations and well over a hundred reference lists.

In general, this book is a valuable contribution to world literature on the diseases of fishes even if it is, as stated by the author in the introduction, written chiefly for conditions existing in freshwater fish culture in Central Europe.

Submitted by:

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1980 FHS/AFS Newsletter
INTUSSUSCEPTION 8(4)

Intussusception is, according to the Dorland Medical Dictionary, the invagination or indigitation of a portion of the intestine into an adjacent portion.

Four of four 8-inch channel catfish from a pond of diseased fish were found to have very severe intussusception with 55% to 80% invagination of the gastrointestinal canal. No cause of disease could be found. Apparently the cause of human intussusception is not known either and, of course, is never epidemic.

Submitted by Hoffman, Mitchell and Rodgers, Fish Farming Experimental Station, Stuttgart, Arkansas 72160.

THE TALE OF THE SCHMOO

For two years the identity of the cause of chronic proliferative kidney disease of pen-reared coho salmon in Pacific waters has eluded North American fish disease experts. The causative agent - a *shmoo-like* parasite - is unlike any known salmon pathogen. Its body is unlike any protozoan spore from salmon. Its eyes reminded workers of myxosporean capsules, but polar filaments could not be seen. Independently, Vic Sprague and Bob Kabata proposed that it is most like *Parvicapsula asymmetrica* (Myxozoa: Myxosporaea: Bivalvulida: Eurysporina: Parvicapsulidae) described by S. Shulman (1953) from the urinary bladder of *Cyclopterus lumpus* in the White Sea, USSR. During its development in the coho salmon, the *shmoo* destroys large areas of the epithelium of kidney tubules, obviously causing pathogenicity. Electronmicrographs are being prepared to attempt to demonstrate the presence of polar filaments and a suture line - both being necessary to relate to *Parvicapsula*.

For further information, contact (in alphabetical order) Domsea's Technical Staff, Lee Harrell, Glenn Hoffman, Bob Kabata, Marsha Landolt, Leo Margolis, Terry Otto, Stave Newman, Vic Sprague, Tosh Yasutake or any other schmooophilous fish pathologist.

Submitted by Glenn Hoffman

IS NOTHING SACRED?

Of course changing names is confusing. Correcting names is also confusing. In complying with the code of Zoological Nomenclature, however, changes must be made. During the past 20 years, the following fish parasite names have been so corrected:

Amphileptus branchiarum Wenrich, 1924 is *Hemiohryx branchiarum* (Wenrich, 1924). The genus *Hemiohryx* was described by Wizesniowski, 1870. *H. voracus* (Davis, 1947) is considered a synonym.

Bodomonas concava Davis, 1947 is *Cryptobia branchialis* Nie in Chen, 1956 (see Ergens and Lom, 1970).

Colponema agitans Davis, 1947 and *Cryptobia agitata* Chen, 1956 is *Cryptobia carassii* Swezy, 1919.

Costia necatrix Henneguy, 1883 is *Ichtyoboda necatrix* (Henneguy, 1883) Pinto, 1928 (see Ergens and Lom, 1970).

Cryptobia, biflagellate of the blood, is *Trypanoplasma* Laveran and Mesnil, 1901. (see Ergens and Lom, 1970) and external *Cryptobia* remains *Cryptobia*.

Glossatella Butschli, 1889 is *Apiosoma* Blanchard, 1885 (see Ergens and Lom, 1970).

Myxosporidea (class) Butschli, 1881 is Myxosporaea Levine et al, 1980.

Octomitus salmonis (Moore, 1923) is *Hexamita salmonis* (see Kudo, 1946).

Plistophora is *Pleistophora* Gurley, 1893 (see Sprague, 1977).

Scyphidia Dujardin is, in part, *Ambiphrya* Raabe, 1952. *S. ameuri* (Thompson, Kirkegard, John, 1946) and *S. macropodia* (Davis, 1947) are *Ambiphrya ameuri* (see Hoffman, 1967).

Trichodina bulbosa (Davis, 1947) is *Tripartiella bulbosa* (see Lom, 1959).

Trichodina bursiformis (Davis, 1947) is *Tripartiella bursiformis* (see Lom, 1959).

Trichodina californica (Davis, 1947) is *Tripartiella californica* (see Bogdanova & Stein, 1963).

Trichodina myakkae (Mueller, 1937) is *Trichodinella myakkae* Lom, 1963.

Trichodina symmetrica (Davis, 1947) is *Tripartiella* (see Lom, 1963).

Submitted by Dr. G.L. Hoffman, Parasitologist, Fish Farming Experimental Station, P.O. Box 870, Stuttgart, Arkansas 72160.

BACTERIA CONCENTRATION WORKSHOP

The USFWS Fish Disease Control Center in Fort Morgan, CO held a workshop recently for the Service's Hatchery Biologists. Pete Bullock of the National Fish Health Laboratory in Leetown, WV instructed the participants in a newly developed concentration method for the detection of bacterial pathogens. The method employs an electron dense, high viscosity material in a differential centrifugation procedure to separate and concentrate bacteria from fecal samples. This method increases sensitivity 20 - 25X over direct fecal smears. With the aid of this technology, the goal of carrier detection seems to be closer at hand. The FDCC plans to implement the new technique in a bacterial pathogen survey of hatchery and feral salmonid stocks.

(Contributed by Rex M. Flagg, FDCC, P.O. Box 917, Fort Morgan, CO 80701)

NOMINATIONS SOUGHT

Fred Meyer, chairman of the 1980-81 Nominating Committee, has announced that his committee is accepting nominations and petitions for the offices of President Elect, Secretary-Treasurer, and Board of Certification. Written nominations must have the consent of the nominee and petitions of nomination must be signed by at least 10 FHS members in good standing. Fred isn't expecting miracles in the way of a flood of nominations and petitions, but he asks that any of you who know of good candidates get in touch with one of the following:

Ron Major, P.O. Box 39, Pinetop, AZ 85935 — (602) 336-1933

Katharine Lannan, Oregon State University, Marine Science Center, Newport, OR 97365 — (503) 867-3011

Fred P. Meyer, National Fishery Research Laboratory, P.O. Box 818, LaCrosse, WI 54601 — (608) 783-6451

The program of the FHS can only be as good as the quality of our leadership. It is incumbent on all of us to make certain that we put forth the best slate of available candidates. Fred and his committee need your help!

1981 ANNUAL MEETING

The 1981 Annual Meeting of Fish Health Section/American Fisheries Society and the 6th Eastern Fish Disease Workshop will be held jointly on July 21-22, 1981, at Mississippi State University, Starkville, Mississippi.

Persons interested in presenting a paper should submit an abstract, not to exceed two pages typed double-spaced on white bond paper (8½ x 11 inches). Contributed papers of a practical nature on disease treatments, diagnostic procedures and problems with infectious and non-infectious diseases are preferred. Abstracts of papers must be submitted by February 1, 1981 to:

Thomas L. Wellborn, Jr.
Leader, Extension Wildlife and Fisheries
P.O. Box 5405
Mississippi State, MS 39762
Telephone (601) 325-3174

Contributed papers should be limited to 15 minutes.

Information on lodging, transportation, speakers, etc. will be mailed later. A tour of a catfish farm, feed mill and processing plant is being planned for July 23. Please mark these dates on your calendar and plan to attend.

BOOKS and PUBLICATIONS

Brown, E.E. and J.B. Gratzek 1980. *Fish Farming Handbook — Food, Bait Tropicals and Goldfish*. AVI Publishing Co., Westport, Connecticut 06880. 391 pp., \$19.00.

Contributors: Margarita Hopkins, R.T. Lovell, E. McCoy, all of Auburn University, R.E. Reinert, University of Georgia and R. Socolof of Brandenton, Florida.

Pages 237-338 are concerned with the host-pathogen relationships, diagnosis and control of warmwater fish diseases. There are 19 scanning electronmicrographs which give a three dimensional impression of these pathogens. (Submitted by G.L. Hoffman)

Everhart, W. Harry and William D. Young 1980. *Principles of Fishery Science*. 2nd ed. Cornell University Press, Ithaca, New York 14850, 360 pp., \$16.50.

Prost, Maria 1980. *Choroby Ryb* (Fish Disease). Dr. Maria Prost, Dept. Fish Diseases, Instytut Chorob Zakaznych, Wydział Weterynaryjny Ar, Akademicka 12, Lublin 20-934, Poland, 441 pp., 145 Zloty (call your bank for exchange rate which changes daily).

Schäperclaus, Wilhelm 1979. *Fischkrankheiten*, Akademie-Verlag, East Berlin, 2 Vols., 1089 pp.

Fish health publications from the American Fisheries Society:

A Symposium on Diseases of Fishes & Shellfishes. S.F. Snieszko, ed. 1970. Special Publication #5. 528 pp. \$16. Members \$8 (1 copy only).

Glossary of Fish Health Terms. G. Post, ed. AFS Fish Health Section. 1977. 48 pp. \$5.

Fish Health Blue Book - Procedures for the Detection and Identification of Certain Fish Pathogens. D.W. McDaniel, ed. AFS Fish Health Section. 1979. 112 pp. \$10. Members \$8 (1 copy only).

Send orders for AFS publications to:

American Fisheries Society
5410 Grosvenor Lane
Bethesda, Maryland 20014, U.S.A.

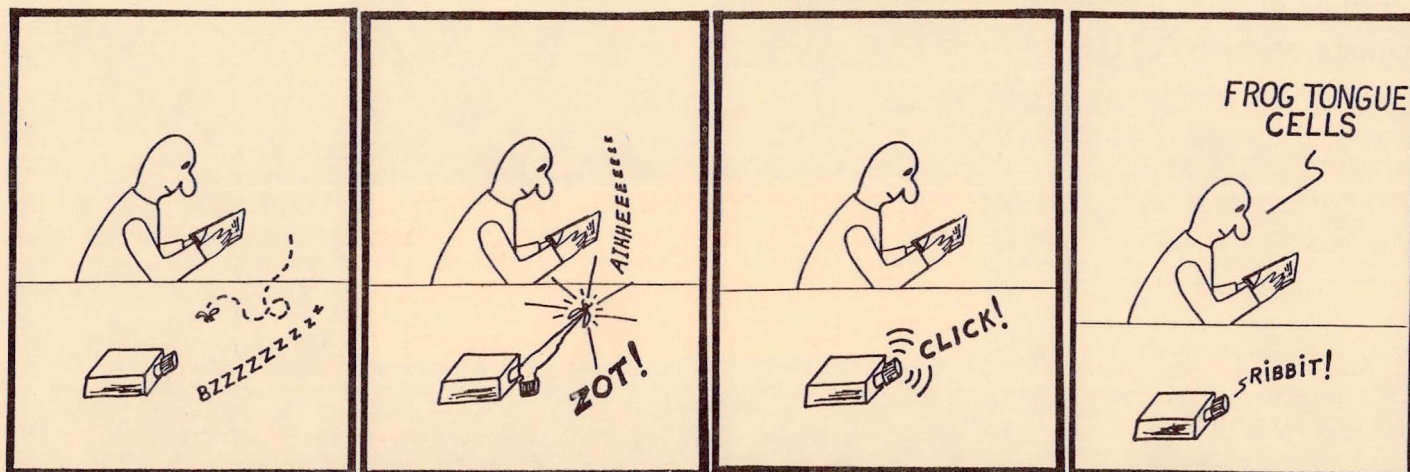
CANADA ATLANTIC REGION WORKSHOP HELD

The Fifth Annual Atlantic Region Fish Health Workshop was held on October 14-16, 1980 at Halifax, Nova Scotia. Hosted by the Disease and Nutrition Section of the Canada Department of Fisheries and Oceans, approximately 40 fish health workers from Canadian Federal, Maritime Provincial and area universities attended the meeting as well as representatives from the USFWS and the State of Maine.

Papers were presented on a wide variety of subjects including nutrition, bacteriology, parasitology and virology. Much attention was devoted to marine finfish and shellfish health problems and research as well as salmonids.

For further information, contact: Dr. R.M. MacKelvie, Canada Dept. of Fisheries and Oceans, Halifax Laboratory, P.O. Box 550, Halifax, Nova Scotia B3J 2S7, Canada.

ICHTHYOWIZARD



MEETINGS AND COURSES

February 9-13, 1981. INTRODUCTION TO FISH HEALTH. Location: Genoa, Wisconsin. Contact: Fisheries Academy, National Fisheries Center-Leetown, Route 3, Box 49, Kearneysville, WV 25430.

April 26-30, 1981. A SYMPOSIUM ON FISH BIOLOGICS: SERODIAGNOSTIC REAGENTS AND VACCINES. Location: National Fish Health Research Laboratory, Kearneysville, WV. Contact: Dr. Blake Grant, Nat: Fish Health Res. Lab., USFWS, Kearneysville, WV 25430.

May 4-8, 1981. CHEMICALS IN HATCHERY AND FISHERY MANAGEMENT. Location: Athens, Georgia. Contact: Fisheries Academy, National Fisheries Center-Leetown, Route 3, Box 49, Kearneysville, WV 25430.

May 11-22, 1981. DIAGNOSIS AND TREATMENT OF DISEASES OF WARMWATER FISH. Location: Mississippi State University. Contact: Thomas L. Wellborn, Jr., Extension Wildlife and Fisheries, P.O. Box 5405, Mississippi State, MS 39762.

July 21-22, 1981. ANNUAL MEETING OF THE FISH HEALTH SECTION/AFS AND EASTERN FISH DISEASE WORKSHOP. Location: Mississippi State University. Contact: Thomas L. Wellborn, Jr., Extension Wildlife and Fisheries, P.O. Box 5405, Mississippi State, MS 39762.

September 16-18, 1981. ANNUAL MEETING OF THE AMERICAN FISHERIES SOCIETY. Location: Albuquerque, New Mexico. Contact Carl Sullivan, AFS, 5410 Grosvenor Lane, Bethesda, MD 20014.

PLEASE SPILL INK

Our Fish Health Section / AFS has grown about 100% in the last few years and is a viable, useful organization. This newsletter serves many functions, including an avenue for reporting important and interesting events that may not turn up in conventional scientific publications. The reporting of these events may help others in their research and diagnostic work, so please submit items to one of the following:

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