

UNIVERSITY OF MAINE
COLLEGE OF ENGINEERING

James and Maureen Gorman
Emeriti Faculty Brunch

Is Proud to Present

PAUL CAMP'S
WORLD OF
ICE AND
SNOWFLAKES

A retrospective of the remarkable career and personal perspectives of master educator and physicist extraordinaire.



Saturday, October 16, 2010

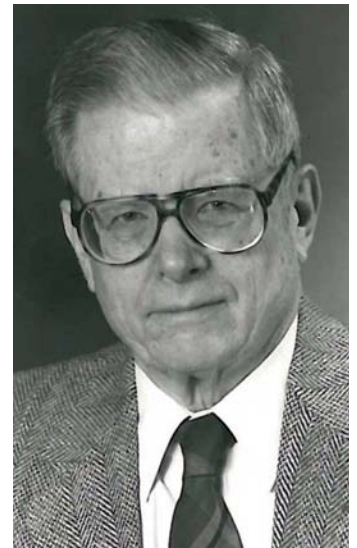


Welcome to the 2010
James and Maureen Gorman
Emeriti Faculty Brunch

Honoring
PAUL CAMP

Professor and Chair
Physics and Astronomy Dept.

1967 to 1996



Ten years ago, UMaine Engineering began what has become one of our most enjoyable traditions - celebrating the remarkable career of one of our own distinguished emeritus faculty members during Homecoming weekend.

- 2000 - Mechanical Engineering - *Dick Hill Pajama Party*
- 2001 - Electrical Engineering - *Showtime with Mac Libbey*
- 2002 - Civil Engineering - *George Greenwood's Cowboy Roadshow*
- 2003 - Chemical Engineering - *Bill Ceckler, Confessions of an Engineering Outdoorsman*
- 2004 - Engineering Physics - *Jerry Harmon, the Physics of Subjective Reality*
- 2005 - Mechanical Engineering - *John Lyman, No Jokes Required*
- 2006 - Electrical Engineering - *Carleton Brown's Three Ringed Circus*
- 2007 - Engineering Technology - *Karl Webster, Super Engineer*
- 2008 - Civil Engineering - *Wayne Hamilton, First Associate Dean*
- 2009 - Chemical Engineering - *Kim Mumme, The Renaissance Man*
- 2010 - Engineering Physics - *Paul Camp's World of Ice and Snowflakes*

This year, we are delighted to be topping off our ten year tradition by celebrating the career of one of the Department of Physics and Astronomy's finest, Professor and Chair Paul Camp. *The World of Ice and Snowflakes* was chosen as Paul's theme to pay homage to his passion for all solid forms of water, the surface growth of ice and his beloved snowflakes! "Ice is interesting," Camp said. "It's the water that is interesting of course, because the water molecule is the one without which we wouldn't be."

In the photos of ice formations and snowflakes we see both the science and the art in what Paul describes as the "art form of ice physics". Contributions tell tales of Paul stringing wire around his bed to electrocute his cousins, as well as stories involving radio nuclides, ice cream and two slices of cheesecake. Most importantly, Paul is remembered by all as a great teacher, mentor and friend who has had a major impact on their success.

We are honored to celebrate the career of Paul Camp with all of you. As you will read in this booklet, Paul is much loved and respected by his students, colleagues, and friends. Thank you for helping us honor one of our best!

Dana N. Humphrey, Ph.D., P.E.
Dean of Engineering



A Member of the University of Maine System

For Paul Camp

Following the long reign of Dr. Bennett as chairman of the Physics Department would surely have been a particular challenge to anyone, particularly for someone from away. Paul handled the responsibility beautifully. He never appeared to have a problem in persuading the faculty and staff to carry out their departmental duties. He also had a special talent for inducing us to look at our peripheral activities as well, as the enclosed letter he wrote to us clearly demonstrates.

How could we resist? *

We wish you the best of luck in all you do.
Thanks for everything!

Jerry

* No spouses were solicited in the preparation of this letter.

Dear Colleagues:

Again this year, I have been asked to distribute the United Way materials. I participate in the United Way drive myself because I believe it is both more efficient and less time consuming than having fifty different organizations send people out to ring my doorbell at dinnertime to ask for my meager support. (If we must indulge in Good Works, let us do so with dispatch and get it over with quickly).

Whatever philanthropic vices you may have, would you briefly look over the enclosed materials? If you wish to contribute to U.W., you may send your form in directly or, if you prefer, put it in an envelope and thence into my mail box. I will send a bunch on together. As have I, some of you may have spouses who are solicited elsewhere (somehow that doesn't sound quite right) and you may wish to split your gift. (It gets worse and worse). Some may be participating in other communities. Some may have the strength of character to resist Every Good Impulse.

Whatever your situation, I do think it is a worthwhile enterprise and urge you to support it here or elsewhere. I would be glad to try to answer any questions you may have.

Sincerely,



Paul R. Camp

My brother, Paul Camp, is 6 and ½ years older than I. Hence, his memory is older than mine, but does that make it more accurate? Let me tell you about our early days.

I loved my brother very much and after I learned to walk, I followed him EVERYWHERE. Paul taught me a great deal – even the Morse code. He allowed me to hang out with him a great deal of the time, but, occasionally, when his baby sister's annoyances proved to be too much for him, (I wasn't interested



in crystal sets and vacuum tube radios) he resorted to electrifying his door knob and, from time to time, his bed.

I was an energetic kid, he liked to ponder things. I am still energetic, for my age, and he still likes to ponder things. He became a solid state physicist and I became a physical therapist. I guess our early years could have predicted that. We still love each and enjoy each other's company and I am sorry not to be there today.

Margie Schwartz

Sister

We remember a playful cousin who was forced by his own young cousins to ride the Staten Island Ferry three times in a row to get the smell of cheap perfume out of his naval uniform. The uniform had been doused by the young boys as retribution for Paul's stringing wire around his bed with a lettered sign saying "He who wakes me up will be instantly electrocuted".

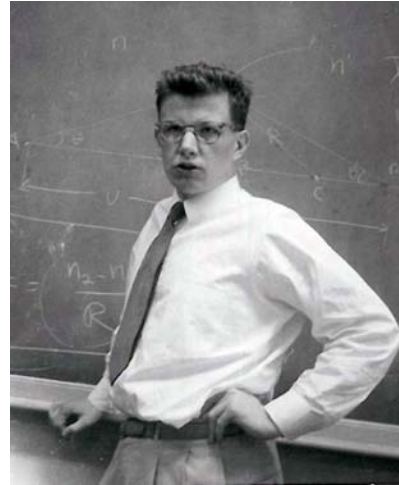


We celebrate with you many years of Paul's teaching and researching at Orono and salute our cousin.

Rachel and Tom Sheridan

Cousins

In the late forties there was a general expansion of college staffs and facilities. The war was over and veterans were striving to compensate for delayed schooling. It was at that time that Paul Camp arrived at the Polytechnic Institute of Brooklyn as a newly hired Asst. Prof. of Physics. Paul made a favorable impression. He was well groomed, friendly, always smiling, articulate and direct. His actions appeared to express and eagerness to "get started."



He accepted his modest office space gracefully as well as his course and committee assignments. He immediately reorganized a senior laboratory course assigned to him. He participated in committee assignments with quick and pertinent comments. One of the committees to which he was assigned was that which advised the president. In connection with his library interests, he brought up what he considered to be an approaching problem, - namely, the storage and retrieval of data. This was before there were any significant discussions internally. In short, he became actively involved in ways to participate in department problems. He was a definite asset to the department.

Paul's association with students was friendly and fair, but firm and disciplined. With the staff, he was considerate, respectful, friendly and eager to be of assistance. Paul was thorough and meticulous, whatever his nature. Writing letters of recommendation was common to junior and senior level course instructors. For most, this was considered a chore and perhaps they were not as accurately written as they might have been. Paul realized that these letters would be very helpful to research supervisors, and he exercised great care in writing them. He evidently felt that honesty demanded this of him.

On a personal level - I felt that my life was enriched by my association with Paul. Although he left after about a decade, we remained in contact. I was a guest at his home on many occasions and was treated most kindly by Paul and his wife, Polly. For this, I am forever indebted to them. The department regretted his leaving, but for personal reasons, he chose to carry out his research at the sponsoring government agency - Cold Regions Research Laboratory at Hanover. Subsequently, he accepted the Physics chairmanship at the University of Maine.

The aforementioned brings back cherished memories.

Walter Kiszewick

Assoc. Prof. of Physics, Ret.

To be a true friend is a special inborn quality of the human heart (that is where love resides) and once turned on it lasts forever.

In 1955, after serving in the Army, I returned to Graduate School at the Polytechnic Institute of Brooklyn to do research on the Ice Project. There I first met Paul, who was my Mentor and became my friend. The environment and studies there helped to build the molecules of later achievements. So, I look fondly back to the times when together we were young and enjoyed the opportunities to do basic research.

After my graduation Paul continued the studies of Solid Water, the greatest asset for life on our planet and it is still a dear topic to him. At Poly, (now the Polytechnic Inst. of NYU) Paul was teaching Modern Physics and was Professor on the faculty of eminent Professors as: Paul P. Ewald, Rudolf Brill, Peter G. Bergmann, and Helmut Juretschke to mention some. In recent years, Betty and I enjoyed side trips to Orono to visit with Paul and Polly after attending Gordon Conferences at Colby. However, time does not appear to be uniform and seems to make jumps. We wish we could hold it still a bit some times.

So, we send our Best Wishes for Good Health and Happiness.

Fred and Betty Feuersanger

We first made the Camp's acquaintance in the fall of 1968, when Paul hired Al as Assistant Professor of Physics. We have been privileged to maintain a warm friendship ever since.

Paul and Polly introduced us to a style of treating employees which has been of great benefit to both of us over these many years. The department faculty became sort of an extended family to them. We fondly remember the many social gatherings at the Camp home. Polly entertained with such style and grace! This style made a huge impression on Donna, and she has emulated it in many situations over the ensuing years.

Paul was responsible for beginning the transformation of the Physics Department into what it is today - a strong department with an excellent balance between teaching (both in Engineering Physics and in Physics), research, and service. I recall that he sparred with the Dean to find \$300 in research start up funds for each new faculty member. The amount sounds so tiny by today's standards, but within the culture of the day it was a significant step.

The aspect of Paul's style which most stands out to me is his command and use of the English language, both oral and written. His sharp pen was responsible for improvements in many a thesis, technical paper, and proposal. His ability to frame an argument, based usually on non-quantitative points, amazes me to this day. Especially coming from a physicist! We recall many faculty meetings where some hapless department chair (often in the humanities) was subjected to his withering assaults. On a softer side, there was his touching eulogy read at the memorial service for Dean Ed Reid.

Of course there was a negative side to all this for the physics faculty. Paul's love of such discourse meant that we were subject to long discussions (monologues!) which seemed to never end. As usual, the faculty coined a verb for such behavior (probably it was Ken Brownstein). We were being "Camped"! Thanks for the many wonderful memories and for the chance to reminisce.

We wish Paul and Polly many more happy years!

Al and Donna Clark

In the late 1960s I spent two years as acting dean of the College of Technology. Paul, as head of the Physics Department, was a major contributor to both the department head's meetings and the faculty meetings. As I presided over my last faculty meeting Paul read into the record a "Sense of the Faculty Resolution" Thanking me for the work I had done as Dean, and acknowledging my role in the growth of the College. Paul will never know how grateful I was for that elegant thought, and how pleased I am to have this opportunity to thank him. .

Richard C. Hill

Dir. Emeritus, Dept. of Industrial Coop.

To my old buddy and Wesleyan friend, Paul, Congratulations, Fond Memories, and Best Wishes from your fellow Eclectic, Wally Hussong. Catherine joins me in wishing you the best and hope you are still making those beautiful snowflakes!

Wallace and Catherine Hussong

Congratulations on this day of recognition for all of the great things that you did for our Department and our students during your many years of service here at UMaine! I am personally very excited that you are being honored at the 2010 James & Maureen Gorman Engineering Faculty Emeriti Luncheon, and at the same time I am disappointed that I cannot be present at this event today.

Of course, I am a 'new guy on the block,' having arrived at Maine in 1988, so my memories of you do not go back all that far. However, from my start here, I very much appreciated how you participated so enthusiastically in the work and life of the department: from teaching, to committees, to faculty meetings, to department picnics.

I know from Clarence Bennett's Department History that you came to UMaine to lead the creation of our PhD program, and that effort clearly resulted in a huge set of new opportunities for our Department. Much of our current exciting research and valuable teaching efforts would be impossible without the cohorts of excellent PhD students progressing through our program.

We today have over 30 PhD graduate students (and about 10 Masters students), one of the largest graduate programs on campus.

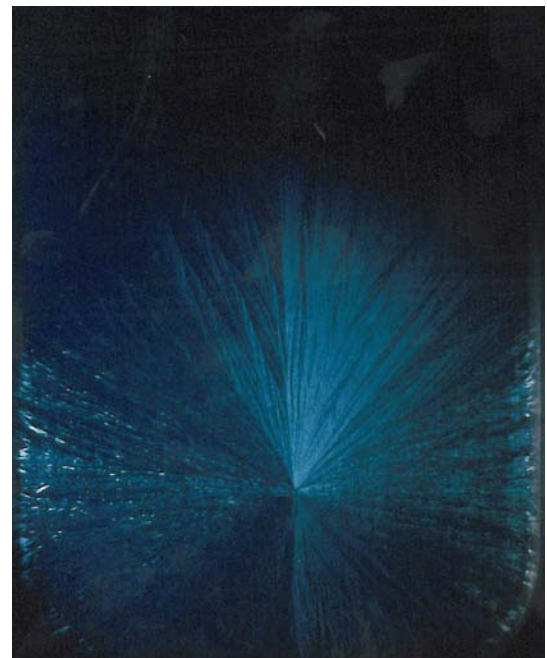
When I arrived 22 years ago and took over the Quantum and Atomic Physics course, you shared with me the carefully organized and thorough course lecture materials that you had assembled. I was inspired to do things as similarly as I could. I also remember stopping by your office several times to talk over such concepts as spin-orbit coupling among the electrons in an atom, to ensure that I understood well enough to discuss these topics in class. I thank you for your mentoring of this young faculty member. And thank you for ALL your great efforts on behalf of the hundreds of students who learned so much from you in the courses you taught here at UMaine. What I learned from you in taking over that course told me that your students were very well-taught!

Thanks very much, Paul, for these and all the other ways you cheerfully contributed to the work and play of UMaine Physics. And thanks for all that ice cream (especially the chocolate) at the annual department picnics!

Your friend always,

David Batuski

Chair, Astronomy and Physics Department





I feel honored to be gathering today to celebrate your accomplishments here at the University of Maine. Your many years of service to the Department of Physics can't be listed as a number. Instead, enjoy the many stories that your colleagues will recollect.

When I first came to the Department, I was the clerk typist. Sorry to say, that I found your handwriting very hard to read! But because I typed so many papers about ice and snowflakes,

I learned the terminology and was able to decipher some of your squiggles quite well and could fill in the words I couldn't quite read!

One thing that I will always remember is your annual contributions to the Department picnics. There was always a blue ice chest filled with ice cream! Sometimes the Maine weather in September was a little to cool for ice cream, but the treat was always enjoyed by all.

Thank you for all you have done over the years to make this department what it is today.

Your friendship will be valued for years to come.

Sincerely,

Pat Byard

Administrative Assistant

Astronomy and Physics Department

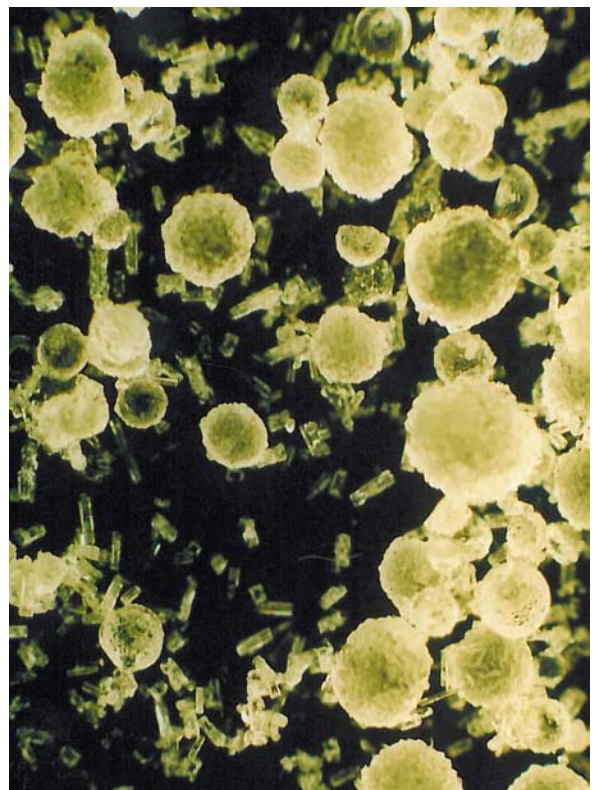
Paul, as you may remember, we first met in the Spring of 1970 when I visited the University of Maine on an interview trip. Due to your influence as Head of the Department of Physics and Astronomy not only did I join the department but also secured a house to rent for the first year our family spent in Orono. This was especially helpful to a family with a small child and another on the way.

Over the years you have provided welcome professional advice and guidance. Your fair-handed treatment of everyone when you were Head, as well as your stalwart defense of faculty rights and your dedication to the university throughout your tenure on the faculty, have impressed me. You have striven to establish a collegial environment in our department welcome to all and that feature has continued to this day. You can also take pride in the success of the department's graduate PhD program which was begun under your direction and is thriving today.

I speak for Terri and myself when I say that we both value the friendship we have enjoyed with you and Polly over the past 40 years. Although we are unable to be with you at this luncheon we are toasting you in absentia.

Rich Morrow

Professor Emeritus





Congratulations, Paul on being chosen the 2010 Honoree for the James and Maureen Gorman Emeriti Faculty Brunch.

Often, on occasions of this type, the honoree is “roasted” by his colleagues. But you and your career have been recognized so many times throughout your years at the University of Maine, that I consider your roasting days sufficient to declare, by now, that you are well done. Instead I would like to comment on two contributions to the Department that I feel were very valuable to its development.

FIRST Your initial major role as a new faculty member and Department Chair, starting in 1967, was to form the experimental component of our recently approved Ph.D. program, while at the same time balancing that effort with the maintenance and nurturing of our well regarded undergraduate B.S. program in Engineering Physics. To this end, five experimentalists were hired (four in 1968 and one in 1969). It was your idea, which in the end proved absolutely correct, that each hire should be a specialist in a different area of physics (semiconductor materials, magnetic resonance, low temperature physics, optics of solids and nuclear physics) and that each hire come from a strong pedagogical background, and have a serious interest in teaching.

This combination assured an exciting range of senior projects and graduate thesis projects, and a core of new teachers that could instruct at both the undergraduate and graduate level. This is exactly what the Department needed and I view it as your major gift to the University of Maine.

I believe I met you for the first time in the early 1970s when we both served on Chancellor McCarthy’s “Faculty Liaison Committee.” I’m sure you remember, that as soon as McCarthy understood that some of the faculty members on the committee intended to offer opinions and advice instead of just listening to the wisdom flowing forth from the chancellor and his staff, McCarthy disbanded the committee. You and I decided to protest and while we were fine-tuning our letter, you made a comment I still remember clearly. “When faculty members are making an argument to higher administration they only have a very small pop gun so it needs to be aimed very carefully if it is to do any good.”

Over the years I have found that to be true and have seen many of my shots bounce harmlessly off their intended administrative targets but I have tried to follow your advice and aim as carefully as possible before firing. A few shots may have even done some good.

I have always looked up to you as an exemplary model of what a college faculty member should be - honest, reasonable, fair, careful while forming opinions, and respectful of the opinions of both students or faculty members.

I have enjoyed working with you over the years both on campus issues as well as occasionally making minor contributions to your research. I have also enjoyed our, too infrequent, social interactions and always found you with interesting ideas and a sharp sense of humor.

John Alexander
Professor Emeritus



SECOND I have always been impressed by your broad range of interests about the natural world, both basic and applied. I will mention only a few projects but I am sure I have left out some.

Since for many years, your laboratory was next to mine in the basement of Bennett Hall, I was able to get a glimpse of some of the things that interested you.

1. Ice physics was a major interest for many years. You are the only person I know that had a small machine shop inside a chest freezer, including a band saw and drill. Shaping single crystals of ice in preparation for measurement was a necessary step in your experiments.

2. You are also the only person I ever knew who had a snowflake spectrometer. As you recall, it was a small building (so you could go inside and take pictures) with a roof slit and parallel plates that separated positive, neutral and negative flakes. As it turns out, throughout a snow storm, flakes are produced with different shapes (rods, blades, plates, etc.) and have various net charge values. These flakes fell in different areas in the spectrometer and their distribution and shapes could be photographed.

3. Measuring down: that is, as in up - and - down, not goose down. With a very sensitive AC impedance bridge and a physical pendulum capacitor of your own design, you could monitor the gravitational vertical direction. As I recall, you could observe the period of the moon and the daily variation of the earth-tide. Even when these changes were taken into account, there were still other background changes taking place. Very interesting stuff!

4. After reading about a construction site tragedy in which a large cooling tower collapsed because the concrete was not allowed to cure sufficiently before the next layer was poured, you put that AC impedance bridge back to work. This time it was used to measure the dielectric constant of concrete. The dielectric constant is related to how water molecules in the concrete are chemically bound as the concrete cures. It was your idea that by correlating the dielectric constant with the physical strength of the concrete, the construction management people on-site would have additional information about the

state of the structure. This project is a great example of engineering physics. You and your students teamed up with Professor John A. Alexander and his students in Civil Engineering. Your group made capacitors with concrete between the plates and sample cylinders and the civil engineers measured breaking strength for different curing times. I don't recall what the overall results of this study were (perhaps you can add some margin notes to this letter), but what impressed me was the overall balance you showed as a physicist at a publicly supported university, a leader of a non-traditional engineering program and a colleague with very original ideas.

There are several other projects.... Something about how water droplets splash into smaller droplets again and again, reflection characteristics of highway signs under various weather conditions, optimizing snow and ice removal from highway and runway surfaces, and the list goes on. However, the point to be made here today is that this year's Emeriti Honoree has made a career of special contributions to the University of Maine and Engineering Physics.

Congratulations, Paul.

Best Regards,

Charles W. Smith

Emeritus Professor of Physics
(and one of the "Original Five")



You actually hired me when I was an assistant professor from my post doc at Florida State University. Thus I must be careful what I say about you since you had such a big effect on my future. I remember in the early 70s, you did research with a large blue container with army stenciled on the back sitting out in the physics parking lot. The container was unheated and had a hole in the top for collecting snow. Inside the container was an electric field plate which would deflect positive and negative snowflakes. This snowflake mass spectrometer was used to detect charge and mass of snowflakes. Some of the snowflakes with an sprayed and photographed. We thought about trying to measure lead 210 and other radio nuclides on the snow at that time as well. When people visited they would ask what's the blue box out there in the parking lot?

A second area of research that you used was a very sensitive pendulum and the capacitance bridge. As the pendulum would move, it's capacitance relative to the plate would change slightly. Thus the pendulum became a very sensitive measure of down. Slight changes due to the tides, heavy trucks, or even pressing on the table would change the capacitance slightly. As you watched the capacitance reading, you could see the slight changes over time.

You always brought a large cooler full of ice cream to our annual fall picnic, which became the favorite dessert for students and faculty at the picnic. You were a regular at attending picnics and always would bring the much appreciated dessert.

When you were a chair you organized senior projects for students by assignment of the faculty. Each faculty member would be assigned three or four students for their senior project and was responsible for the progress of those students.

This was a very good way to run the senior project course and made the students always have good dedicated faculty member in the beginning. One of my students was trying to measure the weight of lobsters on a scale. This proved to be difficult because the lobsters would try to escape and shake the scales.

You were very thrifty with physics money so that if a faculty member would ask for support few thousand dollars for a new piece of equipment you would say "well I did my whole PhD dissertation for only 200 bucks when I was a student". Hence we would be told it was too large an amount of money no matter what we asked for.

These are a few of the things which I remember about your work as a chairman as a colleague in the physics department.

Sincerely yours,

C.T. Hess

Professor of Physics

When I was a senior undergraduate in Engineering Physics, the Physics department gave me the opportunity to publish my senior thesis as an abstract in the Bulletin of the America Physical Society (APS) and to present the work in session at a regional APS meeting. At that meeting, I attended my first professional society banquet.



At the banquet, Professors Csavinsky and Brownstein mentored me in the proper techniques for acquiring the maximum quantity of food and wine for the table. Apparently they considered this an important survival skill for prospective graduate students.

During the course of the meal, a server appeared behind us with a tray of cheesecake, the evening's dessert. Visibly excited, Brownstein and Csavinsky exclaimed "Cheesecake!" in unison. Collecting my serving of cheesecake along with their own and several others, they asked our server to take the cheesecake to the table where Professor Paul Camp sat. Brownstein and Csavinsky then sat, waving at Prof. Camp and eagerly awaiting what I could only assume would be a signal of thankful recognition when the cheesecake arrived.

Eventually I got an explanation for the cheesecake ritual. It had to do with a department meeting that occurred while Prof. Camp was department Chair. One item of business at that meeting was a meal expense account turned in by Prof. Csavinsky that included two servings of cheesecake. Obviously, I wasn't at that department meeting, but I believe there are members of the Physics department who can provide eyewitness accounts.

After this experience, cheesecake became my favorite dessert.

Dan Martin

EPS '76

I met Paul Camp when I was an undergraduate student in the Physics program. Paul was one of the professors who recommended me for the Masters degree program and was my Thesis advisor. So Paul believed in me and this has had a positive impact on my life.

I have kept in touch with Paul over the years and he has become a good friend. At one time I was going through the process of making some career decisions and this involved some paperwork which I sent to Paul for his input. Paul was kind enough to call me and give me his perspective and advice which turned out to be sound and correct.

I remember when I was a student Paul's office was like no other. He had the conventional desk and book cases filled with books but he also had a nice rug on which there was a rocking chair and a floor lamp. I would always sit in the rocking chair whenever we discussed technical issues related to the thesis work.

Paul and I published a paper from the thesis data we took on Portland Cement Paste. Paul's in depth understanding of this complex substance and writing ability impress me every time I read the paper. To this day whenever I have to write a report or give a presentation I use this paper as a template.

So in closing I am pleased to be able to honor Paul for the positive impact he has had on me and the Students and Faculty at UMO and look forward to many more years of good friendship.

Steve Bilotta

PHY '82, G '86



The James and Maureen Gorman Faculty Emeriti Brunch

October 16, 2010

Honoring

Paul Camp

Engineering Physics

Thank you to all of the alumni, faculty, staff, friends, and emeriti of the UMaine College of Engineering who contributed to this book to honor Paul Camp.



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economic future*

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