

TRAVELS NOW AND THEN

© Christopher Earls Brennen

LAKE TAHOE 1994

Trip to Lake Tahoe 1994

Invited lecture at ASME Symposium on Cavitation and Gas-Liquid Flows in Fluid Machinery and Devices, Lake Tahoe, 1994.

d'Auria, F., d'Agostino, L. and Brennen, C.E. (1994). Linearized dynamics of bubbly and cavitating flows in cylindrical ducts. ASME Cavitation and Multiphase Flow Forum, 1994, FED-194, 59-66.

Wang, Y.-C. and Brennen, C.E. (1994). Shock wave development in the collapse of a cloud of bubbles. ASME Cavitation and Multiphase Flow Forum, 1994, FED-194, 15-20.

Liu, Z. and Brennen, C.E. (1994). The relation between the nuclei population and the cavitation event rate for cavitation on a Schiebe body. Proc. ASME Symp. on Cavitation and Gas-Liquid Flows in Fluid Machinery and Devices, FED-190, 261-266.

McKenney, E.A. and Brennen, C.E. (1994). On the dynamics and acoustics of cloud cavitation on an oscillating hydrofoil. Proc. ASME Symp. on Cavitation and Gas-Liquid Flows in Fluid Machinery and Devices, FED-190, 195-202.

Bhattacharyya, A., Acosta, A.J., Brennen, C.E. and Caughey, T.K. (1994). Rotordynamic forces in cavitating inducers. Proc. ASME Symp. on Cavitation and Gas-Liquid Flows in Fluid Machinery and Devices, FED-190, 1-10.



Bodie Ghost Town, California



Bodie Ghost Town, California



Pelton Wheel, Bodie Ghost Town



Tuolumne Meadows, Yosemite



Tuolumne Meadows, Yosemite



Tuolumne Meadows, Yosemite



Tuolumne Meadows, Yosemite



Yosemite National Park





Mount Lassen, Lassen Volcanic National Park



Mount Lassen, Lassen Volcanic National Park



Mount Lassen, Lassen Volcanic National Park



Lassen Volcanic National Park



Lake Tahoe

[Back to table of contents](#)

*Last updated 7/30/99.
Christopher E. Brennan*

TRAVELS NOW AND THEN

© Christopher Earls Brennan

IRELAND 1994

Fri./Sat. Jul.22/23, 1994
Flew UA934 from LAX to LHR
Flew BD82 from LHR to Belfast



London, Houses of Parliament



London, Tower Bridge



With Mills in Lisburn



With Mills in Lisburn and St.Patrick's grave, Downpatrick



Portstewart strand with Michael Brennan's family

Sat. Aug.6, 1994

Flew JY403 from Belfast Harbor to Birmingham



In Welford with the Anderson family

Wed. Aug.10, 1994

Flew UA935 from LHR to LAX

[Back to table of contents](#)

*Last updated 7/30/99.
Christopher E. Brennan*

THE TENTH SEMI-OCCASIONAL

SOPS BANQUET

MAY 26, 1994

ATHENAEUM

SCHEDULE OF EVENTS

6:30 - *No host reception in the Athenaeum Library*

7:15 - *Dinner in Main Dining Hall*

Salad du jour

Chicken medallion with apple & almond
dressing and champagne sauce

Vegetable du jour

Raspberry Parfait

Coffee/Tea

8:30 - *Entertainment*

1. Professor Brennen - monologue

2. Staff skit

3. Al Moser - 'Life After Caltech'

4. Grand Prize winner

5. SOPS TV

Awards/gifts to SOPS members and friends

will be made between the various presentations

Michael D. Brennen, F.R.C.S.
Plastic and Hand Surgery

40 Deramore Drive,
Malone Road,
Belfast BT9 5JR
Telephone 669150

MRS MURIEL M. BRENNEN

LUNCHEON TO CELEBRATE
HER 80th BIRTHDAY

AT

GALGORM MANOR
136, FENAGHY ROAD,
GALGORM, BALLYMENA.

SUNDAY 27TH MARCH
1.00pm

MUM, PAULA, and IRENE

(1)

Woodlands.

Dear Chris,

Maeve is v. friendly with Dorothy Madden + took the photos to show her. She was really thrilled that you had kept it & took the trouble to look up this Programme etc to send you.

Margaret Burch (Calwell) sent me this testimonial of May's - I thought you would be interested in it - perhaps

(3) Chairman of Medical Staff Committee

Irene has just gone home + I shall be taking a quiet rest - when she is here we talk so much + I try to make better meals than the usual for myself + Paula!! My birthday seems to have been going on for a while! so I want to get back to my usual quiet life. I don't suppose I shall be in time to get an



**Bannside Unit
of Management**

Mid-Ulster Hospital
59 Hospital Road
Magherafelt, BT45 5EX
Telephone: (0648) 31431
Fax: (0648) 34078

Easter Card to
Happy Easter
to you all

(2)

that is where you got your talent for writing?

J-Smith was a v. distinguished Prof. + May herself was v. proud of this T.M.

Mike gave me a wonderful party on Sunday + all the young ones were there (Natasha, who has exams. flew over for the day.)

It was a lovely place with a river + waterfall in the ground + the meal was delicious.

December 1994

activities to a minimum: a Hawaiian language class, some tutoring in physics — that's about all. I often think back to my Caltech and student gov't experience, though — working with you as Dean was always a pleasure and an inspiration. Thank you again for being such a positive influence during what I consider to have been the most valuable years of my life thus far.

I hope that the new year holds wonderful things for you and your family! With luck, I'll be able to see you and say hello when I visit Tech this year.

Much Aloha, Michael A. Nassir

Dear Dr. Brennen,

Sincerely wishing you

...a warm...

Mele Kalikimaka

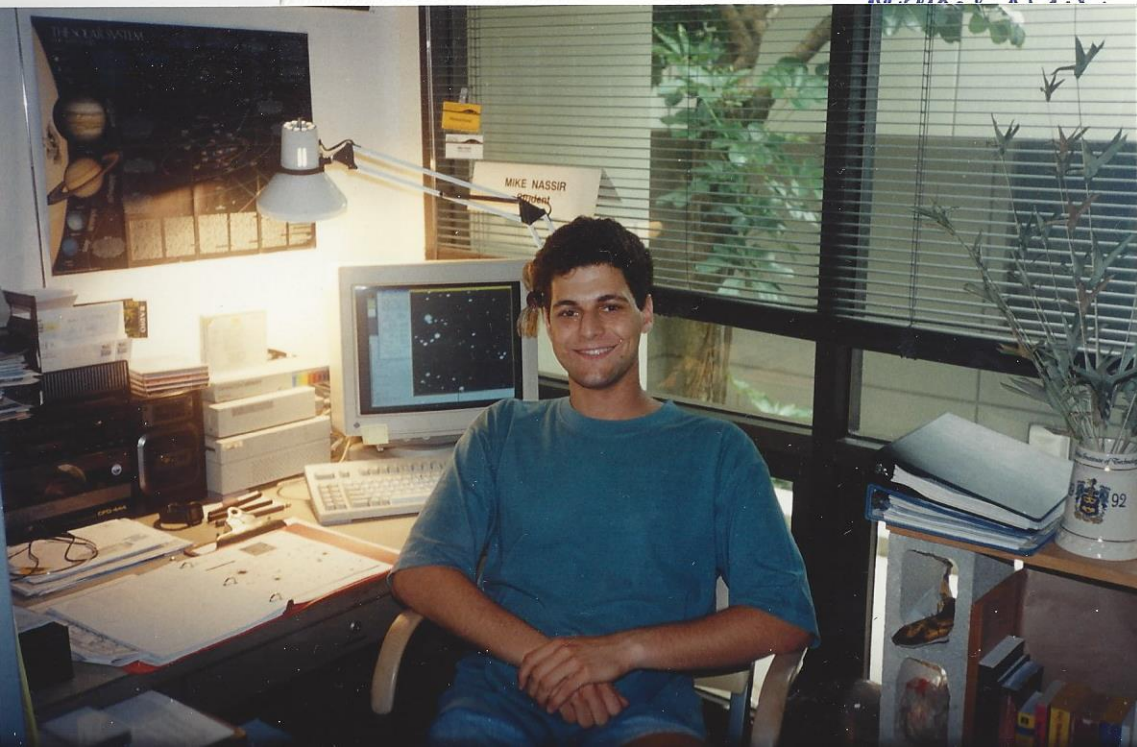
MERRY CHRISTMAS

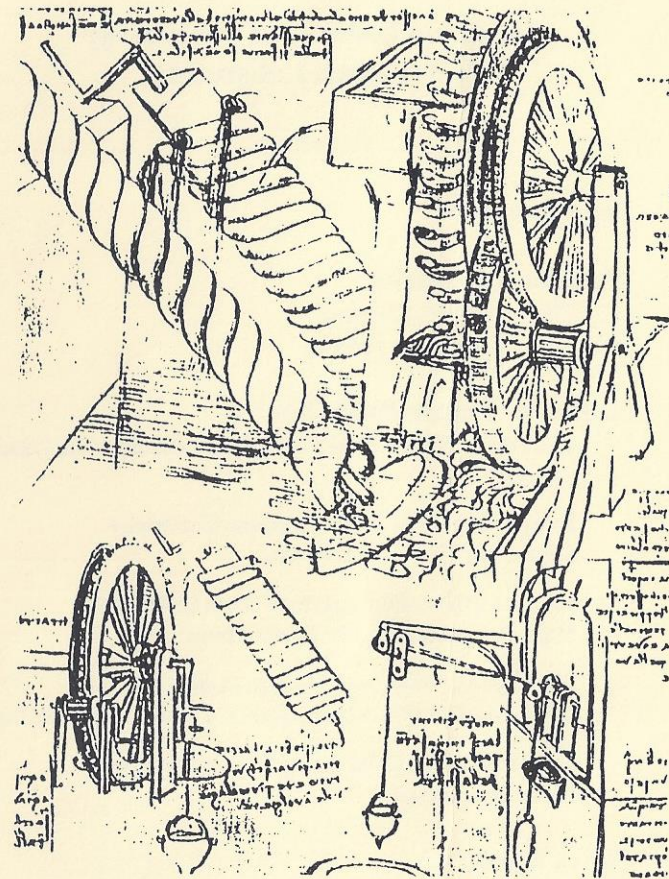
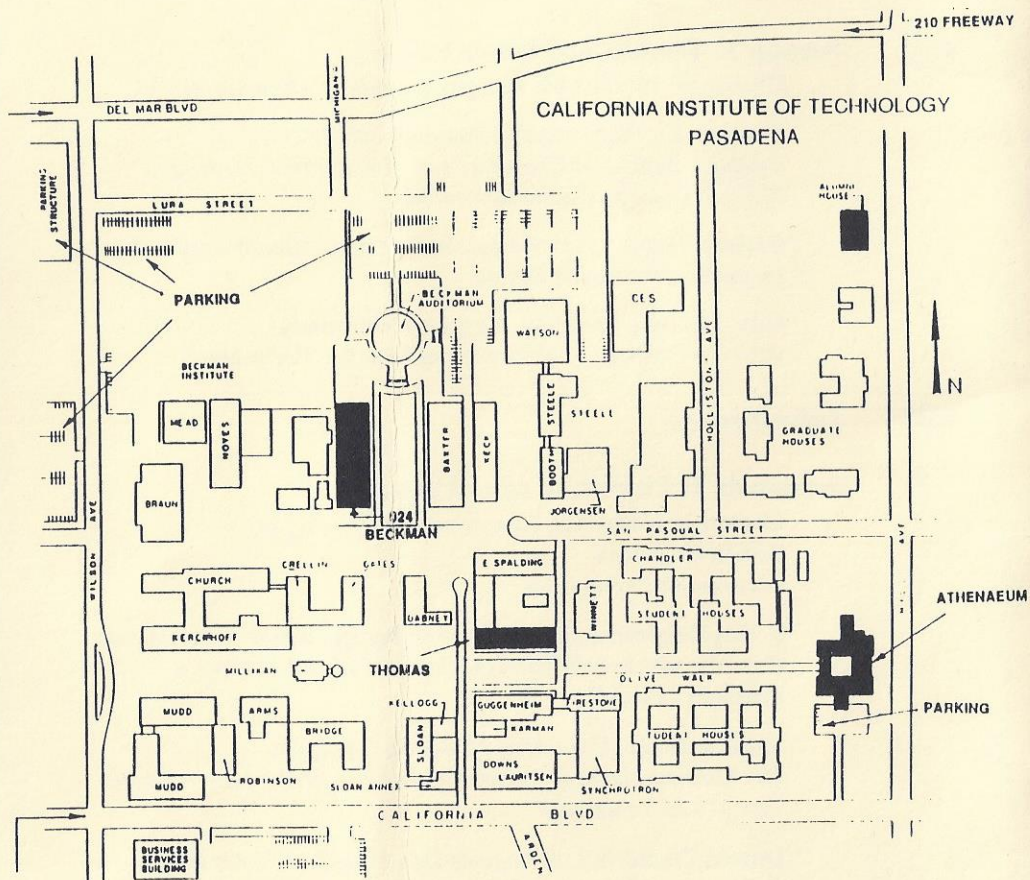
Me Ka

Hauoli Makahiki Hou

HAPPY NEW YEAR

I'm now in my 2nd year of astronomy grad school at Univ. of Hawaii, and lately the workload has really become challenging. But there is still much that I enjoy both at school and in Hawaii in general. However, astronomy has been demanding enough that I have tried to keep my outside ↙





Allan J. Acosta Symposium
California Institute of Technology
Pasadena, California
June 18, 1994

**Symposium in Honor of
ALLAN J. ACOSTA**
**California Institute of Technology
24 Beckman Laboratory**

Program

8:00 Registration

8:40 Welcoming Remarks

Christopher E. Brennen
Paul C. Jennings, Provost

9:00 Session 1: Pumps Pianissimo

Chairman: Blaine Parkin, Pennsylvania State University
(retired)

Joseph Katz, The Johns Hopkins University
Sources of Noise from Pumps

Michael Billet, Pennsylvania State University
High Reynolds Number Pump Flows

Paul Cooper, Ingersoll Dresser Pumps
CFD Analysis of Complex Internal Flows in Centrifugal Pumps

Norbert Arndt, BMW Rolls Royce, Germany
To be announced

10:20 Coffee Break

10:40 Session 2: Pumps Fortissimo (and Other Bangs)

Chairman: C. Samuel Martin, Georgia Institute of Technology

Kenjiro Kamijo, National Aerospace Laboratory, Japan
Development of LE-7 Lox Turbopump for H-2 Rocket

Ray DeLong, TRW
Megawatts to Microwatts

Luca d'Agostino, University of Pisa, Italy
*From Cavitation to Electric Rocket Propulsion:
The (Research) Wanderings of a Caltech Alumnus*

Jong Kim, EPRI
A Few Words

12:00 Lunch

Grassy area between Thomas and Guggenheim Laboratories

1:30 Session 3: Bubbles and Other Music

Chairman: William M. Morgan, Carderock Division, NSWC

Timothy J. O'Hern, Sandia National Laboratories
*Bubbles, Eggs, and Creatures -- A Holographic Study of
Natural Oceanic Cavitation Nuclei*

Richard Wade, Science Applications International Corporation
Inspecting the Ocean Bottom

Hideo Ohashi, President, Kogakuin University
Whirl to Precision -- A History of Impeller Force Study

3:00 Refreshments

3:20 Session 4: Is There Life After Caltech?

Chairman: Edward G. Hauptmann, University of
British Columbia
Chairman's Prerogative

S. Gopalakrishnan, Byron-Jackson Pumps, BW/IP International
*Carnatic Music and Western Classical Music: Is there a
Common Ground?*

Sheldon Green, University of British Columbia
*The Lure and Love of British Columbia -- or Why Allan Should
Visit Me In Vancouver*

Dimitri Chamieh, Los Angeles Department of Water and Power
Reflection of Life After Caltech

Douglas P. Hart, Massachusetts Institute of Technology
Why Boats Sink!

5:00 Closing Remarks

Elmer Ward, ABLE Corporation

6:00 Informal Dinner in the Garden of the Alumni House

BUENAS DIAS.

BON JOUR

BUON GIORNO

GOOD MORNING, GUTEN MORGEN. (ITALIAN). OHIOGO ZAI MASS.

IT IS, OF COURSE, A VERY GREAT PLEASURE FOR ME TO WELCOME ALL OF YOU - SOME WHO HAVE COME FROM A VERY LONG WAY AWAY - TO THIS SYMPOSIUM IN HONOR OF MY VERY GOOD FRIEND AND LONGTIME COLLEAGUE ALLAN ACOSTA. IT WILL COME AS NO SURPRISE TO MOST OF YOU, FOR ME TO TELL YOU THAT

IT IS ONE OF THE

GREATEST PLEASURES OF MY ACADEMIC CAREER TO HAVE HAD THE CHANCE TO WORK CLOSELY WITH ALLAN ON MANY RESEARCH PROJECTS OF MUTUAL INTEREST.

THERE ARE A NUMBER OF REASONS WHY OUR RELATIONSHIP PROSPERED FROM THE BEGINNING. ONE IS THAT WE SHARE A GREAT LOVE OF TEACHING IN BOTH THE FORMAL ARENA OF THE CLASSROOM AND IN THE INFORMAL ARENA OF GRADUATE INSTRUCTION. IT IS THEREFORE ONE OF THE DELIGHTS OF TODAY'S FESTIVITIES THAT WE ARE ABLE TO SEE AGAIN SO MANY OF OUR FORMER STUDENTS. ANOTHER REASON IS THAT ALLAN AND I SHARE A SENSE OF ADVENTURE AND PLAIN FUN NOT ONLY IN THE BUSINESS OF SCIENCE BUT ALSO ON THE HIGH SEAS AND IN THE MOUNTAINS. FOR THAT REASON WE TRIED TO PUT TOGETHER A PROGRAM FOR TODAY'S ACTIVITIES THAT HAS SOME SCIENCE, SOME ENGINEERING, SOME MUSIC AND SOME FUN. I HOPE YOU WILL ENJOY YOURSELVES.

AND NOW LET ME INTRODUCE YOU TO THE CURRENT PROVOST OF CALTECH AND ANOTHER MUTUAL FRIEND FROM THE THOMAS BUILDING, PROFESSOR PAUL JENNINGS WHO WILL SAY A FEW WORDS ABOUT TODAY'S ACTIVITIES AND ABOUT TODAY'S HONOREE. BEFORE HE WAS LURED AWAY TO BECOME PROVOST PAUL JENNINGS WAS AND STILL IS A WORLD RENOWNED EXPERT IN THE FIELD OF EARTHQUAKE ENGINEERING. IN 1985 HE BECAME THE CHAIRMAN OF THE ENGINEERING DIVISION AND IN 1989 WAS FURTHER ELEVATED TO BECOME THE XXTH PROVOST AND VICE-PRESIDENT OF THE CALIFORNIA INSTITUTE OF TECHNOLOGY. PAUL IS ALSO A FLYFISHERMAN PAR EXCELLENCE AND A FELLOW MOUNTAINEER. EXCEPT I DON'T THINK HE EVER GOT LOST. IN ANY CASE, IT IS MY GREAT PLEASURE TO TURN THE PODIUM OVER TO PROFESSOR PAUL JENNINGS

Handwritten note: *Handwritten signature/initials*

THANK YOU PAUL. THERE ARE A FEW ANNOUNCEMENTS BEFORE I INTRODUCE THE CHAIR
OF OUR FIRST SESSION THIS MORNING:

THE CHAIRMAN OF OUR FIRST SESSION IS KNOWN TO VIRTUALLY ALL OF YOU. A GRADUATE
OF CALTECH, MORE IMPORTANTLY A GRADUATE OF THE HYDROLAB, BLAINE PARKIN'S
THESIS IN 1952 REMAINS ONE OF THE MOST IMPORTANT MILESTONES IN CAVITATION
RESEARCH FOR IT WAS HE WHO FIRST IDENTIFIED AND ANALYZED THE IMPORTANT
SCALE EFFECTS WHICH OCCUR IN CAVITATING FLOWS. BLAINE WENT ON TO A MOST
DISTINGUISHED CAREER AT RAND, CONVAIR AND THEN AT PENN. STATE WHERE HE WAS
THE DIRECTOR OF THE APPLIED RESEARCH LABORATORY UNTIL HIS RECENT RETIREMENT.
IT IS A GREAT PLEASURE FOR ME TO WELCOME BLAINE PARKIN.

CALIFORNIA INSTITUTE OF TECHNOLOGY

Pasadena, California 91125

Thomas E. Everhart
President

(818) 395-6366
FAX (818) 449-9374

June 10, 1994

Professor Christopher Brennen
360 Olive Tree Lane
Sierra Madre, California 91024

Dear Professor ^{Chris}Brennen,

I am pleased to notify you that your salary for the academic year 1994-95 has been increased to \$132,000 effective October 1, 1994.

With this change in salary, the Institute's contributions to your benefit programs will be adjusted. These adjustments will be reflected in the statement of benefits that you will receive later in the year.

As President, I am keenly aware that the quality of our faculty is the cornerstone of the reputation of our distinguished institution. This salary increase is a small attempt to recognize the importance of your contributions to the Institute.

Sincerely yours,



Thomas E. Everhart

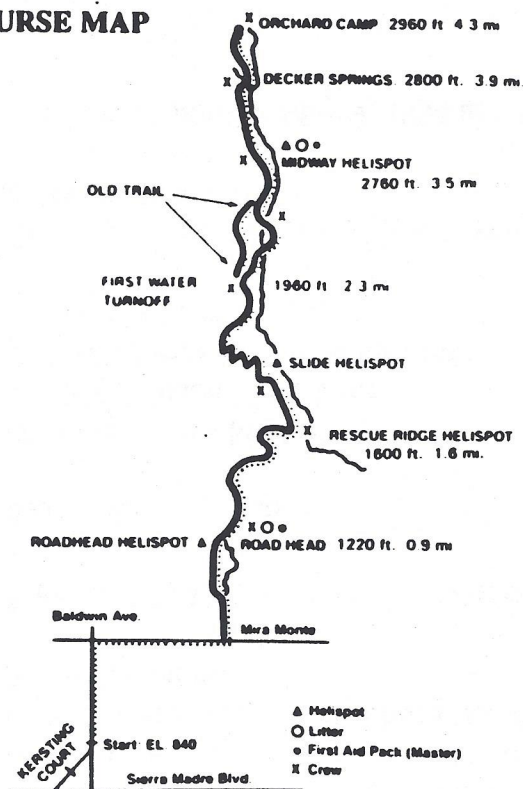
CAUTIONS

Dehydration is the worst problem that a runner may face during this event. It is recommended that participants prepare properly by consuming adequate and appropriate fluids as part of their training. Runners with a sensitivity to bees are advised to be cautious, as there is at least one resident hive near the two mile marker.

AWARDS

Awards will be presented to the first overall male and female finishers as well as the first three finishers in each age category. The first three Sierra Madre resident male and female finishers will also be awarded.

COURSE MAP



Direction of course to be determined by trail conditions. The upper trail was used in 1992.



28TH ANNUAL MT. WILSON TRAIL RACE

Saturday, May 28, 1994

Memorial Day Weekend

ENTRY FEE: \$24.00

Presented by:
City of Sierra Madre
Department of Parks and Recreation

Volunteer Mt. Wilson Trail Race Committee
Co-Chair, Rob Stockly
Co-Chair, Nan Carlton

For Information:
Michelle Keith
232 W. Sierra Madre Blvd.
Sierra Madre, CA 91024
(818) 355-7135

HANSEN'S

REGISTRATION

PRE-REGISTRATION ONLY: No race day registration. The race is limited to 300 entries on a first come, first serve basis. Packets, including race number are issued at check-in on race day. **NO REFUNDS.**

Entry fee: \$24 with T-shirt, \$20 without T-shirt.

Make checks payable to:

"City of Sierra Madre"
c/o Mt. Wilson Trail Race
232 W. Sierra Madre Boulevard
Sierra Madre, Ca 91024

Send a self addressed stamped envelope to receive entry confirmation.

Deadline: Monday, May 9, 1994 at 5:00 p.m.

TIME

The race begins at 7:30 a.m. sharp. Check in time is from 6:30 - 7:15 a.m.

WHAT RUNNERS WILL RECEIVE

- 100% natural cotton T-shirt (optional)
- Hansen's Natural Fruit Juice, Calistoga Mineral Water and fresh fruit at finish line.
- Massage service by certified volunteers.
- Search and Rescue Team support, including helicopter evacuation if necessary.
- First aid support by Sierra Madre Volunteer Fire Department.
- Race results will be mailed to each participant.

EARLY BIRD REFRESHMENTS

The Sierra Madre Main Street Chamber of Commerce will be selling donuts, muffins, coffee & juice for family, friends and spectators of the Trail Race participants. Service begins at 6:30 a.m.

COURSE

The race starts on pavement, uphill, to a dirt path no more than three feet wide. It features an elevation gain over 2100 feet in approximately 4.3 miles to the turn around point at Orchard Camp. Most of the race takes place on the established Mt. Wilson Trail where some sections have vertical drop offs of several hundred feet. All emergency support will be deployed at strategic points along the course to give any necessary aid. Local boy and cub scouts will provide water at two locations: The 2.3 mile marker, and the turn around point. See map for details.

MT. WILSON TRAIL RACE

19

DEL010

360 Olive Tree Lane
Sierra Madre
California 91024
U.S.A.
Sept.15, 1994

Dear Marjorie,

It was with very great sorrow that I learnt of Cecil's passing and, while I was not able to attend his memorial service, I want you to know that I was certainly there in spirit. Since we had relatively little contact in recent years, you may not fully realize what Cecil meant to me. So I hope you will bear with me as I unburden myself.

On one level, Cecil was and always will be my greatest hero. His legendary exploits during the Second World War were indeed the stuff of myths and of heroes. When I was younger I would boast to all who would listen of his military heroics. It was not until later that I came to understand the pain, doubt and ambivalence which any such experience must leave in the soul. And yet somehow that only made him a greater hero, because of the way in which he summoned the resolve and the strength to dedicate his life to serving others. To doing what he could to relieve those scars in other souls from conflicts both public and private. Having tried in a much more minor way to help in the healing of souls, I now have some small appreciation for the strength of character and goodness which that implies.

But there were other dimensions in which Cecil holds a special place in my heart. At an uncertain time in my life many, many years ago, he reached out to me in a way in which no-one else could or would. He served as a touchstone as I made that awkward transition from childhood to young adulthood. It seemed extra-ordinary to me that someone of such legendary proportions could possibly care about an ordinary country kid like me. And yet in doing so he gave me a sense of self-worth that served me the rest of my life. Cecil's patience and understanding therefore filled a very important need during an important time in my life.

As with all such relationships, there are random moments which remain forever imprinted in the memory. I vividly recall Cecil trying to

teach me to play the zither he had recently purchased. I think the place was the student rooms he was then occupying somewhere near Queens. As with many such recollections, the memory is more of a special feeling than any sequence of events. For me, the feeling was one of a special bond which took me beyond the dimensions of my previous existence.

And so I feel that I was greatly privileged to have known my uncle Cecil. His memory will always be with me and, in ways that I may only dimly perceive, his lessons will always guide and help me. Moreover, I know that he must have touched countless others in similar ways. I hope that, in the midst of your sorrow, it is at least some comfort to recognize that he lives on in so many ways.

With very deepest sympathies,

Christopher Earls Brennen

Recognize that
he lives on in so many ways.

With very deepest sympathies,

Christopher Earls Brennen


```

\documentstyle{letter}
\begin{document}
\address{360 Olive Tree Lane \\
Sierra Madre\\ California 91024
\\ USA \\CIT Tel: 818-395-4117 \\CIT Fax: 818-568-2719 }
\signature{C.E.Brennen}

\begin{letter}{Douglas Hart\\Garrett Reisman}

\opening{\null}

Here is my tentative plan for our January expedition:

\begin{itemize}
\item
{\bf Sunday, Jan. 8.} Fly to Mexico City, check into a moderate hotel
and perhaps do a little sightseeing.

\item
{\bf Monday, Jan. 9.} Visit the Archeological Museum in Mexico City and
the pyramids at Teoti.... Stay a second night in Mexico City.

\item
{\bf Tuesday, Jan. 10.} Travel to Amecameca and then on up to the
saddle at Paso de Cortes and on to Tlamacas (3950m). Stay in the
Vicente Guerrero Lodge (need reservation).

\item
{\bf Wednesday, Jan. 11.} Rest and acclimatization day at
Vicente Guerrero Lodge area.

\item
{\bf Thursday, Jan. 12.} Climb Popocatepetl starting before sunrise and
returning to the Vicente Guerrero Lodge for the night.

\item
{\bf Friday, Jan. 13.} We could return home on this day or we could rest
on this day and take a climb on Iztaccihuatl on Saturday, returning home
on Sunday.

\end{itemize}

Let me have your thoughts. When we come to some agreement I will contact
Francisco Avila-Segura and seek his help with the arrangements.

\closing{With best wishes,}

\end{letter}
\end{document}

```

\documentstyle{letter}
\begin{document}

From fas@iimtemix.unam.mx Mon Oct 31 13:44:06 1994
Return-Path: <fas@iimtemix.unam.mx>
Received: from mazatl.iimtemix.unam.mx by piccolo.cco.caltech.edu with SMTP
(8.6.7/DEI:4.41) id NAA16586; Mon, 31 Oct 1994 13:43:49 -0800
Message-Id: <199410312143.NAA16586@piccolo.cco.caltech.edu>
Received: by mazatl.iimtemix.unam.mx
(16.7/16.2) id AA08697; Mon, 31 Oct 94 11:44:07 -0700
Date: Mon, 31 Oct 94 11:44:07 -0700
From: Francisco Avila Segura <fas@iimtemix.unam.mx>
Apparently-To: brennen@accord.cco.caltech.edu
Status: RQ

Dear Dr [Brennen](#), Here you have some information about your reservations.

The [vicente guerrero](#) lodge is also called the [Tlamacas](#) lodge ([albergue de Tlamacas](#)) It seems to me that most of [tjhe](#) people knows it by the second name.

I wont be able to make any reservation until this [thrsday](#), since the people in charge are on [vacagtion](#), however, [sombody](#) whose sister is a friend of mine and who claims the [popocatepetl](#) and the [ixtaccihuatl](#) on regular basis has told me that there is never a problem for room there, in any case I will call them on [thursday](#) to find out. This guy also tells me that the claiming of the [ixaccihuatl](#) is the most beautiful one, so I think your idea for [saturday](#) in your [temptative](#) program is a good one.

About accommodation in [mexico](#) city I have in mind a couple of options , though there must be hundred of possibilities,, one is 'Hotel el [Diplomatico](#)', the other is some sort of family [bussiness](#) called [Casa Gonzalez](#)'.

El [Diplomatico](#), has been used for visiting professors at the university, perhaps some 35 minutes from it, and about the same time to the [Museo Nacional de Antropologia e Historia](#). It is about 70 [usd](#) double occupancy.

[Casa Gonzalez](#), is very close to Angel de la [Independencia](#) monument, this is located in [Reforma Av.](#), about 15 min from the museum. A friend of mine from LA was there and told me that it was good, it serves meals if you want. The price of this is about 27 double occupancy, tough I have to make sure th
, and
it looks like a private house. I would prefer to try this one myself.

I will try to find out about other options and let you know. Your idea about doing the national museum ... and [teotihuacan](#) both the same day is very [chalengig](#). You [coud](#) go early to [Teotihuacan](#) so that you get there about 10 am (the [timemost](#) of the stuff opens). This is one of the most interesting places and one of the oldest too, but 3 hrs should be more than enough. There are two big places there. One has the pyramids of the sun and moon and the palace of [quetzal-papaotl](#), the other is the "[ciudadela](#)" where the pyramid of [quetzalcoatl](#) is located. The two places are at each end of the '[calzada de los muertos](#)' (road of the dead) which is very long (2km, about) and hard to walk (have to go up the stairs, down the stairs , up and down many times). Get suntan lotion with protection 40 because you always get sun burn, bad one.

This was [suppossed](#) to be a short message, [thogh](#) I ended up with a long one. [hopfully](#) you will get this as I am looking at it, because some time the [eraseer](#) key [doesnt](#) word and you get [somthing](#) impossible to read!!

In any case I will send a fax, later on.

Best regards,
Francisco.

PD. I know you are very fond of archaeology, there is a new magazine in [mexico](#) about [mexican](#) archaeology very interesting. Lately , there has been a lot of money for archeology and there is a lot of work going on all over. In my home state, another colossal head has been rescued. This belong to the mother [culturecalled Olmeca](#) it was made in XII to IX before [christ](#). In fact [teotihuacan](#) is [suppossed](#) to have been built by [olmecs](#).

\end{document}