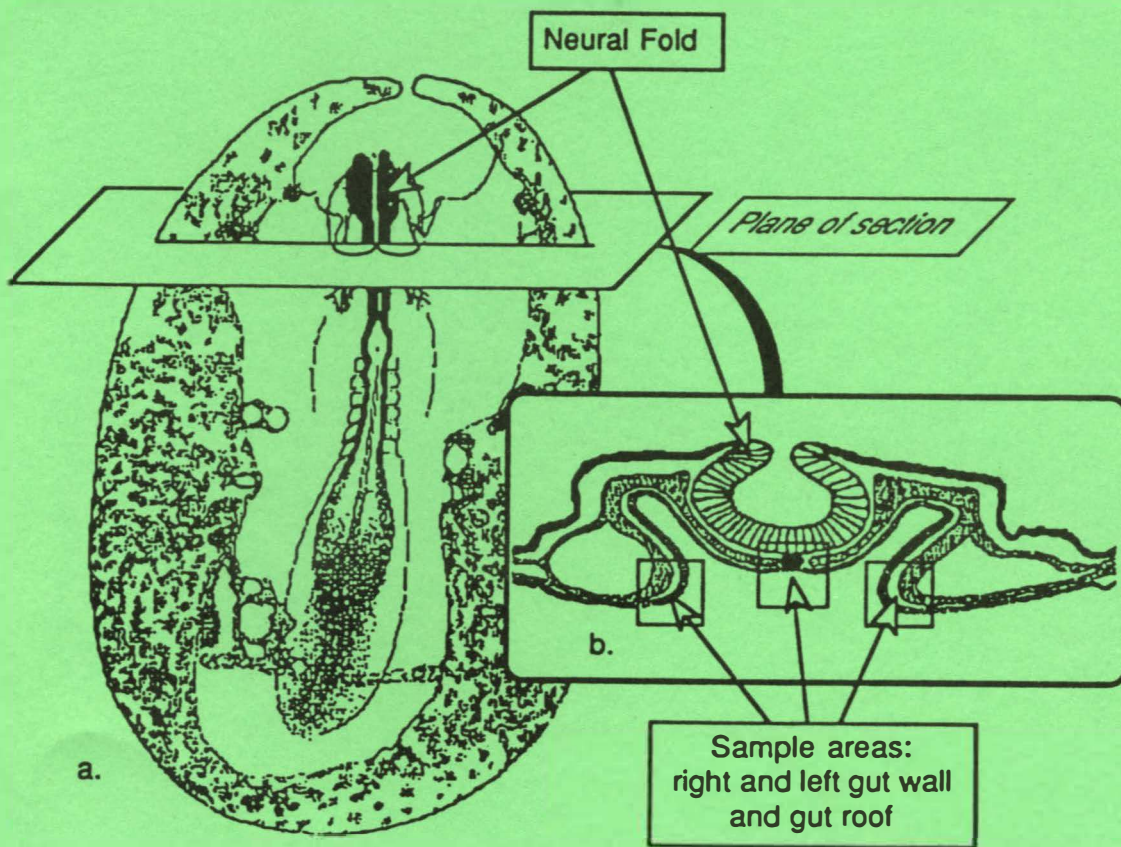


Midwest Bioscience



Volume 16 Number 2
October 1990

Midwest Bioscene

Volume 16 (2) October 1990

Table of Contents

Articles:

- Animal Rights: Responses to
"The Domination of Knowledge by Ignorance"** 3
D.E. ErkenBrack
- The Occurrence of *Pseudomonas aeruginosa*
In Surface Water** 7
Paul C. Radich
- A "New" Creation?** 13
Review of Scientific Creationism
Malcolm P. Levin

News & Views:

- Instructions to Authors** 2
- In Memoriam: Harold W. Hansen** 16
- My First Year of Teaching** 17
Ethel Stanley
- AMCBT Membership Application Form** 19

Cover Illustration: Sectioning a Chick Embryo. Early chick embryos are basically flat discs sitting on top of a ball of yolk: (a) shows the disk with a plane showing how it was cut. (b) shows a typical section and the arrow points to a typical sample area, where labeled and unlabeled cells would be counted. Labeled and unlabeled nuclei would be counted in each square area.

Credits: Sue Miller and Frank Price, Hamilton College, Clinton, NY

Midwest Bioscene Editor:

John R. Jungck
Department of Biology
Beloit College
700 College St.
Beloit, Wisconsin 53511

Managing Editor:

Jennifer L. Tipton

Please submit all manuscripts directly to the Editor. We prefer receiving two printed copies and one in computer readable form. We work with the following word processors on the following computers: MacWrite and Word on the Macintosh, Appleworks and Applewriter on the Apple IIe/IIc, Word Perfect on IBM PC compatibles, TDP on an HP 3000, and WHIPS Plus on a DEC VAX. Final copy is prepared in Quark Xpress on a Mac II. If you can submit your manuscript only on another system, please check with us beforehand. We hope to be on BITNET soon so that we can receive manuscripts electronically; however, we currently have no capacity to do this other than by connecting through Applelink where our address is BioQUEST. Please address file to AMCBT. Next Deadline: October 27.

Midwest Bioscene Editorial Board:

Chairperson:

Robert H. Buchholz
Biology Department
Monmouth College
Monmouth, IL 61462

Joe Kapler
Biology Department
Loras College
Dubuque, IA 52001

Ray Reed-Secretary
Biology Department
Jefferson Community College
Louisville, KY 40210

William Brett
Biology Department
Indiana State University
Terre Haute, IN 47809

Phyllis Kingsbury
Biology Department
Drake University
Des Moines, IA 50311

Russ Tepaske
Biology Department
University of Northern Iowa
Cedar Falls, IA 50613

Dave Finley
Biology Department
Lincoln University
Jefferson City, MO 65101

Richard Knowles
Biology Department
Saint Mary's College
Winona, MN 55987

Robert L. Wallace
Biology Department
Ripon College
Ripon, WI 54971

George Garoian
Biology Department
Southern Illinois University
Carbondale, IL 62901

Malcom P. Levin
Biology Department
Sangamon State University
Springfield, IL 62708

C. Rober Wikel
Biology Department
Doane College
Crete, NE 68333

Suggestions for Manuscripts:

Announcements
Laboratories that work
Courses that work
Minority Education
Computer Advice

Letters to the Editor
Sources of Funding
Professional School
History of Biology
Review of Software/
Hardware

Book Reviews
Sociology of Biology
Biology Policy Issues
Women in Biology
Philosophy of Biology

Midwest Bioscene Is published by the Association of Midwest College Biology Teachers.

ANIMAL RIGHTS: RESPONSES TO “THE DOMINATION OF KNOWLEDGE BY IGNORANCE”

by D. E. ErkenBrack
Central University of Iowa
Pella, IA 50219

Review of some of the recent social “revolutions” leading to a change in the general perception of society’s responsibilities toward minorities, women or the environment yields a discernable pattern in such societal “sea changes”. This appears to start with a committed and vocal minority which wins support for its view by capturing the attention of the media (sometimes by illegal activities) and keeping the issue in the public eye until politicians perceive that it has gained enough of a constituency to be worth addressing. In cases where the proponents of the status quo are not heard or seem ineffective, sweeping changes in law have been enacted resulting in reallocation of resources to programs more in line with the “new order” even if their efficacy is problematic. Most Americans, and even many academics, seem to feel that this scenario is a natural if not desirable mechanism for implementing needed social change. The potential for serious mistakes in public policy is often deemed too low to be worth concern. The more worrisome possibility that this political process may be abused by fomenting an artificial controversy for the primary purpose of raising funds from an ingenuous populace is frequently not even addressed.

There is no question that Humane Societies and other animal protection groups have historically served an important role in prompting professional scientific societies to implement and enforce responsible standards for animal use, especially regarding the elimination of unnecessary suffering. Unfortunately, these groups have almost always

contained extremist factions which periodically succeed in mobilizing political support for more draconian restriction of the scientific utilization of animals. Some of the most striking examples of this occurred during the anti-vivisectionist movement of the last century (1).

It appears that the history of the animal protection movement has been one of intermittent periods of intense activity, initiated by specific (and generally sporadic) abuses and mollified by prompt and responsible redress by professional scientific societies. These events occurred in a general atmosphere of trust: the scientists were presumed to be genuinely committed to the exploration of the unknown and the relief of human suffering, viewing the use of animals as an unavoidable and unfortunate necessity; the societies were presumed to be primarily concerned with avoiding unnecessary animal suffering while accepting the validity of animal use in biomedical research. Since these goals are not mutually exclusive, consensus was eventually achieved.

The current resurgence of the so-called “animal rights” movement has elicited a similar initial response from the research community and the government agencies affecting it. There is an absolutely unprecedented level of control of research animal use, from the initial justification of a research proposal right up to the disposal of remains (2). The increasing cost of these measures is having constraining effects on biomedical research, decreasing the amount that can be done by consuming a sizable fraction of the available resources and even

making some important lines of inquiry prohibitively expensive (3).

Many would say this is an appropriate response to changing mores within our society, and this may be a defensible point of view. However, reviewing the changes which have already been implemented by professional scientific societies as well as the plethora of newly-enacted regulations protecting research animals from abuse leaves one with the impression that there is little more the research community can do to protect animals except stop using them altogether. Thus if the social concern is for respectful and humane treatment of research animals, one would expect the controversy to subside as a result of the responsible ways the scientific community has responded to this concern. But the controversy is escalating each year, almost each month. In advertisements, articles and editorial pages the public is persuaded that scientists routinely and cavalierly misuse lab animals (4)(5). Most recently, Ingrid Newkirk, national director of People for the Ethical Treatment of Animals (PETA) who originally achieved notoriety for her oft-quoted "a dog is a rat is a pig is a boy", left no doubt of the continued emphasis animal rights organizations place on the prohibition of animal use: "Even if animal research resulted in a cure for AIDS, we'd be against it" (6). Attention for this view is maintained by incidents of vandalism perpetrated in animal research laboratories: more than 29 incidents causing over \$7 million dollars in damage since 1982 (1).

Thus we must face the fact that continued use of research animals, however well-justified or painless the protocols may be, is itself in contention; that is, that the animal welfare movement has become an abolitionist movement.

The consequences are already being felt in our society, and they have by no means run their course. Cosmetic companies are rapidly replacing animal product testing with substitutes of questionable reliability (7). Scientific research projects are being halted in midstream (8). Existing laws are misused: "freedom-of-information" suits brought against research review panels force disclosure of proposed experiments, making delay, interference and even sabotage much easier to accomplish (9); the "tactic of raising false issues of environmental safety in an attempt to stop animal research has been repeated across the country" (10). Local laws have been enacted in several (admittedly politically liberal) communities to abolish lab animal use, reminiscent of the nuclear-free zones of the last decade (11). Bills to effect similar restrictions on a national scale have been introduced in both houses of Congress (H.R. 560, 778 and 1676; S.727, 891 and 1457). Funding of two animal research projects was actually halted by the passage of H.R. 3072 which will go into effect in 1990. One of the most serious consequences imaginable is the loss of gifted young scientists from the biomedical research field, as noted by Dr. Frederick Goodwin of the National Institute of Mental Health: "My people speak more and more of fear and demoralization concerning their research and the necessity to use animals for meaningful and objective experiments. If you stop funding or drive up the costs by layers of regulation, nobody on the outside knows its happening. Research just quietly dies" (12).

Will meaningful biomedical research truly die if animal use is abolished? Cultured cells and computer analogs are chief among the research systems touted by the abolitionist movement as appropriate alternatives to animal use. Articles reporting this in the secondary literature (13,14) frequently fail to elucidate the substantive differences between animal use in basic research as opposed to product testing (15). Little if any attention is given to the almost

constant iteration in the primary literature of the facts that neither cultured tissue nor the level of sophistication extant in present computer technology affords sufficient complexity to model living organisms; heed is similarly denied the concomitant assertions that until this complexity is achieved, the need to continue animal work is absolute (16,17). This point does not seem overly difficult to grasp: the fact that it is continually ignored raises the question of the credibility of the abolitionist movement.

In the face of the tremendous contribution animal research has made to health care (18), it is difficult to understand first the fact that abolitionists have made it a target of their primary efforts, and secondly the success of those efforts to impede and discredit it. It is true that our society generally embraces a double standard toward animals (19) but it is also true that a thousand animals are exterminated in shelters and a million are slaughtered in abattoirs for each animal (90% are rodents) that dies in research. It is true that some lab animals die painfully (a vanishingly small fraction—again, virtually all rodents—involved in pain research) but millions of relatively sophisticated stray pet animals die regularly in shelters by egregiously inhumane methods involving carbon monoxide or dioxide, negative pressure, gunshot, etc. The most basic right is the right to life, but there is no outcry from 'animal rights' groups for compulsory sterilization of extant pets to preclude the necessity for the extermination of their progeny in shelters; instead much effort is expended to ensure that animals in shelters are killed there instead of being released to research (20).

The record thus does not support the claim that animal rights organizations are working sensibly and clearly toward goals pursuant to the eradication of animal suffering; by attacking biomedical research, they single out that facet of the controversy which uses by far the fewest animals for by far the most defensible purposes, while instances of indefensibly inhumane treatment on a much larger

scale are being effectively ignored. Observing this inconsistency in the record, a scientist naturally begins to formulate hypotheses to account for it. Indications of a hidden agenda exist, but it is in fact hidden and requires some ferreting out and perhaps some inference. In the first place, surprisingly large annual budgets are controlled by animal protection organizations, well into the tens of millions of dollars (21). Secondly, the tenor or philosophy of these organizations is being subtly yet radically changed, with their well-earned reputation for moderation (with emphasis on humane use of animals) being kept as a facade to mask a much more activist abolitionist reality (22). Thirdly, those in opposition to these organizations such as the Foundation for Biomedical Research (FBR) and the Iowa Academy of Science Controversial Issues Committee are beginning efforts to effect the inclusion of animal protection groups under racketeering laws. This would make it easier to prevent the misuse of the sizable funds controlled by such organizations, which are mostly collected ostensibly for the purpose of promoting humane use, but which have begun to be employed to promote the abolition of all animal use (private communication).

"It is easier to believe a simple lie than to understand a complex truth". Alexander De Toqueville's words indicate the manner in which professional Biologists should respond to this issue. Public ignorance is the difficulty and public education the answer. Daniel E. Koshland, editor of *Science*, has eloquently stressed our responsibility in this regard (23). Colleagues have published protocols for meeting this challenge (22). Other institutions have effectively precluded interference by taking the initiative instead of waiting for protest and passively reacting to it (24,25). Bills have been introduced in Congress to protect animal research (H.R. 3270, 3349; S. 727) which may be supported by letters from any citizen. Finally, as Dr. Ronald McLaughlin (Director of the Office of Laboratory

Animal Medicine of the University of Missouri at Columbia) writes:

“There probably isn’t a reader of this newsletter who doesn’t have the knowledge, the ability and the contacts to encourage some undecided person to support the use of animals in research and education. The majority of the United States population wants to support us. All they need is the information and encouragement to counter the misinformation of the animal rights activists and anti-vivisectionists” (26).

At our next AMCBT meeting I will propose a resolution that we formally commit ourselves to activities such as those described above. However, as our colleague Larry Horton points out, “Developing successful strategy and tactics would be a relatively easy task—not quite trivial, but not greatly difficult—provided that **one condition** is met: **The issue must be truly recognized by scientists as serious enough to warrant their personal involvement on a priority basis**” (1, emphasis his).

At the beginning of this century, at the climax of the then raging antivivisectionist controversy, Dr. Mary Putnam Jacobi testified before a U.S. Senate committee considering anti-vivisection legislation, “I will speak (against) the fundamental vice of the bill...that its provisions are deliberately planned for the domination of knowledge by ignorance” (27). She and her colleagues won their fight. The legacy of freedom of inquiry they left makes it incumbent upon us to make sure that we do the same.

LITERATURE CITED

1. *Journal of the National Cancer Institute*, 81(10):736; 1989
2. *Guide for the care and use of laboratory animals*, NIH pub. No 86-23; 198
3. *Science* 242:662; 1988
4. *The New York Times*, 16 July 1988, p.5
5. *The Wall Street Journal*, 19 May 89, p.A15
6. *USA Today*, 8 June 90, p.3A
7. *The New York Times*, 2 Aug 1989, p.1
8. *Science* 242:1001; 198
9. *The New York Times*, 22 Aug 1989, p.B1
10. *Science* 242:840; 1988
11. *The New York Times*, 8 June 1989, p. A22
12. *North Carolina Medical Journal* 48(12):653; 1987
13. *Scientific American* 261(2):24; 1989
14. *Science News* 133:42; 1988
15. *Science* VOLUME:148; April 1986
16. *Nature* 335:385; 1988
17. *The Physiologist* 31(4):57; 1988
18. *Buffalo Physician* 18:3; 1984
19. *New England Journal of Medicine* 318(24):1631; 1988
20. *American Psychologist* 42(6):598; 1987
21. *Town & Country*, 142:218; 1988
22. *The Physiologist*, 31(3):43; 1988
23. *Science* 243:1253; 1989
24. *Science* 244:17; 1989
25. *Science* 244:415; 1989
26. *FBR Newsletter* 4(4):4; 1989
27. *Circulation* 77(6):1197, 1988

THE OCCURRENCE OF *PSEUDOMONAS AERUGINOSA* IN SURFACE WATER

by Paul C. Radich
Dept. of Biology
University of Indianapolis

A growing interest in the micro-organism *Pseudomonas aeruginosa* has developed in recent years. This has been brought about by a gradual realization that *aeruginosa* is an opportunistic pathogen of major significance in human pathogenesis (3). *P. aeruginosa* can cause a wide variety of infections in human beings including local infections as well as systemic infections, especially in patients with impaired resistance. In particular it has become apparent that *P. aeruginosa* causes a significant hospital infection. It is estimated to cause 6 to 11% of all nosocomial infections (10).

The organism itself is widespread in both human habitats and natural environments. It has been isolated from a wide variety of sources such as soil, vegetation and water(11). Numerous studies have documented the ubiquity of this organism in hospital environments(2). In man-made aqueous environments (i.e. swimming pools) studies have show *P. aeruginosa* to be a surface water contaminant (3).

Because of the increasing importance of *P. aeruginosa* as an environmental contaminant as well as a potential and actual pathogen, the need has become apparent for a study of this organism outside of medical settings. Thus the present study was undertaken to study the occurrence and distribution of *P. aeruginosa* in natural surface waters of Marion County, Indiana.

MATERIALS AND METHODS

Sampling sites. During the summer of 1989, water samples were collected from eight creeks, one river and two reservoirs all located within Marion County, Indiana. A total of four sampling stations were selected for each body of water sampled. On the East side of Marion County, Buck Creek and Grassy Creek were sampled. Buck Creek flows in a southerly direction and empties into Sugar Creek. Grassy Creek drains an area of some 18 square miles on the west side of Buck Creek and its confluence is with Buck Creek.

On the south side of Marion County, Little Buck Creek was sampled. This creek begins in the southwest corner of Marion County and flows west toward its confluence with the White River. On the far north side of Marion County, water samples were obtained from Crooked Creek. This creek has its beginning in the southwest corner of Hamilton County. It flows south into Marion County, where it eventually enters the West Fork of WhiteRiver.

Within the confines of the Indianapolis metropolitan area, LickCreek, Fall Creek and Pleasant Run Creek were sampled. Lick Creek has its origin on the far east side of Marion County and flows though Beech Grove, then southwest where it enters into the West Fork of White River. Fall Creek has its beginnings in Geist Reservoir. It flows through the northern portion of the city of Indianapolis and

empties into the West Fork of White River. Pleasant Run Creek flows from the far east side of Indianapolis into the White River. All three of these creeks flow through residential sections interspersed with industrial developments. These bodies of water are listed in Table 1.

•**Samples.** Samples of Surface water were collected in sterile glass bottles and investigated within two hours of collection.

•**Enumeration and isolation procedures.** Most probable numbers (MPN'S) of *P. aeruginosa* were determined by following the procedure as described in the 16th edition of Standard Methods (1) with the exception that citrimide medium (Pseudosel agar, BBL) was used instead of acetamide agar in the confirmation step.

Samples of 10 ml, 1.0 ml, and 0.1 ml were placed respectively in 10 ml tubes of asparagine broth. All tubes were incubated at 37 C for a total of 48 hours. Those tubes exhibiting greenish fluorescence under long-wave ultraviolet

light were considered to be presumptively positive.

The confirmatory step was carried out by transferring inocula from positive asparagine broth tubes to the surface of citrimide agar and streaking for isolation. Petri plates were then incubated at 37 C for 24 to 48 hours and observed for the presence of a blue-green pigmentation (pyocyanin) around colony growth. If such a pigmentation was found the colony was considered to be confirmed.

•**Verification of Isolates.** Isolated colonies were picked from cetrimide agar plates and subcultured on nutrient agar slants. Isolates were considered to be *P. aeruginosa* if the following tests gave positive results: (1) oxidase, (2) catalase, (3) fruity odor present, (4) casein hydrolysis, (5) production of pyocyanin on nutrient agar slopes, (6) acid production from glucose only under aerobic conditions, (7) arginine decarboxylation and (8) fluorescence under long wave UV light.

Table 1. Bodies of water surveyed for the presence of *P. aeruginosa*, Marion County, Indiana

Type	Body of Water
Creeks	Big Eagle Creek Buck Creek Crooked Creek Fall Creek Grassy Creek Lick Creek Little Buck Creek Pleasant Run Creek
Reservoirs	Eagle Creek Reservoir Geist Reservoir
River	West Fork White River

EXPERIMENTAL RESULTS

The results of the previously described experiments indicate that *P. aeruginosa* can be isolated from a variety of aqueous habitats. The distribution of this organism, however is not uniform throughout Marion County. Some bodies of water showed a relatively high density of *P. aeruginosa* while others indicated the organism was present in only low numbers.

•**Comparison of surface waters sampled.** Table 2 shows a comparison of the mean of the means (MPN'S) for all surface waters sampled in Marion County. As can be seen from the table there is a wide variation in *P. aeruginosa* population sizes. Crooked Creek has the

lowest population of *P. aeruginosa* while the West Fork White River has the highest. In general the creeks had a lower population of *P. aeruginosa* than did reservoirs except where the origin of a creek was a reservoir. Only then did the population of *P. aeruginosa* exceed that of a reservoir.

Those creeks which were located in rural areas of the county (i.e., Crooked Creek) or those whose head waters were in rural areas as a general rule, had a lower population of *P. aeruginosa* than did the White River. Since all creeks in this study eventually emptied into the West Fork White river it is not surprising to find this to be the case.

Table 2. Comparison of the means (MPN'S) for all surface waters sampled for *P. aeruginosa*, Marion County, Indiana

Source	Mean of the Means(MPN'S)
Crooked Creek	2.00
Lick Creek	2.59
Little Buck Creek	6.65
Grassy Creek	8.2
Buck Creek	11.84
Pleasant Run Creek	13.35
Eagle Creek Reservoir	13.43
Big Eagle Creek	16.45
Geist Reservoir	233.18
Fall Creek	261.60
White River	508.23

Verification of isolates. Those tubes exhibiting the highest degree of fluorescence for a given collection date were sampled for the presence of *P. aeruginosa* (Table 3). Samples from 33 tubes were streaked onto citrimide agar plates. A total of 145 colonies were

observed which looked like colonies produced by *P. aeruginosa*. These colonies were flat, 0.8 to 2.2mm in diameter with blue-green pigmentation. Of those suspected colonies, a total of 127 were verified as being *P. aeruginosa*, which gave a 87% verification rate.

Table 3. Verification of Isolates as being *P. aeruginosa*

Samples Examined		Number of Typical Colonies	
Source	No	Observed	Verified
Big Eagle Creek	3	10	8
Buck Creek	3	14	13
Crooked Creek	3	12	10
Fall Creek	3	15	13
Grassy Creek	3	9	8
Lick Creek	3	11	11
Little Buck Creek	3	13	12
Pleasant Run Creek	3	14	10
Eagle Creek Reservoir	3	14	13
Geist Reservoir	3	16	14
White River	3	17	15
Total	33	145	127
<u>Percent Verified</u>			87%

DISCUSSION

The present study has shown that *P. aeruginosa* is widespread in the surface waters of Marion County. It can be isolated from creeks, reservoirs and a river. The question arises as to how this organism gains entrance into the surface waters. There is always the possibility that it is indigenous to surface water, but previous studies have shown that *P. aeruginosa* cannot survive long or multiply unless the temperature of the water is in excess of 30 C. While such water temperatures can occur in the southern states of the U.S.A., here in central Indiana ambient temperatures for much of the year are well below 30 C. The isolation of *P. aeruginosa* from unpolluted surface waters whose temperature was low, has been reported by various researchers (7). This isolation occurred only following rains which suggest that soil may constitute a reservoir for *P. aeruginosa*. However, the role of soil as a natural habitat and source for the organism is not clear. Attempts have been made to isolate *P. aeruginosa* from soil but with low positive results (9). It has been isolated from soils contaminated with oil, agricultural soils in California, and from soils taken from pots placed in hospitals(6). All of these soils are enriched soils and furthermore have been in contact with man. This leads one to believe that man is the primary source of *P. aeruginosa* found in these types of soils. The major potential source of *P. aeruginosa* in surface waters is believed to be domestic sewage(7). The percentage of human carriers of *P. aeruginosa* is believed to be approximately 10% of the total human

population. It is not known if this organism permanently resides in the human intestinal tract or whether it is transient(4). Sewage as a potential source for *P. aeruginosa* may account for its presence in the West Fork White River, but it is doubtful that human fecal material is responsible for the contamination of all the reservoirs and creeks in Marion County. Human sewage in the county is treated by either (1) the septic tank method or (2) at sewage treatment plants. The possibility exists, however, that septic tank leakage may account for some of the presence of *P. aeruginosa* in surface water. The isolation of *P. aeruginosa* from barnyards has been reported in the literature(4). Barnyard runoff may well account for the presence of *P. aeruginosa* especially in rural areas of the county. This organism can cause mastitis in cows and carriers in dairy herds have been shown to exist (5). The occurrence of *P. aeruginosa* in surface waters flowing through residential areas of the county could be due to either or both (1) storm sewer runoff or (2) domestic water supplies. It was noted that along many of the creeks surveyed for the presence of *P. aeruginosa*, storm sewer drainage outlets occurred. If this organism is harbored by farm animals might it also be found in the fecal material of such pets as dogs and cats? If so, this would then account, in part at least, for its presence in storm sewer drainage water. *P. aeruginosa* has seldom been isolated from treated domestic water(8). But it can occur in such water and in fact does every now and then. Perhaps this could be another source of contamination of surface waters in Marion County.

LITERATURE CITED

1. American Public Health Association, American Water Works Association, Water Pollution Control Federation. Standard Methods for the Examination of Water and Wastewater. 16th ed., pp. 979-980. New York.
2. Bennett, J.V. (1974). Hospital-acquired infections and the altered host: nosocomial infections due to *Pseudomonas* *J Infect. Dis.* 130:4-7.
3. Havelaar, A.H. et al. (1985). Comparative study of membrane filtration and enrichment media for the isolation and enumeration of *Pseudomonas aeruginosa* from sewage, surface water and swimming pools. *Can. J. Microbiol.* 31:686-692.
4. Hoadley, A.W. et al. (1968). Investigations concerning *Pseudomonas* in surface waters. *Arch. Hyg. Bakt.* 52:328-338.
5. Hoadley, A.W. (1967). The occurrence and behavior of *Pseudomonas aeruginosa* in surface waters. PH.D. Dissertation. pp.2-3. Un. of Wisconsin.
6. Hoadley, A.W. (1977). Potential health hazards associated with *Pseudomonas aeruginosa* in water. In Bacterial indicators/health hazards associated with water, *ASTM STA 635*. Edited by B.J. Dutka. American Society for Testing and Materials, pp. 81-82. Philadelphia.
7. Hoadley, A.W. (1972). Some characteristics of fluorescent pseudomonads isolated from surface waters and capable of growth at 41 C. *Canadian J. of Microb.* 18:1769-1772.
8. Lanyi, B. et al. (1971). Incidence and hygienic importance of *Pseudomonas aeruginosa* in water. pp. 319-326. *Acta Microbiol. Acad. Sci. Hung.*
9. Ringen, L.M. et al. (1952) A study of the incidence of *Pseudomonas aeruginosa* from various natural sources. *J. of Bacteriology* 64:841-845.
10. Salmen, P. et al. (1983). Whirlpool-associated *Pseudomonas aeruginosa* urinary tract infections. *JAMA* 250:2025-2026.
11. Young, V.M. 1975. *Pseudomonas aeruginosa* : Ecological Aspects and Patient Colonization. Ravens Press. New York. xi-xvii.

A "NEW" CREATION?
BOOK REVIEW OF SCIENTIFIC CREATIONISM
(GENERAL EDITION) "SECOND EDITION
TWELFTH PRINTING APRIL, 1985
EDITED BY HENRY MORRIS

by Malcolm P. Levin
Biology Program
Sangamon State University

On June 19, 1987, the Supreme Court of the United States seemingly dealt a final blow to "creation science." However, a probable consequence of this decision is that science educators will let their guard down. Historically, many teachers at all academic levels neglected to teach what science is, how one does science, and how we know what we know. During the last several years, the efforts of creationists stimulated a re-evaluation of science teaching methodology. The Court's decision should not give educators a false sense of security; or once again, osmosis will become the common way of understanding the intellectual enterprise of science. In short, creation "scientists" are still a threat to scientific and intellectual freedom. Following the court decision, Duane Gish of the Institute for Creation Research stated, "the decision will intensify our efforts" to place creationism in the schools (Anonymous, 1987). It is in this context that this writer examines Henry Morris' recent effort.

Master Books, formerly Creation-Life Publishers, has produced a "second edition" of Scientific Creationism (general edition) edited by Henry Morris. This writer reviewed Scientific Creationism to determine whether an effort had been made to correct the shortcomings in accuracy and in scholarship that characterized previous printings.

The apparently deliberate intellectual dishonesty of the previous printings remains a hallmark of this volume.

The book is offered to the public as a new text; however, a careful comparison of this so-called "second edition" with the last printing (eleventh) of the first edition revealed no substantive changes. While the book contains a new forward, by Morris, "Forward to the Second Edition," this is the only indication that it should be considered a second edition.

Numerous critics of "scientific creationism," e.g., Futuyma (1983), Glenister and Witzke (1983), Kitcher(1982), and Ruse (1982), have thoroughly documented the distortion of scientific facts, hypotheses and theories in this book. In what should by now be considered a characteristic style of books written for the scientifically naive, by staff of the Institute for Creation Research, the original publication quotes and footnotes common knowledge, takes legitimate science out of context, and supports crucial creationist arguments by citing other non-scientific, creationist literature. The changes in this printing have done nothing to correct these obfuscations of current scientific knowledge. Indeed, virtually all changes in this printing are restricted to the last page of each chapter. The result is that the publisher has been able to maintain pagination throughout the text with the exception of the forward, pp. 3-6 in chapter 1, pp. 174 and 175 in chapter 7, and the suggested readings in the appendix.

All of the changes in this "edition" are summarized in the list that follows:

1) In chapter 1, pp. 3 and 4 contain a revised statement of the purpose of the book. The basic arguments of the

previous printings have not changed. The remaining changes in chapter 1 are found on the last page. The final paragraph (p. 15) of the eleventh printing was modified and a brief section entitled "Evolution as Religion" was added to this twelfth printing.

2) In chapter 2, no changes are found until the last page of the chapter (p. 35). Here a section entitled "Evolution Out of Nothing" is added. The result is the addition of several 1983 and 1984 references giving the appearance of a revised text.

3) Chapter 3 is a repeat of this editing process. Changes are restricted to the last page of the chapter (p. 58). In this revision, the last two paragraphs from the previous printing have been deleted, providing space for a one page addition entitled "Misfits and Extinctions." This alteration results in the inclusion of two new references which add nothing to Morris' old arguments about thermodynamics, but which place two recent publications in the footnotes.

4) Chapter 4 begins on p. 59 as in the previous printing. On p. 80, a quote by Preston Cloud and the footnote are replaced by a one-line clause added to an existing sentence from the previous printing. Page 79 also includes a minor change in the species list identified with the Cambrian and more recent periods. The only other change comes on p. 90, the last page of the chapter. Here a section entitled "Punctuated Equilibria" is added. The section consists of three short paragraphs, less than one-third of a page, but it adds two new, relatively recent references from 1972 and 1982.

5) Chapter 5, beginning on p. 91, has one minor change in the second and third paragraphs of the first page, in which Morris simply rephrases his reasons for discussing catastrophism and uniformitarianism, the subject of this chapter. Like the previous chapters, chapter 5, contains no other revisions or

alterations of any type until the last page (p. 130). In this instance, Morris deletes the last paragraph of the chapter and adds a one-page section entitled, "The Resurgence of Catastrophism" which includes two new references allegedly supporting the creationist position of catastrophism.

6) "Old or Young?," chapter 6, has the first minor change on p. 152. Here Morris modifies the discussion of the accumulation of cosmic dust and adds to the footnote. The spurious logic remains unchanged; pagination is maintained; and the eleventh and twelfth printings continue to match page for page. On p. 157, Morris deletes the last two sentences of the second paragraph, to accommodate an expanded footnote. The original footnote (eleventh printing) which references a 1973 Institute for Creation Research publication has been revised and updated. This "monograph," The Origin and Destiny of the Earth's Magnetic Field, now bears a 1983 publication date. The last part of the second paragraph (p. 158) has also been dropped to accommodate a foot note to another of Morris' books. Such changes were apparently made to eliminate the need for re-typesetting the entire book. Again the remaining changes in this chapter occur on the last page (p. 169). In this instance, Morris deletes the last paragraph, a lead-in to the next chapter, and adds two sections, one entitled "Age of the Sun," the other, "Fiat Creation." These additions provide two new references and the blank page (p. 170), of the previous printing is now utilized so as to avoid the repagination of the balance of the book.

7) Chapter 7, "Apes or Man?," contains a minor revision in the section describing Homo erectus (p. 174). This editorial change eliminates an old quote and substitutes a new reference (a recent article appearing in the Washington Post); however, the revision adds nothing to Morris' original arguments. The changes are such that only pages 174-175 in the

body of this chapter require new typesetting. There are no further emendations in the text until the last printed page of the chapter, p. 201 in the previous printing. Two irrelevant paragraphs are eliminated and a new section, "The Pitfalls of Paleoanthropology," is added. This section contains quotes by Oxnard, who reminds us of the Piltdown error and new references by respected paleoanthropologists are incorporated. However, the context is such that the reader is left with the erroneous impression that paleoanthropology is an intellectually bankrupt discipline.

8) The last chapter (8), "Creation According to Scripture," appears to have no revisions.

9) Finally, the appendix, "Bibliography of Creationism," is substantially revised. The list of books by "creation scientists" on "creation science" has been expanded from one to approximately three and one-half pages. The list of evolutionists critiquing evolution has also been expanded and additions have been made to the list of creationist authors who

write about the relationship between science and the Bible.

In conclusion, this twelfth printing (inappropriately presented as a second edition) continues to misrepresent scientific data and to quote scientists out of context. This writer must conclude that the sole purpose of the minor editing is to take a book with a 1974 copyright and create the illusion of a current text. The addition of one page at the close of each chapter which includes 1983 and 1984 references has provided no new insights. Morris has not changed his vision of the world or his interpretation of the Bible since he began his efforts to save Americans from the perceived dangers of scientists - labeled secular humanists and atheistic evolutionists - in southwestern Virginia in the late 1960's (e.g., see Morris, 1968). As noted above, there have been no changes in any of the quotes and references that were originally taken out of context and there have been no changes of substance. In short, this pseudoscientific text remains but a shoddy attempt to sell the aged arguments and intellectual dishonesties of "scientific" creationists to another generation by providing this "revision" for an unquestioning public.

LITERATURE CITED

Anonymous. (1987). Science and the Citizen- Science, 7; Creationism, 2. *Scientific American* . 257(2):14.

Futuyma, Douglas J. (1983). Science on Trial, the Case for Evolution. Pantheon Books. New York, N.Y.

Glenister, Brian F. and Brian J. Witzke. (1983). Interpreting Earth History. Pages 55-84 in D. B. Wilson, ed. Did the Devil Make Darwin Do It?. Iowa State University Press. Ames, IA.

Kitcher, Philip. (1983). *Abusing Science, the Case Against*

Creationism. The MIT Press. Cambridge, MA

Morris, Henry. (1968). *Here's Your Answer: Is Evolution a Proven Fact or Science?* The News Messenger. p. 14, Dec. 12. Christiansburg, VA.

Morris, Henry M. (Ed.). (1974). Scientific Creationism (General Edition). Creation-Life Publishers, San Diego, CA.

Ruse, Michael. (1982). Darwinism Defended. Addison Wesley

IN MEMORIAM

**HAROLD W. HANSEN,
AMCBT HONORARY LIFE MEMBER
ST. OLAF PROFESSOR**

NORTHFIELD, MN. -- Dr. Harold W. Hansen, Professor Emeritus of Biology at St. Olaf College and a founding member of The Association of Midwestern College Biology Teachers (AMCBT) in 1956, died Saturday, May 26, at his Northfield home following a long battle with cancer. He was 73.

Hansen, who taught biology at St. Olaf for more than 40 years, was awarded an honorary life membership in the AMCBT in 1984. He also was honored in 1968 with a distinguished service award by the Minnesota Academy of Science -- an organization he served for six years as a director and as president during the 1950s and early 1960s. In 1980, he was named for a distinguished teaching award by the National Association of Biology Teachers.

A pioneer in instructional television, he offered a 12-week course "The Plant World" on KTCA, Channel 2, in the station's infancy. And, in addition to teaching virtually every biology course at St. Olaf, he also served as department chair for more than 20 years, wrote numerous scholarly articles for books and journals, and invented at least one device for better teaching.

That device, constructed from wood, aluminum and glass, uses the wedge interference filter for the examination of plant pigments. It enables a teacher to demonstrate the absorption of light by chlorophyll to an entire class rather than just one student at a time.

A native of St. James, MN, Hansen was born Jan. 28, 1917. After graduating from St. James High School, he earned his bachelor's degree from St. Olaf in 1938 and immediately began his prestigious career at the college as an instructor of biology. In 1942, he left to serve in the U.S. Navy during World War II. He was attached to the First Marine Division and served 28 months in the South Pacific. He rejoined the St. Olaf faculty in 1948 after earning his Ph.D. from Iowa State University. Hansen married Leona Irene Huso in Cottonwood, MN, on Aug. 28, 1948.

He did post-doctoral work at both the University of Minnesota and Cornell University (N.Y.) while continuing his teaching and research career at St. Olaf. He was promoted to full professor in 1957 and continued teaching until his retirement in 1982. He also oversaw construction of St. Olaf's biology greenhouse and started "Green Thumb Day" on campus



-- an annual occurrence in which plants raised in the greenhouse are given away to students, faculty, staff and townspeople. That popular event, started in the 1960s, continues today.

An expert on both common and exotic plants and flowers, Hansen was named professor emeritus at his retirement in 1982 and further honored by the College in 1986 with the dedication and naming of the Harold Hansen Perennial Flower Garden near the St. Olaf Science Center.

During his career, Hansen served on many state and national science committees and directed a series of National Science Foundation institutes for high school science teachers. He also served as a judge for state, regional and international science fairs for the Danforth Foundation, of which he was an associate member since 1953. In 1962, he was a member of a six-man U.S. task force study group sent to Pakistan under the sponsorship of the U.S. State Department.

He was active in Boy Scout work in Northfield and Minnesota, was a member of the Choir and Board of Trustees for St. John's Lutheran Church in Northfield, and served as editor for the Sons of Norway newsletter. He held memberships in Phi Kappa Phi, Sigma Xi, the American Botanical Society and the National Association of Biology Teachers.

Survivors include a daughter Carol and her husband Kevin Collins of Northfield; a son Craig and his wife Kay of Apple Valley, MN; one grandson, Hugh Hansen; two sisters, Mildred Hansen Largey of Ruthven, IA; and Eunice Hansen Logan of Clinton, IA; and numerous nieces, nephews and cousins. He was preceded in death by his wife and one brother.

TWENTY THINGS I WISH I HAD KNOWN BEFORE MY FIRST YEAR OF TEACHING

Ethel Stanley
Department of Biology
Millikin University, Decatur, Illinois 62522

1. Genetic corn should not be stored in a cardboard box. (Discovering 24 naked cobs nestled in mouse droppings is a shock.)
2. When setting up the still to make distilled water overnight, do not use the daytime production rate to estimate the size of your container. (Water pressure increases at night when no one is using it. Your cup may runneth over... my carboy sure did.)
3. Nothing dead stays that way. (Stuffed birds, mounted butterflies, and even an old moose head must be checked for life. Periodic freezing, adding mothballs, and even light vacuuming are helpful.)
4. Electrical equipment must be plugged into a live outlet. (Hint: If the air conditioner has stopped running, check the circuit breaker.)
5. Blood Sweat and Tears is not just the name of an old group. (If you add Urine and Saliva to the title, this is exactly what you can personally expect to donate in prepping an A & P lab practical.)
6. Apple slices should not be used to feed the mealworm culture. (The resulting fruitfly invasion kept us hopping for a week.)
7. Power outages will only occur under two circumstances: (1) You've sacrificed frogs, isolated the sacral plexus and are ready to apply an electrical stimulus. (Substituting a mechanical stimulus while holding a flashlight is not a satisfying alternative.) (2) You are doing only microscope work in lab.
8. Even large redlegged tarantulas can negotiate a dime size opening. (Our secretary still speaks colorfully of the incident.)
9. Check puffball fungi for animal life before you try to sun dry them on your office window sill. (A mass of wriggling maggots is an upsetting sight.)
10. Overfeeding a Physarum culture and leaving an open container of rolled oats nearby is not ideal. (Plasmodia everywhere!)
11. A small, but hungry, lizard can jump a vertical foot. (Our secretary was impressed again.)
12. The pH of tapwater should always be tested. (Ours has a pH of 9.7 which has quite an effect on a phenolphthalein solution.)
13. The pH of distilled water should always be tested. (Ours is 6.2 - ditto the above effect.)
14. Biological graffiti is expensive. (Pens and pencils should be taken away before students count genetic corn, examine bone surface markings, or study anatomical models or charts.)
15. The phrase "It's snowing on the cacti again" is not an example of some weird greenhouse effect. (Our school's greenhouse sits on the south side of a building with a peaked roof that dumps melting snow and ice directly on the glass roof three stories below.)
16. The most important thing you can tell students about a physiograph when they are running an ECG is the difference between the transducer and the high gain coupler ports. (Delivering a stimulus during an ECG is not an acceptable experimental error.)
17. Mark the fresh eggs when working with both fresh and hard boiled eggs. (Our globular protein demonstration in the non-major course took on a real sense of adventure (panic?) when I casually tossed a fresh egg into a group of students.)
18. Consult the Away Game schedule before requesting a school van for a field trip. (Sad, but true.)
19. Having a new lab assistant increases your teaching load - at least initially. (A corollary to this is never teach a lab that only seniors take. Your "pool" of qualified assistants is non-existent.)
20. Getting out of the science building in your first year requires skill, organization, and luck. (Students still visibly react to my occasional presence in our liberal arts building.)

IMPORTANT DATES

**AMCBT Conference
11-13 October, 1990
Terre Haute, IN**

**National NABT Convention
7-11 November, 1990
Houston, TX**

***Please note: The last issue of Midwest Bioscene was incorrectly titled Vol. 15 (1), It was issue 16 (1). Also, there were incorrect pages numbers in the index. We apologize for any confusion or inconvenience.**

TROPICAL ADVENTURE: BELIZE

A Continuing Education class offered by Harper College, Palatine, Illinois from March 29 to April 7.

This class is a ten day study tour exploring the people, culture, and natural history of Belize, Central America. Travel remote jungle rivers, snorkel the world's second largest barrier reef, and visit Mayan ruins. Learn from local naturalists about tropical forests, mangrove swamps, and lagoons. Beachcomb and bird watch on uninhabited islands. Travel with qualified Harper College faculty to focus on an educational encounter with the nature and culture of Belize. Most accommodations include no electricity or indoor plumbing. Belize has a long tradition of stable, peaceful government dating back to its years formerly as British Honduras. The course includes two pre-trip lectures to be held from 7:00 to 9:00 pm on February 20 and 27 at Harper College. An optional snorkeling practice session in the college will also be scheduled. Cost is approximately \$1200 from O'Hare. Continuing Education credit is extra. Contact Professor Bill Andresen for more information at (708)397-3000, ext. 2523 or 2414.

Application for Membership

ASSOCIATION OF MIDWESTERN COLLEGE BIOLOGY TEACHERS

NAME _____ DATE _____

TITLE _____

DEPARTMENT _____

INSTITUTION _____

CITY _____ STATE _____

ZIP CODE _____

ADDRESS PREFERRED FOR MAILING _____

CITY _____ STATE _____

ZIP CODE _____

PHONE NUMBER _____

MAJOR INTERESTS:

- () 1. Biology
- () 2. Botany
- () 3. Zoology
- () 4. Pre-professional
- () 5. Teacher Education
- () 6. Other

RESOURCE AREAS:

RESEARCH AREAS:

Have you been a member before? _____ If so, when? _____

Mail To

Edward S. Kos

Executive Secretary, AMCBT

AMCBT Central Office

Department of Biology

Rockhurst College

Kansas City, MO 64110

CURRENT DUES ARE \$15.00