

Michigan Technological University
Academy of Sciences and Arts Dinner and Induction Ceremony
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Comments by Bruce Seely
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Opening Remarks

This evening we are here to recognize two distinguished alumni both with connections to the Department of Biological Sciences. This is not an accident, as this year marks the 50th anniversary of that department's establishment, so I'd like to spend a few minutes wearing my historian's hat and review a few points about the department's history.

The Department of Biological Sciences came into existence on July 1, 1962, with five faculty members drawn from other departments: **Robert Brown** and **Ken Kraft** from Forestry, **Jim Spain** and **Ira Horton** from Chemistry and Chemical Engineering, and **Robert Janke** from Physics. Jim Spain became the first department head and oversaw the development of a new degree in biological sciences. He also inherited an existing program in Medical Technology (officially created in 1958), and the pre-medical program also was folded into the department. Thus at the 1963 commencement ceremony, the department celebrated the first biological sciences graduate (*Susan Cross Yonker*)¹ and presented diplomas to 10

1 Two days after the induction ceremony, Susan Yonker reported by email that and her husband (another Tech grad

medical technology students.

Biological Sciences experienced a very dynamic first decade as the popularity of this major exploded. The number of students enrolled, which stood at 76 in 1962-63 grew to 594 a decade later -- 222 in bio, 192 in med tech, and 147 premed. And the number of degrees awarded climbed accordingly, reaching 49 in 1972 -- 5 in med tech and 44 in biological sciences. Moreover, the department added a nursing program in 1966 and biology teacher education in 1969. The result was the addition of steady stream of new faculty -- **Fred Erbsich** in 1963, instructor **Gloria Rall** and **Robert Stones** in 1964, **Jack Holland** in 1966, **Betzabe Allison** and **C.A. Moyer** in 1967, **John Slater** in 1969, **Eunice Carlson**, **Bert Whitten**, and **Thomas Wright** in 1970, and **Ken Kramm** and **Robert Ziegler** in 1971. A further indication of the excitement surrounding the new unit was the introduction of a Master's program in 1966, and a doctoral program in July 1970 -- thus becoming the first -- and for a long time the only -- Ph.D. to be granted from a CSA department. The initiation of graduate education despite the rapid growth in undergraduates signaled the faculty's commitment to research, in most instances focused upon ecological issues. Thus **Robert Stones** studied the hibernation of bats; **Robert Janke's** pursued an interest in Isle Royale that culminated in publication of the "Flora of Isle Royale;" **Thomas Wright** launched investigations of Torch Lake; and **Ken Kraft** conducted research on jack pine moths. These early efforts set the pattern for successive generations of faculty, including **Janice Glime** (1973 -- life-long attention to stream and bog ecology -- especially bryophytes and

in mechanical engineering) had lived in Frankenmuth, MI, for 49 years. She worked for 31 of those years as Quality Control Manager for a flour mill that produced soft white wheat flour which is used in the pie and cookie industries, supplying major companies like Kellogg's, Sara Lee, General Mills, and many others. She has been back to campus

mosses), **Bob Keen** (1977 - studies of animal plankton –specifically water fleas! - in Superior and other lakes), **Steve Bowen** (1978 - studies of lake herring), **Wilbur Campbell** (1985 - plant biochemistry and biotechnology focused on nitrogen reductase leading to several patents), **Sue Bagley** (1979 - the environmental microbiology of engine emissions, currently focused on biodiesel fuels), **Nancy Auer** (1981; tenure-track in - perhaps most recognized for her work on sturgeons, but whose aquatic ecology interests are wide and deep); **Charles Kerfoot** (1989-established LASER – Lake Superior Ecosystem Research in 1990, leading to the EEGLES [*Episodic Events- Great Lakes Experiment*] – and KITES [*Keweenaw Interdisciplinary Transport Experiment in Superior*] projects), and **Casey Huckins** (1998 - a community ecologist interested in the coaster brook trout and the reintroduction of Arctic grayling in the Big Manistee River watershed. The faculty hired over the past 4-5 years, several of whom are here this evening [**Thomas, Xiaoqing and Guilang,**] reflect every bit the same passion for research on an even wider array of topics in ecology, plant physiology, and biochemistry. It is a fitting mark of these efforts that **Jim Spain** received the university research award in 1965, **Robert Stones** in 1968, **Eunice Carlson** in 1985, **Wilbur Campbell** in 1988, and current interim chair **Shekhar Joshi** in 2011.

Equally indicative of the efforts of the department has been its commitment to teaching and instruction. Thus **Jim Spain** devoted significant attention to integrating computers and biological sciences and the authoring an introductory textbook. **Bob Brown's** long-running program of summer institutes for secondary school teachers, which secured NSF funding for the first time in 1974. And the

medical tech program launched an annual medical technology symposium in 1966, while **Jack Holland** secured HEW funds to support equipment purchases, a library, and new faculty for his program in 1972. Indeed, under Jack medical technology graduated its largest class in 1976 (83) and still enrolled about 40 students annually during the 1980s, helping to make biological sciences the largest non-engineering program on campus. Signals of excellence included **Fred Erbsich** receiving the university teaching award in 1973, **Jack Holland** in 1976, **Bert Whitten** in 1979, and **Janice Glime** in 1994. This pattern of educational activities also continued to be a hallmark of the department, as witnessed by the long-running spring-break field trip to the Bahamas that **Tom Snyder** launched in 1994 or the on-going annual Bioathlon competition for UP high schools, which also began in 1994.

As might be guessed, housing the department has been an interesting challenge. Initially faculty offices and labs were in Hubbell School and Koenig Hall, an older buildings that was used only until space was renovated in Hubbell Hall in 1965. But with rapid growth, none of this was adequate, and the transformation of the campus began with the opening of the Chemistry/Bio/Metallurgical Engineering building in 1968. The rapid growth of the department led to the inclusion of the Biological Sciences Department into the new ME-EM building, which opened in 1971. This building housed the department until the Dow Environmental Sciences and Engineering Building was dedicated in 1998. The newly dedicated Great Lakes Research Center adds vital new space for research on campus, with Bio faculty at the center of that program. But there were other buildings and facilities used by Bio faculty over the years. The greenhouse was built in 1968, for example, and ever since has fascinated students fighting the wind tunnel on those frigid January days

when the dome is covered with icicles. In 1969, a small tugboat was donated to Tech for the department's use – the first but not the last boat used by department faculty. The *Agassiz* is the most important tool at the moment -- but I think Bob Keen could add some stories about the adventures of biological scientists in small boats. Of course many faculty have spent significant time in waders working in the field. Other have different tools, as indicated by the this headline in the *Lode* in 1969 -- “Bio Department Gets Cadaver.”

This department, initially assembled from elements present on campus during the 1960s, was called into being because of the clearly increasing interest of society and students in this broad field of study. Ecology – especially related to the surrounding Great Lakes – was one of the early drivers that still remains very much in evidence, but it is not the only one. Another consistent and important thread of teaching and education is related to human health. The current CLS and biochemical research activities are intellectual heirs to this long-time programmatic interest. Today the need for this department to play a leadership role in the intellectual and research life of the campus is just as vital as it was in the 1960s – if not more so. Indeed, we can find no better evidence of why biological sciences must be a strong presence on this campus than the careers and accomplishments of the two individuals who we are inducting into the Academy of Sciences and Arts this evening. They provide clear evidence of the quality of the people and programs that have been part of the Department of Biological Sciences over the past 50 years.

Induction Ceremony

So let us turn to those individuals who explain our presence this evening.

The two distinguished graduates from the Department of Biological Sciences who are being inducted into Michigan Technological University's Academy of Sciences and Arts because they meet several criteria. They graduated from a program of the College or one of its predecessors. They most definitely have brought distinction to themselves, their academic department, the College of Sciences and Arts, and Michigan Technological University through participation, commitment, and outstanding leadership in their profession and through public service. Election to the Academy publicly recognizes our appreciation and pride in alumnae and alumni for their exemplary achievement and professional excellence. Members of the Academy now include distinguished academics, leaders of industry, members of the National Academy of Sciences, a Hollywood executive, and the University's sole winner of a Nobel Prize - Melvin Calvin (1964). An engraved plaque with a photograph of each recipient will be displayed in the Walker Arts and Humanities Center to serve as an inspiration for our current students and for our faculty and staff. Michigan Tech is committed to graduating superbly educated individuals who serve their professions, students prepared to thrive in the arenas of graduate and professional schools, and leaders who have a sense of the various influences of science, technology, the liberal arts, language, and arts on all of our lives. The members of the Academy, including the newest to be inducted this evening, have shown these qualities in their exemplary careers and lives. They are inspirational role models who provide a splendid example for all of us.

The College provides Academy members with a plaque to remember this occasion. Tonight we also honor our inductees with a beautiful, original photographic image of the Keweenaw taken by emeritus Humanities faculty member Joe Kirkish. The pictures, displayed on the easels next to the podium, are chosen because they capture the beauty of the Copper Country that surrounds Michigan Tech and which no doubt forms such a significant part of the memories of so many of our graduates.

Dr. Robert Keen, emeritus professor of Biological Sciences, introduces Gary Fehnenstiel.

It is my privilege, this evening, to honor an alumnus of our department and to induct him into the MTU Academy of Sciences and Arts. The whole department is delighted that we can recognize one of our graduates with this honor.

Gary Fahnenstiel was born in Saginaw, Michigan and has lived in the state his entire life. Gary earned his BS in Biology and Chemistry at Eastern Michigan University in 1978, but his vocation started at Michigan Technological University, where he had the chance to engage in research on Lake Superior as a MS student in Biological Sciences ('80). He pursued a doctorate at the University of Michigan ('86) and worked as a research scientist at the National Oceanic and Atmospheric Administration (NOAA).

Gary has had a long and productive career engaged in the study of the Lakes. He has published more than 130 scientific papers. The recognition he received from this research has translated into numerous opportunities to help shape the research programs on the Great Lakes by serving on numerous national and international committees. For

example, Gary served as a member of the Steering Committee for the Great Lakes Initiative of the National Coastal Ocean Program at NOAA and was associate editor of the *Journal of Great Lakes Research*. He was also a member of the Board of Directors of the International Association of Great Lakes Research and co-chair of NOAA's Coastal Ocean Program, Great Lakes Development Team. Recently Gary has been deeply involved in projects related to the impact of non-indigenous species and climate change on the Lakes. He has been the leader of the Center for Great Lakes and Human Health Harmful Algae Bloom Program, a member of the International Cyanobacteria Workshop-Organizing Committee, the Steering Committee for NOAA's Eutrophication Program, and the Organizing Committee for the National Science Foundation's Coastal Ocean Processes Program in the Great Lakes.

These efforts have prompted wider recognition of Gary's research contributions. He received the Chandler-Misener Award for outstanding scientific paper from the International Association of Great Lakes Research; the Lifetime Achievement Great Laker Award from the Healing Our Waters Coalition/National Wildlife Federation; and the NOAA National Environmental Hero Award for development and implementation of volunteer LakeWatch program.

Gary notes that without the valuable experience and education he received at Michigan Tech, his life journey would have been very different and likely less rewarding. This summer he rejoined Tech as a Senior Scientist in the newly opened Great Lakes Research Center.

Gary is here tonight with his wife Holli and son John.

It is now my great pleasure and privilege to extend the compliments and congratulations of my colleagues to Gary Fahnenstiel's distinguished career achievements and to recognize him with the induction into the Michigan Tech Academy of Sciences and Arts.

Shekhar Joshi, Interim Chair of the Department of Biological Sciences introduces Jeffrey Haskins.

It is my privilege, this evening, to honor a distinguished alumnus and to induct him into the MTU Academy of Sciences and Arts. As spokesperson for the department let me say how delighted we all are to recognize Jeffrey Haskins with this honor.

Dr. Haskins received dual BS degrees in Biological Sciences and Chemistry from Michigan Technological University in 1986. He earned a MS in Toxicology from the University of Michigan in 1988, and a PhD in Environmental Health Sciences in 1998.

Dr. Haskins professional career began in 1988 at the Ford Motor Company in Dearborn, Michigan as an Industrial Toxicologist for North American Plant Operations. He evaluated the chemical composition and assessed the safety of more than 3000 products in terms of employee exposure. In addition, he was responsible for automated software systems used in safety evaluation of paints and coatings.

In 1989, Dr. Haskins joined Parke-Davis Pharmaceutical Research in Ann Arbor, Michigan as a Senior Assistant Scientist in the Pathology and Experimental Toxicology group, where he worked on toxicology safety assessments. He also was

involved in the discovery and development of pharmaceuticals such as Lipitor, Lyrica, Nipent, Accupril and Penetrex. Shortly after the merger of Parke-Davis with Pfizer in 2000, Dr. Haskins became a Senior Research Associate in Cellular Biotoxicology with the Drug Safety Evaluation group researching the development and validation of *in vitro* toxicology assays.

In 2001, Dr. Haskins accepted a position as Senior Director of Assay Feasibility for Cellomics, Inc., a small start-up company in Pittsburgh, Pennsylvania specializing in the development of *in vitro* cell-based assays, analytical instrumentation and software. In 2003, Dr. Haskins became Vice President, Technology & Product Development and was part of the team that negotiated the sale of the company to Thermo Fisher Scientific in 2005. Dr. Haskins is currently Site Leader and Director of Research & Development for Cellular Imaging products for Thermo Fisher. His group has developed and released over 100 innovative product solutions, including integrated instrumentation platforms, stand-alone analytical and data-management software, validated cell-based assay solutions, and engineered cell lines.

Dr. Haskins actively participates in the Society of Toxicology, the International Society for Advancement of Cytometry, the American Society for Cell Biology, and the International Society for Stem Cell Research. He is author of over 125 abstracts and peer-reviewed articles. In addition, Dr. Haskins has delivered invited presentations on his research worldwide and authored multiple book chapters.

Jeff is here tonight with his wife Beth.

It is now my great pleasure and privilege to extend the compliments and congratulations of my colleagues to **Jeffrey Haskin's** distinguished career achievements and to recognize him with the induction into the Michigan Tech Academy of Sciences and Arts.

Closing Remarks by Bruce Seely:

I want to bring this evening's events to a close by reflecting for another minute or two on the nature of what we, here at Michigan Tech, and our colleagues at other universities around the world do. It is absolutely stunning to me that a recent question in popular discourse has been whether a college education is "worth it." Much of the motivation has been the cost of university attendance, although there is more to it than that. Perhaps there would be less controversy about the value of college if we all accepted the comment of Charles Babbage, the British inventor of the first mechanical calculating device and computer. *"It will be readily admitted, that a degree conferred by an university, ought to be a pledge to the public that he who holds it possesses a certain quantity of knowledge."* The challenge, of course, is how to insure that our students actually gain that "quantity of knowledge."

One biological scientists with firm thoughts about learning was Jean-Louis Agassiz, the Swiss-born academic who joined the Harvard's faculty in 1847. He has a connection to this region, begun with a visit to Lake Superior in 1848 drew him and his son Alexander into a long-term involvement with the area: Jean-Louis because of the study of glaciers and Alexander as later head of the Calumet & Hecla Copper mining operation. Thus it is not an accident that Tech's research vessel is named the *Agassiz*.

At Harvard, Agassiz introduced an approach to biology that was never forgotten by his students, as historian David McCullough explained in his 1992 book, *Brave Companions: Portraits in History*.

[Agassiz] intended, he said, to teach students to see—to observe and compare – and he intended to put the burden of study on them. Probably he never said what he is best known for, “Study nature, not books,” or not in those exact words. But such certainly was the essence of his creed, and for his students the idea was firmly implanted by what they would afterward refer to as “the incident of the fish.”

...Agassiz would ask the student when they would like to begin. If the answer was now, the student was immediately presented with a fish—usually a very long dead, pickled, evil-smelling specimen –personally selected by “the master” from one of the wide mouthed jars that lined his shelves. The fish was placed before the student in a tin pan. He was to look at the fish, the student was told, whereupon Agassiz would leave, not to return until later in the day, if at all.

Samuel Scudder, one of the many from the school who would go on to do important work of their own (his in entomology), described the experience as one life’s turning points.

“In ten minutes I had seen all that could be seen in that fish...Half an hour passed – an hour – another hour; the fish began to look loathsome. I turned it over and around; sideways, at three-quarters view – just as ghastly. I was in despair. I might not use a magnifying glass; instruments of any kind were interdicted. My two hands, my two eyes, and the fish: it seemed a most limited field. I pushed my finger down its throat to feel how sharp the teeth were. I began to count the scales in different rows, until I was convinced that that was nonsense. At last a happy thought struck me – I would draw the fish, and now with surprise I began to discover new features of the creature.”

When Agassiz returned later and listened to Scudder recount what he had observed, his only comment was that the young man must look again.

“I was piqued; I was mortified. Still more of the wretched fish! But now I set myself to the task with a will, and discovered one new thing after another.... the afternoon passed quickly; and when, toward its close, the professor inquired “Do you see it yet?”

“No” I replied, “I am certain that I do not, but I see how little I saw before.”

The day following, having thought of the fish through most of the night, Scudder had a brainstorm. The fish he announced to Agassiz, had symmetrical sides with paired organs.

“Of course, of course!” Agassiz said, obviously pleased. Scudder asked what he might do next, and Agassiz replied, “Oh, look at your fish!”

The incident of the fish marked the end of the student’s initiation. At once Agassiz became more communicative, his manner that of a friend or colleague, now that the real work could begin.

The way to all learning, “the backbone of education,” was to know something very well. “A smattering of everything is worth very little,” he would insist... “Facts are stupid things until brought into conjunction with some general law.” More important, one must become capable of hard, continuous, original work without the support of the teacher...What the student needed above all was the chance to learn to think for himself...

Merely to lecture and inspire was not enough, Agassiz preached fiercely: it was a professorial duty to investigate, discover – to collect. (pp. 24-27)

I think Agassiz’s philosophy of learning and education still resonates; I believe we see signs of his emphasis upon observation in the way our new inductees have pursued and produced good work in biological sciences, just as their faculty mentors did and our current faculty continue to do. This is only one of the many reasons why a university education – rather than the actual degree we confer -- is most definitely “worth it.”

But to fully make this point, let me share the words of Ryan Delahanty, who earned his BS in the department in 2001. He recently dropped this note to Shekhar remembering Shekhar's course in bioinformatics.

It was a great experience and had a deep impact on me. At that time, they were about to develop the first draft of the human genome... Since then the explosion in information has been enormous. I don't think anyone had predicted things like the development of the Hap Map Project, the GWAS [BES: *genome-wide association study*], the next generation sequencing, the 1000 Genomes Project, etc. Today I do cancer genetic epidemiology. I did my Ph.D. at Vanderbilt... It is an exciting time....

I hope the bioinformatics program at MTU is still going strong. The strong computer science and skill level of the students along with the focus on plant genomics provides a great combination for its students. I still use the MTU mirror to download R packages, like CVNtools, for looking at copy number variation data. When I do I always think of the school fondly.

Certainly the department should be proud for helping students like Ryan – as well as our inductees this evening – develop their careers.

I apologize for going on at such length, and appreciate your indulgence this evening. This event always shows me ways how the past, the present and the future are firmly linked. My thanks go to our newest members of the Academy for joining us this evening and for enriching the experience for all of us – and for reminding us of the long-term commitment and activities that reach from them to us and through our students into the future. We are so proud of what you have accomplished. My thanks as well to our special guests, and to the faculty and the chairs for attending and making this another special evening. It has been a memorable time – and I

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hope an inspirational one as well. Please be safe in your travels home this evening.

Good night!