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平成22年4月6日

大学院工学系研究科

松本 洋一郎

殿

東京大学山上会館

責任者



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22.4.06

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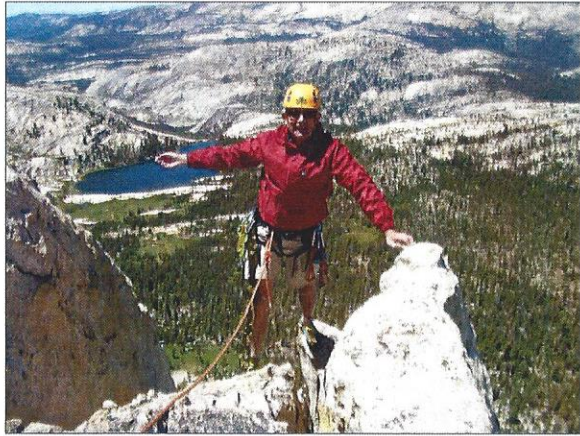
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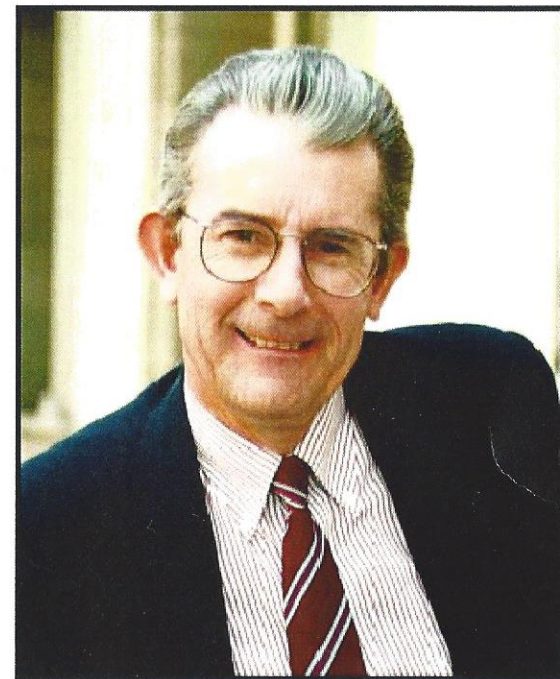
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*Christopher E. Brennen was born in Northern Ireland and educated at the University of Oxford. In 1969, he arrived at Caltech on a Fulbright Scholarship, and subsequently held several research positions. In 1976 Chris was appointed to the Caltech faculty, and in 2005 he was named the Richard L. and Dorothy M. Hayman Professor of Mechanical Engineering. Over his 45 years of research, he has investigated many areas of fluid mechanics, including turbomachinery, cavitation, and multiphase and granular flows. He has received many engineering awards and was recently recognized as an Honorary Member of the Japan Society of Mechanical Engineers and a Fellow of the School of Engineering at the University of Tokyo. A prodigious writer, he authored several books, including *Hydrodynamics of Pumps*, *Fundamentals of Multiphase Flow*, and *Cavitation and Bubble Dynamics*. Chris' tenure at Caltech is also marked by a deep dedication to the quality of education and support for our students. He is the only Caltech faculty member to have served as Master of Student Houses, Dean of Students, and Vice President of Student Affairs. Along the olive walk in front of Dabney House sits a wooden bench with the inscription, "The Dean Brennen 'Remain Calm' Bench." In 2005, Chris received the Feynman Award for Excellence in Teaching.*

## SYMPOSIUM HONORING PROFESSOR CHRISTOPHER E. BRENNEN

March 19, 2010  
California Institute of Technology



SYMPOSIUM HONORING  
PROFESSOR CHRISTOPHER E. BRENNEN

Lees-Kubota Auditorium



Program

9:15-9:30	Opening Remarks
9:30-10:00	<b>Joseph Katz</b> (MS '78, PhD '82) <i>Complex Flow Structure and Turbulence within Turbomachines</i>
10:00-10:30	<b>Yoshinobu Tsujimoto</b> (MS '77, PhD '77, Osaka University) <i>Suppression of Cavitation Instabilities in a Turbopump Inducer by Using a Circumferential Groove</i>

\* \* \* \*

10:30-11:00	<i>Refreshments – Dabney Gardens</i>
-------------	--------------------------------------

\* \* \* \*

11:00-11:30	<b>Steven L. Ceccio</b> (MS '86, PhD '90) <i>Inception and Dynamics of Vortex Cavitation</i>
-------------	---

11:30-12:00	<b>Charles S. Campbell</b> (MS '78, PhD '82) <i>Computer Simulation of Granular Flow</i>
-------------	---

12:00-12:30	<b>Garrett E. Reisman</b> (MS '92, PhD '97) <i>Adventures in High Places</i>
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\* \* \* \*

12:30-1:30	<i>Lunch – Dabney Gardens</i>
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\* \* \* \*

1:30-2:00	<b>Tricia Sur</b> (MS '94, PhD '99) <i>Spray Generation by Bow Waves</i>
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2:00-2:30	<b>Yoichiro Matsumoto</b> (MS '74, PhD '77, University of Tokyo) <i>Bubble Cluster in Ultrasound Field</i>
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2:30-3:00	<b>Clarence W. Rowley, III</b> (MS '96, PhD '02) <i>Taming Fluids: in Simulations, and in the Field</i>
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\* \* \* \*

3:00-3:30	<i>Refreshments – Dabney Gardens</i>
-----------	--------------------------------------

\* \* \* \*

3:30-4:00	<b>Douglas P. Hart</b> (PhD '93) <i>From Caltech Peak to Gangkhar Puensum and a Few Bumps In-Between</i>
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4:00-4:30	<b>Roberto Zenit-Camacho</b> (MS '93, PhD '98) <i>Bubbles, Particles and a Few Other Things I Learned from C.E. Brennen</i>
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\* \* \* \*

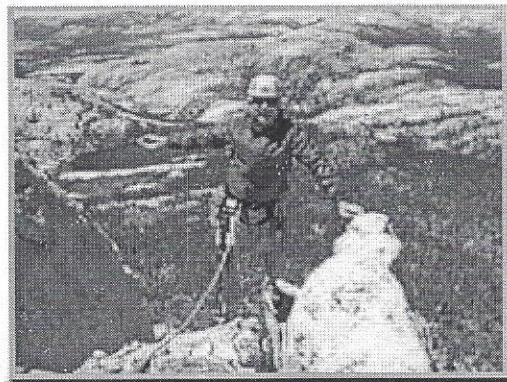
6:00	<i>Cocktails and Dinner - Athenaeum</i>
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[Home](#)[Event Schedule](#)[Speakers and Topics](#)[Travel and Accommodations](#)[Contact Information](#)[Registration](#)

## Symposium Honoring Professor Christopher E. Brennen

### Event Schedule



Time	Description/Location
8:00-9:15 a.m.	<b>Registration and Continental Breakfast</b> <i>Dabney Gardens</i>
9:15-9:30 a.m.	<b>Opening Remarks</b> - Lees-Kubota Auditorium
9:30-10:00 a.m.	<b>JOSEPH KATZ</b> (MS '78, PhD '82) <i>Complex Flow Structure and Turbulence within Turbomachines</i>
10:00-10:30 a.m.	<b>YOSHINOBU TSUJIMOTO</b> (MS '77, PhD '77) <i>Suppression of Cavitation Instabilities in a Turbopump Inducer by Using a Circumferential Groove</i>
10:30-11:00 a.m.	<b>Refreshments</b> <i>Dabney Gardens</i>
11:00-11:30 p.m.	<b>STEVEN L. CECCIO</b> (MS '86, PhD '90) <i>Inception and Dynamics of Vortex Cavitation</i>
11:30-12:00 p.m.	<b>CHARLES S. CAMPBELL</b> (MS '78, PhD '82) <i>Computer Simulation of Granular Flow</i>
12:00-12:30 p.m.	<b>GARRETT E. REISMAN</b> (MS '92, PhD '97) <i>Adventures in High Places</i>
12:30-1:30 p.m.	<b>Lunch</b> <i>Dabney Gardens</i>
1:30-2:00 p.m.	<b>TRICIA SUR</b> (MS'94, PhD '99)

***Spray Generation by Bow Waves***

2:00-2:30 p.m.

**YOICHIRO MATSUMOTO** (MS '74, PhD '77)  
***Bubble Cluster in Ultrasound Field***

2:30-3:00 p.m.

**CLARENCE W. ROWLEY, III** (MS '96, PhD '02)  
***Taming Fluids: in Simulations, and in the Field***

3:00-3:30 p.m.

**Refreshments**  
***Dabney Gardens***

3:30-4:00 p.m.

**DOUGLAS P. HART** (PhD '93)  
***From Caltech Peak to Gangkhar Puensum and a Few Bumps In-Between***

4:00-4:30 p.m.

**ROBERTO ZENIT-CAMACHO** (MS '93, PhD '98)  
***Bubbles, Particles and a Few Other Things I Learned from C.E. Brennen***

6:00 p.m.

**Cocktails and Dinner**  
***Athenaeum***

Division of Engineering and Applied Science

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Thanks so much  
for two fantastic terms!

Denny Schinas

Thank you for two wonderful  
terms. We will really miss  
having you as our professor.  
Christine Fuller

Thanks so much! *Your class was amazing*  
I hope you spend the *Best ME Class!*  
rest of your time in Caltech *- Ryan Newton*  
with good memories! *- Tyler*

- Sang Ha Shin

Thank you for  
instilling in me a  
passion for  
fluid mechanics!!  
- Troy

PROF BREUNEN,  
YOU MADE BEING A  
TA FUN!

- Nick

Thanks for everything!  
- Eric F.

Thanks for the great  
class Professor. I  
enjoyed every minute  
of it, and I'll miss  
not having you next  
term.  
- Paul Suffolter

Thanks for teaching  
in this year! It's  
been really fun going  
to your lectures.  
You're the best lecturer  
I've seen at Caltech,  
and it will be sad  
to see you go.  
- Suzanna

Thank you for teaching us!  
You've made the class awesome!  
[esp yr stories!!] Hoï Yee Nam.

Thanks for teaching us.  
Your stories are really  
entertaining. - Sachith Rautinga

By far your class  
has been the best  
one here. Thanks  
for doing such a  
great job  
Peggy Allen

Thanks,

The class was one  
of the best taught here.  
- Colin

Thanks for  
doing such a  
great job teaching  
me 19  
- Lal

Thank you for the  
great classes. We will  
miss you.  
- Alex Smith

Thank  
you!

*[Signature]*

Thank you for this  
wonderful class!  
Edward Huang  
2/15/10

Thank you for  
your hard work!  
We'll miss you!

*[Signature]*  
Fang

Thank you!  
And we wish  
you the best!  
We love you!  
- Dylan Lee-

Thanks! Your class was  
really awesome!  
- Gerardo Morabito

Thanks for  
teaching fluid mech!  
It was interesting and fun.  
Excellent class!  
Faith

Thanks!!  
Allison &  
Sarah

Thank you for  
2 great terms!  
I am so glad  
I was able to  
be in your class  
- Stacy

Thank you for  
teaching us a  
wonderful fluids  
class! These 2 terms  
have been interesting  
& exciting  
- Brian Mok

Thanks for the  
greatest class.  
Really loved  
fluids!!  
- Cole

Thank you for your  
enthusiasm & dedication to our  
class. It has been a real pleasure  
having you as our professor this year.

Der Brenner,  
You're the best. Best wishes,

Kai  
2011

ME19 students, 2009-2010

Thank you for teaching  
us fluid. You make the  
class really interesting  
we will miss you  
long

It has been a pleasure  
TA'ing for a legend.  
All the best in the  
future. Cheers Jeff  
Hanna





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Attendance List - Brennen Symposium			
Name	Yes/No	Name of Guest	Number
Acosta, Allan J.			
Adkins, Douglas R.			
Ahn, Hojin			
Alaama, Vanya Katharine Earls (Kathy)	Yes	Troy & Payton (grandchildren)	3
Ando, Keita	Yes		1
Antonsson, Erik K.			
Arndt, Roger E.A.	Yes	Jane Arndt	2
Behnken, Robert	Yes		1
Bell, Lon E.	No		
Bernier, Robert J.	Yes	Wife	2
Bhattacharya, Abhjit			
Bhattacharya, Kaushik			
Blake, John R.	No		
Blanquart, Guillaume			
Brady, John			
Braisted, David M.			
Brennen, Barbara Ann	Yes		1
Brennen, Dana Michelle	Yes	David Shannon	2
Burdick, Joel	Yes	Donna Burdick	2
Campbell, Charles S.	Yes		1
Ceccio, Steven L.	Yes		1
Chameau, Jean-Lou	No		
Chamieh, Dimitri			
Colonus, Tim	Yes		1
Cummings, Suzette			
d'Agostino, Luca	No		
d'Auria, Fabrizio	Yes	Susan Paulsen	2
Duttweiler, Mark E.	Yes	Christine Pajak	2
Geer, Cheryl			
Green Volckmann, Barbara	Yes	David Volckmann	2
Greer, Julia			

Name	Yes/No	Name of Guest	Number
Grubbs, Robert H.			
Guinzburg, Adiel	Yes	Sandi Silverion Hurtado	2
Hart, Douglas P.	Yes		1
Hill, Finbar and Carmel			
Hostler, Stephen R.			
Hsu, Yun			
Huang, S.L.			
Hunt, Melany	Yes	Bruce Drolen	2
Japikse, Dave			
Jaroux, Belgacem "Jery"	Yes	Need name	2
Jennings, Paul	Yes	Missy Jennings	2
Katz, Joe	Yes		1
Kizilbash, Imran			
Koeper, Maria			
Kuhn de Chizelle, Yan			
Kumar, Sanjay			
Kytomaa, Harri K.			
Lapusta, Nadia			
Liu, Zhenhuan			
Lorden, Gary A.	Yes	Louise Lorden	2
Matsumoto, Yoichiro	Yes		1
McKenney, Elizabeth	Yes		1
Miskovish, Scott	Yes		1
Morgan, James J.			
Murray, Richard	Lectures only		
Nguyen, Tanh V.			
Oey, Kiam T.			
Ooi, Khoon	Yes		1
O'Rourke, Robert L.	No		
Ortiz, Michael			
Oseguera, Carolina			
Pearce, James C.			
Perry, John	Yes	Nicole	2
Phillips, Rob	No		

Name	Yes/No	Name of Guest	Number
Pickar, Ken			
Poer, Randi	Yes	Marilyne Grant	2
Prosperetti, Andrea	No		
Ravichandran, Guruswami	No		
Reisman, Garrett E.	Yes		1
Rico, Leslie			
Rosakis, Ares			
Rowley, Clancy	Yes		1
Sabersky, Rolf			
Savage, Stuart S.B.			
Sette, Troy	Yes	Susan Sette	2
Seymour, Lynn			
Shannon, David Michael	With Dana Michele		
Shepherd, Joe			
Silva, Chris	Yes		1
Smith, Scott			
Stolper, Edward M.	Yes, unsure re banquet		
Sur Waniewski, Tricia A.	Yes		1
Tai, Yu-Chong			
Thorpe, Caroline	Yes	Dale Hansen	2
Troian, Sandra			
Tsujimoto, Yoshinobu	Yes		1
Tyson, Thomas	Yes	Possibly for banquet only	2
Uy, Robert V.			
Van Deusen, John			
Wales, David B.	No		
Wang, Yi-Chun "Jack"			
Wassgren, Carl R.			
Wu, Theodore Y.	Yes	Wife	1
Zenit, Roberto	Yes		1
Zoladz, Tom			
			56

## **C.E.B. Symposium Speech**

**19 March, 2010**

Friends, Countrymen, it is appropriate today at this august symposium, to not only ridicule CEB, but to praise his accomplishments as well. It is clear from the content of today's symposium that Chris' students have made giant scientific strides. Pretty much everyone in this room, with the notable exception of myself, has gone on to make major contributions to our understanding of multiphase fluid mechanics.

While this is a laudable achievement for Chris, it is not necessarily unique since many other Caltech profs can surely make a similar claim. What is unique is how many of Chris' students have turned out to be such really good people. Pretty much everyone in this room is a person you enjoy spending time with, someone who is decent and fun. The notable exception of course, is Clancy. I guess no one can bat a thousand...

Chris was always concerned with more than our intellectual development. He encouraged outside interests and wanted well-rounded students. When I was his grad student, I realized a life-long dream and learned to fly. My flight instructor was a chemistry grad student who was afraid to admit to his advisor that he was flying at all, let alone instructing. So worried that he would appear to have any life outside of the lab, he forbade me from speaking about flying while on campus.

Chris of course was the exact opposite. He not only encouraged my flying, he was eager to participate. I remember picking him up at the airport in Catalina when he was ready to come back from frosh camp and making several "reconnaissance" flights to scout out new canyons to explore.

I remember coming into his office with a problem I was having in the water tunnel and after a brief discussion, when he was satisfied with the direction I was taking, he took the marker from my hand and leapt up to the whiteboard to sketch out a new canyon he was keen on exploring.

I learned a great deal from Chris about cloud cavitation, but I learned even more from him about life. I learned about public speaking and the need to e-n-u-n-c-i-a-t-e. I learned about leadership by example and the importance of giving your advisees a chance to prove themselves. I learned about adventure, going down canyons without knowing what would be around the next corner. Never knowing how long the 3-hour hike would take - never knowing when you might have to get buck naked, jump into a pool of freezing water and attempt to climb up a waterfall out of sheer desperation.



Chris is like a second father to me. Together we learned how to cope with horrible tragedy, he with the loss of his son Patrick and his wife Doreen, me with the loss of my first father and my friends on the Space Shuttle *Columbia*. But together we also learned about love, as Chris advised me on negotiating the turbulence as I wooed another graduate student, Simone, who would later become my wife. I would subsequently return the favor as Chris tumbled head over heels for the incomparably wonderful Barbara.

But enough. You probably didn't expect to hear me stand here and speak of love, you probably did expect me to talk about space. But they are linked you see, since when I flew in space for the first time I took a few special mementos with me...

Continue with PowerPoint Slides and movie...

## **Key Points**

**It is appropriate today at this august symposium, to not only ridicule CEB, but to praise his accomplishments as well.**

**Pretty much everyone in this room, with the notable exception of myself, has gone on to make major contributions to our understanding of multiphase fluid mechanics.**

**While this is a laudable achievement for Chris, it is not necessarily unique**

**What is unique is how many of Chris' students have turned out to be such really good people.**

**Chris was always concerned with more than our intellectual development.**

**When I was his grad student, I realized a life-long dream and learned to fly.**

**Chris of course was the exact opposite. He not only encouraged my flying, he was eager to participate**

**I remember coming into his office with a problem I was having in the water tunnel ...**



**I learned a great deal from Chris about cloud cavitation, but I learned even more from him about life.**

**I learned about public speaking and the need to e-n-u-n-c-i-a-t-e.**

**I learned about leadership by example and the importance of giving your advisees a chance to prove themselves.**

**I learned about adventure, going down canyons without knowing what would be around the next corner**

**Chris is like a second father to me.**

**Together we learned how to cope with horrible tragedy,**

**But together we also learned about love,**

**But enough. You probably didn't expect to hear me stand here and speak of love, you probably did expect me to talk about space. But they are linked you see,**

**Continue with PowerPoint Slides and movie...**

Key threads:

Accomplishments – successful students

Unique accomplishments – students turned out to be good, fun and decent people.

Chris' concern for more than our intellectual development

Flying example

Water Tunnel whiteboard story

Life lessons – public speaking, leadership, mentorship, adventure

**Is Like a 2<sup>nd</sup> father, coping with tragedy, learning about love**

Space and love – linked



Caltech

# CALIFORNIA INSTITUTE OF TECHNOLOGY

Pasadena, California 91125

Jean-Lou Chameau  
President

March 18, 2010

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

*Chris*  
Dear Professor Brennen:

It gives me great pleasure to notify you that at the meeting of the Executive Committee of the Board of Trustees on March 9, 2010, you were named "Richard L. and Dorothy M. Hayman Professor of Mechanical Engineering, Emeritus," effective April 1, 2010. This action was recommended by the Division of Engineering and Applied Science and approved by the Provost and me.

We hope you will view your promotion to Professor Emeritus as an expression of our respect and gratitude for your many years of service to the Institute.

Although your new position carries no stipend and has no official duties, we hope you will continue to maintain your associations on campus.

Sincerely,

Jean-Lou Chameau

cc: A. J. Rosakis

## Retirement March 2010

"There's a dance in Billy Brennan's barn tonight,  
And there's a half-talk code of mysteries  
and the wink-and-elbow language of delight"

Please forgive me if this sounds like an Oscar speech. There are so many people to thank for this lovely day that it is beyond me to do them justice and so forgive me if I choose to express my gratitude to just a few special people who have played a major role during my 40 years at this marvelous institution

I must begin by thanking the two people who were my special mentors and I begin where I began over forty years ago when, living in London, I received that life-changing letter from Ted Wu. Ted not only brought me to Caltech but introduced me to a whole world of new fluid mechanics – from micro-organism locomotion, to tsunami waves to internal and non-linear waves to, of course, Mushkeshevilli and free-streamline flows. It has been a great honor to know Ted - perhaps the kindest man I have ever known. I also owe an enormous debt to my other special mentor and friend, Allan Acosta, with whom it was great joy and inspiration to work on a variety of ground-breaking research projects – for example, the work on dynamic transfer functions in turbomachines that is still, thirty years later, unique information. I believe I had the privilege to work with the best fluids engineer in the world. Somehow we managed a chemistry that was exceptionally productive. Allan is also a great friend who helped me survive the tragedies life threw at me.



I have also been singularly fortunate in my younger colleagues and have so enjoyed my work with, among others, Melany “the dunes will never be the same” Hunt and with Tim “Numerical cloud” Colonius. To all of these intellectual explorers I give thanks for their company on so many intellectual adventures.

Next to these faculty colleagues, I feel deeply blessed that I had the honor and privilege to work with an outstanding group of graduate students –as well as some undergraduates and a series of visitors particularly from Japan. One of great side benefits of my role at Caltech was the opportunity to get to know many of these very talented young people outside the classroom – and to have their company on some marvelous wilderness adventures – and so to Doug, to Garrett, to Mark, and to Clancy (as well as many others) I want to say a special thank you for your companionship. I would also be remiss not to add the names of those beyond Caltech who joined me on the mountains and in the canyons – and who are here tonight – to Troy, to Randi, to the magnificent marine John and to seldom-seen Scott Smith to name just a few. So to all of my fellow explorers whether in the intellectual or the natural world, I give toast in the words of the iconic author Edward Abbey, the bell-weather of southwestern individualism:

“May your trails be crooked, winding, dangerous, leading to the most amazing view. May your mountains rise into and above the clouds.”

And, in the words of some anonymous poet:

``I have travelled through great beauty  
To some measure of understanding  
You cannot ask for more than that."

I need to say that I will always be deeply devoted to this institution –  
for it allowed me to explore in all of these dimensions.

I have a small framed quotation in my office – a quotation from  
T.S.Eliot that has always been a talisman for me:

``We shall not cease from exploration  
And the end of all our exploring  
Will be to arrive where we started  
And know the place for the first time."

For the ultimate discovery always seemed to lie within my own soul  
whether the route lay through some intellectual endeavour or through  
some unexplored canyon or mountain peak.

But back to my debts. This evening would be incomplete without recognizing the inestimable debt I owe to the loved ones who supported me throughout all these adventures. Tragedy has taken two of them from me before their due time, my magnificent son Patrick and my dearest wife Doreen - she who stood quietly in the background supporting me throughout almost forty years of my career. After her passing I would not have survived without the support of my two daughters whom I am so pleased are here tonight. To Dana and to Kathy I owe a very special debt beyond any words I can find and I would like them to join me here for this farewell. Finally I acknowledge that I feel deeply blessed to have somehow during my life earned the affection of two marvelous women. To have my life-long friend Barbara with me tonight seems to me to be almost too good to be true and I ask you to welcome her here beside me as I bid you all a special but partial farewell.

And so I bring this evening to a close before it begins to sound like an obituary – for I intend to be around this institution at least part-time for the rest of my days – and the canyons and deserts will always beckon. So I will see you all there and will be able to thank you all again for the wonder of these forty years and the wonder of this day. Thank you.



ÁRD-CHONSALACHT NA HÉIREANN



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**Professor Christopher E. Brennen,  
California Institute of Technology,  
Pasadena,  
California.**

**19<sup>th</sup>.March 2010**

**Dear Chris,**

**You have reached another milestone in your distinguished life and career.**

**At to-days symposium many of your fellow Academics, Caltech Faculty, Staff and former Students paid justifiable tributes to you on your academic achievements at Caltech over so many years and indeed also for your work with NASA in space exploration. Your contributions in the fields of fluid dynamics have been recognized throughout the world.**

**On behalf of the Government of Ireland and indeed on my own behalf I, too, wish to associate myself with the tributes paid to a native born Irishman. From the very outset of this great Nation Ireland gave to America Presidents, Patriots and Scholars. You are among this distinguished band. To many of us the United States was not only a destination it was a destiny.**

**Looking at the breath and depth of your career at Caltech over the decades the words of the Irish poet Paul Durcan come to mind**

**“So hard he worked for her  
So heroically he hullaballoed for her  
So hopefully he hopped for her  
So heartily he hooted for her  
So harshly he harped for her  
So headlong he hunted for her”**

**In wishing you a long, healthy and carefree retirement may I remind you of the words of the Mountain Woman in Bean An tSleibhe? She said “it is not ageing I am but ripening”**

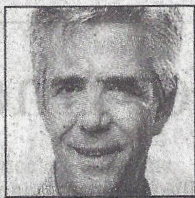
**In your ripe old age therefore may I offer these Irish Toasts  
“May you get all your wishes save one, so you will have always have something to strive for”  
“May all your pain henceforth be champagne”**

**Sincerely,**

*Finbar*



**M. Finbar Hill,  
Hon. Consul General of Ireland,  
Chief of Protocol,  
Los Angeles Consular Corps.**



**LARRY  
WILSON**

**Friday's random notes:** If you are in the Caltech orbit, you know **Christopher Brennen**, the bright-eyed Ulsterman, as the former master of student houses, dean of students, current Hayman professor of mechanical engineering and longtime overseer of the Athenaeum. You might be among us feting his retirement tonight on campus, and declaring that Caltech without Chris — not that he will disappear entirely — is hard to even imagine. But there's nothing for realizing the extraordinary nature of the man like taking a gander at his fully illustrated book "Adventure Hikes and Canyoneering in the San Gabriels," available online at [www.dankat.com/advents/advents.htm](http://www.dankat.com/advents/advents.htm). Not being adept with the ropes and the petons, I will never be able to descend Thalehaha Falls up in Rubio as Chris does. It's like looking at pictures of the guys who surf Mavericks — good for you all, I think. But I get a kick out of seeing the spry Irishman rappeling in my stead. Here's to more time in the mountains, professor. ... Perennial Sierra Madre council candidate **Bill "Eagle" Tice** on whether he'd taken campaign cash from outside the town: "No, but I would!"



TRAVELS NOW AND THEN

© Christopher Earls Brennan

DEATH VALLEY 2010

2010  
Trip to Death Valley, Easter 2010



*Badwater, Death Valley*



*Artist's Palette, Death Valley*



*Rhyolite Ghost Town, Death Valley*





*Rhyolite Ghost Town, Death Valley*



*Leadville Ghost Town, Death Valley*



*Leadville Ghost Town, Death Valley*





*Titus Canyon, Death Valley*



*Titus Canyon, Death Valley*



*Scotty's Castle, Death Valley*





*Scotty's Castle, Death Valley*



*Scotty's Castle, Death Valley*



*Scotty's Castle, Death Valley*





*Scotty's Castle, Death Valley*



*Dante's View, Death Valley*



*Zabriskie Point, Death Valley*



*Dumont Dunes*

[\*Back to table of contents\*](#)

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



# TRAVELS NOW AND THEN

© Christopher Earls Brennan

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## JAPAN 2010

**Sat. Apr.17**

Fly UA 891 from Los Angeles to Narita, Tokyo

**Sun. Apr.18**

Fly UA 9687 from Narita, Tokyo, to Itami, Osaka

**Mon. Apr.19**

**Tues. Apr.20**

**Wed. Apr.21**

**Thurs. Apr.22**

**Fri. Apr.23**

Ceremonial presentation at Convention Center, Tokyo



*Ceremonial presentation at Convention Center, Tokyo.*



*Banquet speech after ceremony.*

**Sat. Apr.24**

Fly UA 890 from Narita, Tokyo, to Los Angeles.

[Back to table of contents](#)

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*Last updated 7/30/99.*

*Christopher E. Brennen*

Shinanomachi-Rengakan Bldg., Shinanomachi 35, Shinjuku-ku, Tokyo, 160-0016 Japan

Phone +81-3-5360-3500 Fax +81-3-5360-3508 E-mail [wwwadmin@jsme.or.jp](mailto:wwwadmin@jsme.or.jp) URL <http://www.jsme.or.jp/English/>

May 31, 2010

Dear Mr. Christopher Earls Brennen

Welcome to the Japan Society of Mechanical Engineers. I am pleased to inform you that your application has been approved and you have been admitted to the Society. Your admission card is enclosed.

The Society will help you exchange information with many engineers, especially those residing in Japan. While taking advantage of JSME membership, you will also help promote the scientific and engineering activities of the Society by actively participating in its program.

I am greatly pleased to welcome you as a valuable asset to our membership.

Sincerely yours,

Yoichiro Matsumoto

President

The Japan Society of Mechanical Engineers



〒160-0016 東京都新宿区信濃町35

信濃町煉瓦館5F

電話 03(5360) 3 5 0 0 (代)

社団法人 日本機械学会

The Japan Society of Mechanical Engineers

# 入 会 承 認 書

THIS IS TO CERTIFY

Christopher Earls Brennen

is admitted Honorary Member of the Society

会 員 資 格

会 員 番 号

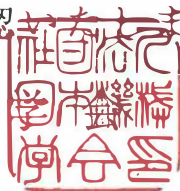
入会承認年月日

Membership No.1016584

Date: 2010/04/20

上記のとおり入会を承認します

社団法人 日本機械



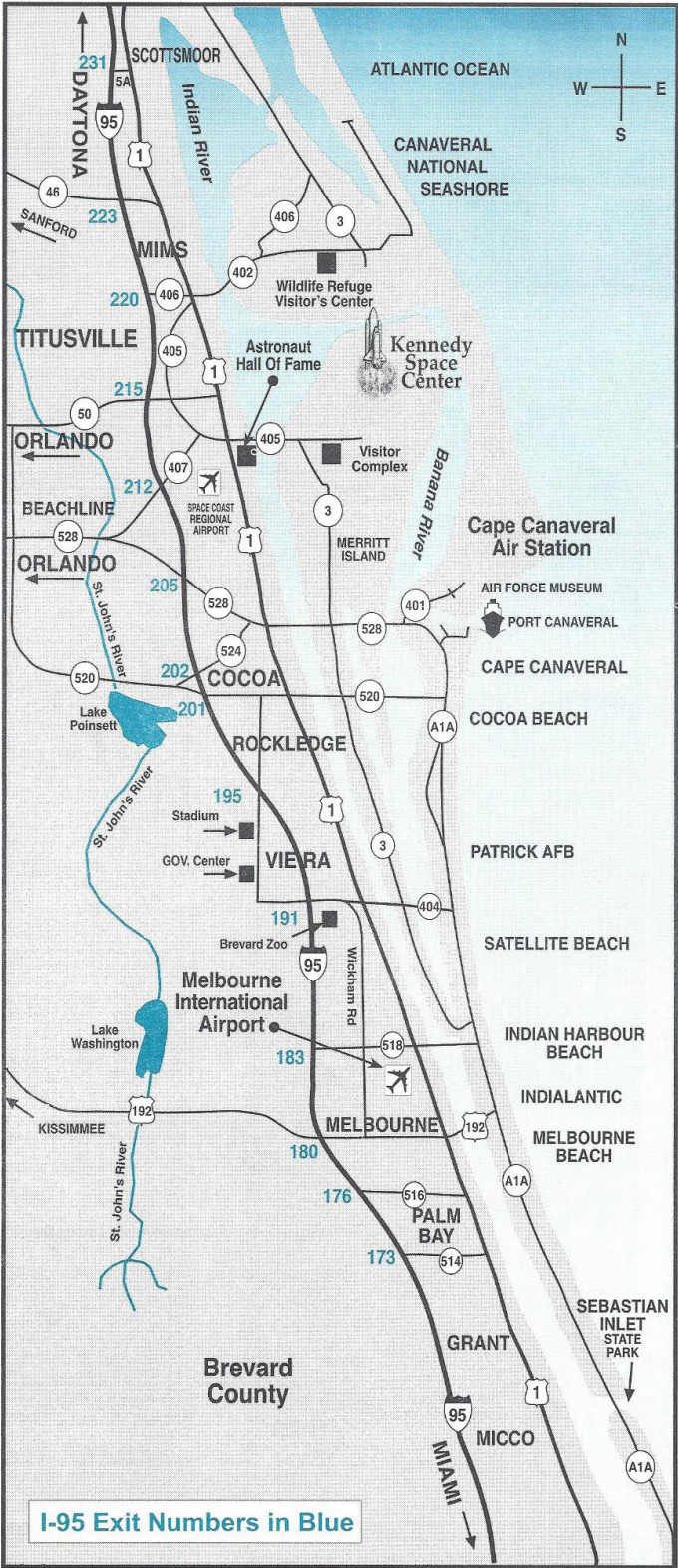
# **TRAVELS NOW AND THEN**

© Christopher Earls Brennan

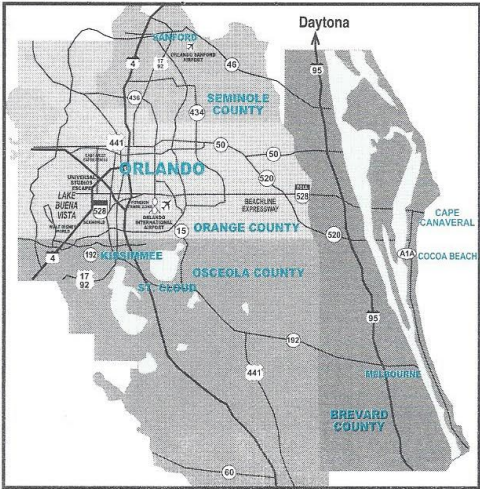
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## **SPACE SHUTTLE STS132 2010**

**Launch: May 14, 2010**



# Welcome to Florida's Space Coast.



## Space Coast Office of Tourism

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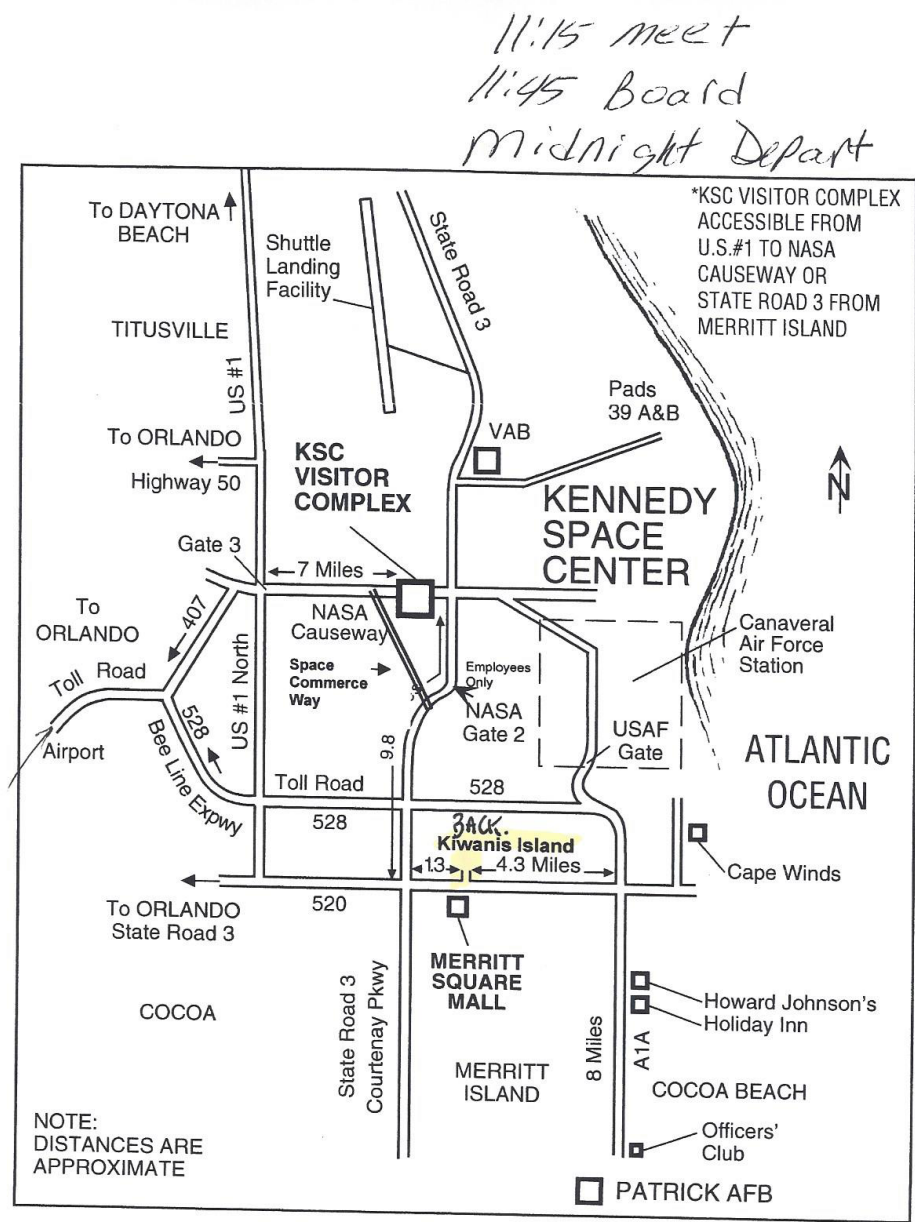
[WWW.SPACE-COAST.COM](http://WWW.SPACE-COAST.COM)

**1-877-57-BEACH**  
**321-433-4470**  
**FAX: 321-433-4476**



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Cocoa Beach Area Map:

- The Bee Line is changing to the Beach Line.
- Kiwanis Island is located on 520 between Wal-mart and Merritt Square Mall.
- There is only one departure. Be sure to confirm the departure time when you check in. **Please plan for traffic.**





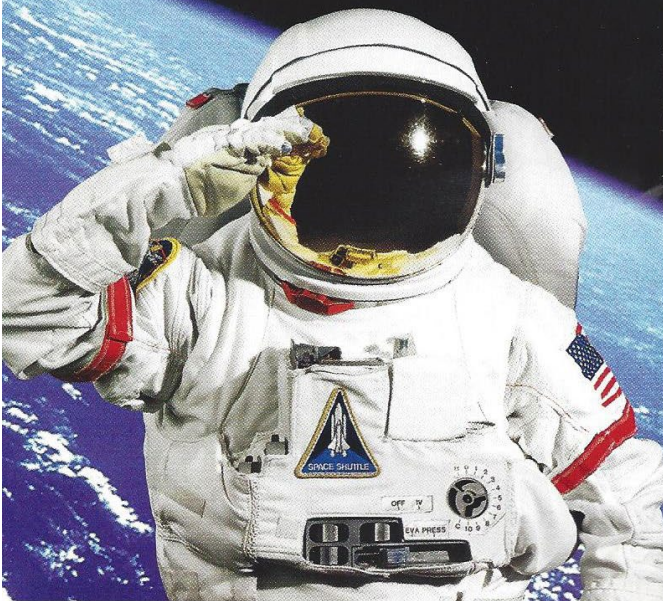


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Kennedy Space Center is a working spaceflight facility. Tours, films, and exhibits may be altered or closed due to operational requirements. Some exhibits may be closed due to inclement weather. Seating available on a first come basis. Some exhibits may have limited seating due to group reservations. No admittance once films begin. We suggest arriving 15 minutes prior to movie time. Tickets are non-refundable. Printed on recycled paper.

ENGLISH VISITOR GUIDE







*Before the launch*



*Before the launch*



*Waiting for launch*



*Lift-off*



*Off to space*



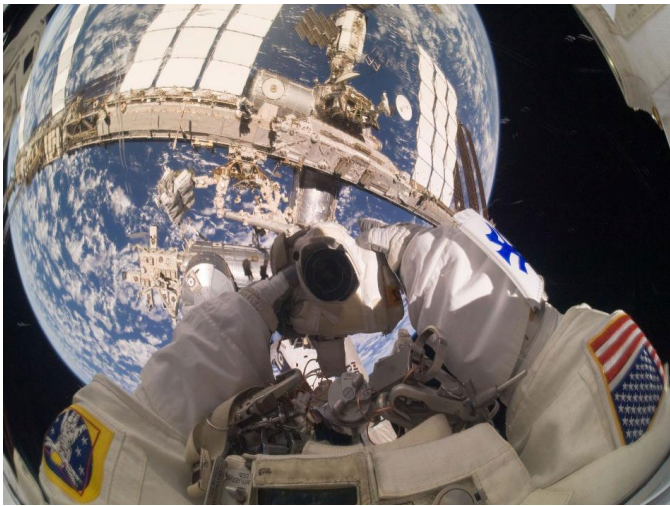
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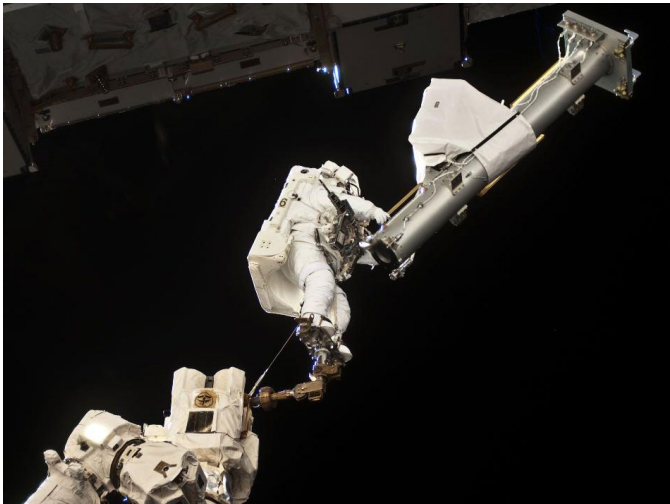
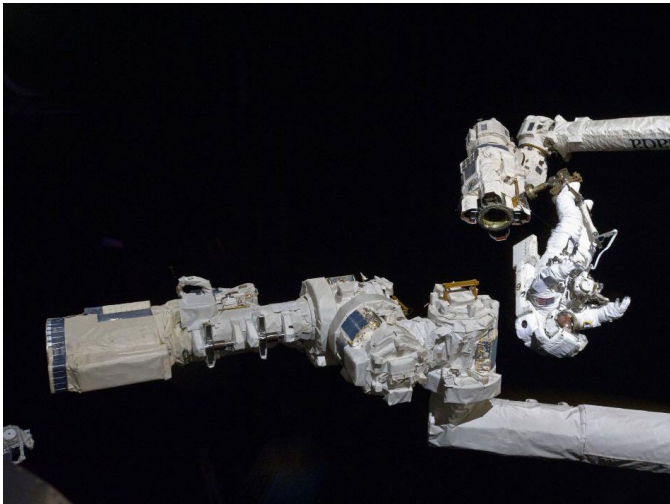
S132E009383

*In orbit*





*Space walking*



*Space walking*



*Space walking*





S132E007758



S132E007941

*Space walking*



S132E009356



S132E009360

*Space walking*



*Landing*



*In Washington, DC*

[Back to table of contents](#)

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

TRAVELS NOW AND THEN

© Christopher Earls Brennen

EGYPT 2010



DETAILED ITINERARY.

SECRETS OF EGYPT SAFARI

FOR CHRISTOPHER & BARBARA BRENNEN X2

OCTOBER 2010.

SAFARI HIGHLIGHTS.

EGYPT.

- 05 Oct 2010 – Radisson Blu Heliopolis Hotel - Cairo
- 06 Oct 2010 – Radisson Blu Heliopolis Hotel - Cairo
- 07 Oct 2010 – Luxor - Nile Cruise
- 08 Oct 2010 – Edfu - Nile Cruise
- 09 Oct 2010 – Aswan - Nile Cruise
- 10 Oct 2010 – Aswan - Nile Cruise
- 11 Oct 2010 – Radisson Blu Heliopolis Hotel - Cairo
- 12 Oct 2010 – Departure.

Travel Connections Ltd, P. O. Box 3698, 00100-Nairobi, Kenya.  
Tel: +254-(0)20-248447 Tel/Fax: +254-(0)20-241712  
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Zimbabwe, Botswana, Egypt and S. Africa.



**TUESDAY 05<sup>TH</sup> OCTOBER 2010 – ARRIVAL IN CAIRO, EGYPT.**

Arrive at Cairo Int. Airport at ....hrs where you will be met by your escort who will assist with immigration, luggage and customs, and then you will be transferred to your hotel, overnight.

The hotel will offer 427 outstanding guest rooms and 60 suites, all equipped with modern amenities and stylish furnishings. All rooms will be outfitted with an LCD television, luxury bath amenities from renowned French brand Anne Sémonin and Free high-speed Internet access. Designed for comfort with individual climate control. All Standard rooms equipped with free high-speed Internet access along with world-class amenities including, coffee and tea making facilities, and flat-panel LCD televisions, comfortable work station and a private bathroom.

**Overnight at Radisson Blu Heliopolis Hotel – bed, breakfast and lunch.**

**WEDNESDAY 06<sup>TH</sup> OCTOBER 2010 - CAIRO CITY TOUR.**

After breakfast at your hotel you will visit the **Egyptian Museum** of Antiquities housing the largest collection of Egyptian monuments in the world 250,000 items. also see the jewelry of the famous King Tut Ankh Amun, dates back to 1352 B.C. PM visit **Giza Pyramids** to See one of the seven wonders of the ancient world, Giza pyramids built by the IV Dynasty Kings Cheops, Chephren and Mycrinus 2559 B.C. Proceed on tour to see the Valley Temple where they used to mummify the body of the dead King also to see the mysterious Sphinx guarding the cemetery for almost 5000 years. Back to your hotel.

**Overnight at Radisson Blu Heliopolis Hotel – breakfast and lunch**

**x THURSDAY 07<sup>TH</sup> OCTOBER 2010 – CAIRO TO LUXOR.**

Breakfast at hotel and check-out, transfer to airport for a short flight to Luxor 01hr, arrive and escort to your Nile cruise which will be your home for the next 4nights.

AM. You will Cross the River Nile to the West Bank to visit the **Valley of the Kings** housing tombs of the Kings of the XVIII Dynasty. Continue on tour to El Dier El Bahari **Temple of Queen Hatshipsut** one of the strongest women in the Egyptian history that went against the rules and ruled Egypt for more than 18 years. On your way back to the East Bank stop by the **Colossi of Memnon** of King Amenophis III, once stood in front of his Temple.

Lunch on board (the boat)

In the afternoon visit the great Temples of **Karnak** the largest temple man ever made to view the Avenue of the Sphinxes, the many Pylons, the Hypostyle Hall with it's. 134 gigantic columns and the Sacred Lake.

Continue on tour to visit the Temple of **Luxor** built by King Amenophis III (The magnificent) one of the greatest Kings of XVIII Dynasty, overnight and dinner on board.

**Overnight on the cruise – full board**

**FRIDAY 08<sup>TH</sup> OCTOBER 2010 – LUXOR TO EDFU.**

Sail to Edfu crossing Esna lock.

**Overnight on the cruise – full board**

**SATURDAY 09<sup>TH</sup> OCTOBER 2010 – EDFU TO ASWAN.**

A.M you will go by horse carriage to visit the Temple of **Horus** The Falcon God of protection, that beautiful temple which is considered the only well preserved temple in a perfect condition dates back to the Ptolemaic period.

Board the horse carriage back to your boat and continue sailing to Kom Ombo.

Arrive in the afternoon at Kom Ombo, walk to that beautiful unique double Temple of **Kom Ombo**, which was, dedicated to the two Gods Sobek the Crocodile God. And Horus the Falcon God, This is a Greco Roman Temple, where you will view the oldest Calendar in history, as well as the surgical instruments used in operations in ancient Egypt.

Back to your boat and sail again to Aswan.

**Overnight on the cruise – full board**

**SUNDAY 10<sup>TH</sup> OCTOBER 2010 - ASWAN.**

Morning is free

Afternoon you will have a **Felucca** (sailing boat) paste Aswan islands; where you can view the Mausoleum of Agha Khan and Aswan Islands while sailing, rest of day free.

**Overnight on the cruise – full board**

**MONDAY 11<sup>TH</sup> OCTOBER 2010 – ASWAN TO CAIRO**

Disembarkation and check-out after breakfast then tour to see the **High Dam**, the Temple of Isis in **Philae** Island and the granite quarries where you will see the **unfinished obelisk**, then transfer to airport to fly back to Cairo.

Arrive and escort to your hotel.

**Overnight at Radisson Blu Heliopolis Hotel – bed and breakfast**

**TUESDAY 12<sup>TH</sup> OCTOBER 2010 – DEPARTURE**

Check out then transfer to airport for final departure.

**Including:**

- All sightseeing tours throughout (including entrance fees) with private licensed English speaking guide
- All airport transfers and ground transportation in a/c vehicle as stated in the program.
- 01 lunch in Cairo during tours
- 03 nights in Cairo including breakfast
- 04 nights including all meals (breakfast, lunch, dinner as mentioned in the program) on board 5\* Cruise.
- Domestic flights (Cairo/Luxor & Aswan/Cairo)
- Camel ride at Pyramids

**Excluding:**

- Personal expenses such as drinks, laundry, telephone calls, etc.
- Tips
- International airfare

**IMPORTANT INFORMATION ON EGYPT**

**Currency in Egypt:**

The Currency in Egypt is the Egyptian pound and it is divided into 100 piaster. Egyptian pound is referred as LE.

The Egyptian pound is called genaeh in Arabic. Here you will find 25 and 50 piaster notes and various sized coins down to the 5 piaster. At present 1 \$ dollars is equivalent to 6.2 Egyptian pounds

-In Egypt most of the banks open from Sunday to Thursday, working hours are 8:30 to 2 PM. However, banks at the airport and the majors entry ports are open 24 hours daily.

**Credit Cards.**

Most the the major credit card names such as American express, master card, all euro cards and JCB are widely accepted in various hotels and shops To use an ATM machine, they mostly accept visa master and cirrus cards, if you don't find an ATM machine in your vicinity; you can still obtain cash if you go to any of Misr Bank braches. Banks are unwillingly to accept US\$100 notes issued before 1992. You can use US\$ and English sterling or Euros to exchange, as they are accepted in many places and banks.

**Electricity :**

The electricity current is 220 volts, 50 Hz, North American travelers are advised to bring a converter, sockets are designed for round pronged plugs, if you are coming from the UK, you will need an adaptor for your plugs.

The power plugs used in Egypt are 220 volts. if you are coming from a country using 110 please don't forget to bring you converter, the socket pins in the wall are the two holes type !

**Customs at Cairo Airport :**

You are allowed to bring 250 grams of tobacco two cartoon of cigarettes One liter of alcohol and personal stuff. if you are planning to bring your own pet make sure you have a veterinary health certificate and it should include a valid rabies certificate.

**Tipping**

10 to 12 per cent is added to hotel and restaurant bills but an extra tip of 5 per cent is normal. Taxi drivers generally expect 10 per cent.





Your purchase is complete. Thank you for choosing Delta.

Flight Confirmation Number: GT570M

What's Next

Now that you've finished booking your trip:

- Your eTicket receipt(s) and confirmation have been sent to brennen@caltech.edu.
- Delta Messenger will send flight updates based on the contact preferences in your profile. [Subscribe/edit](#) your contact preferences now.
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Your Flight Selection:

Departs		Arrives	Stops	Flights & Cabin (Class)		Travel Time
Outbound: New York-Kennedy, NY (JFK) to Cairo, Egypt (CAI) on Mon, 04 Oct 2010						
9:55pm JFK	3:15pm CAI Arrives 05 Oct	Nonstop	Delta 84 Boeing 767 In-Flight Services	Coach (L)	11 hr 20 min	
Return: Cairo, Egypt (CAI) to New York-Kennedy, NY (JFK) on Tue, 12 Oct 2010						
11:35pm CAI	6:15am JFK Arrives 13 Oct	Nonstop	Delta 85 Boeing 767 In-Flight Services	Coach (T)	12 hr 40 min	



Book with confidence. See Delta's Best Fare Guarantee.

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Miles earned = 11228  
MQM earned = 11228 [\(details\)](#)

[View](#) New passport and visa requirements may exist for your itinerary.

Passenger	From	To	Seat Assignment	Special Services (e.g. Wheelchair)
Dr. Christopher E Brennan SkyMiles # 2104897984	New York-Kennedy, NY (JFK)	Cairo, Egypt (CAI)	35C <a href="#">Change Seats</a>	<a href="#">Add/Edit</a>
	Cairo, Egypt (CAI)	New York-Kennedy, NY (JFK)	31F <a href="#">Change Seats</a>	<a href="#">Add/Edit</a>
Barbara A Brennan	New York-Kennedy, NY (JFK)	Cairo, Egypt (CAI)	35D <a href="#">Change Seats</a>	<a href="#">Add/Edit</a>
	Cairo, Egypt (CAI)	New York-Kennedy, NY (JFK)	31G <a href="#">Change Seats</a>	<a href="#">Add/Edit</a>

Passenger Information

**Contact**  
Telephone numbers: 626-688-1381 (Cell), 626-688-1381 (Business)

**Billing Information**  
Payment Type: VISA, \*\*\*\*\*2303  
Payee: Christopher E Brennan  
1200 E. California Blvd  
Caltech 104-44  
Pasadena, CA 91125, United States

Price per Passenger					# of Psgrs	Total Price of Ticket(s)
Fare	U.S. Tax(es)	Base Fare	Taxes/Fees	Subtotal		
\$978.00 (USD)	\$32.20 (USD)	\$1,010.20 (USD)	\$49.30 (USD)	\$1,059.50 (USD)	2	\$2,119.00 (USD)
<a href="#">View fare rules</a>						
<a href="#">View Taxes/Fees</a>						

<https://www.delta.com/booking/intlCustomerInfo.do?sessionId=3yv2JxdRvBPp0u8?dispat...> 9/17/2010



Radisson Blu Hotel Cairo, Heliopolis  
Abdel Hamid Badawy St. Heliopolis, Cairo, Egypt  
P.O. Box 114 Rawda Al Sheraton, Heliopolis, Cairo  
Tel: +202 269 65 656  
Fax: +202 269 65 657  
info.cairo@radissonblu.com  
www.radissonblu.com

Mr. Brennan, Christopher

United States

INFORMATION INVOICE

Membership No. :  
A/R Number :  
Company Name : ABC Travel

Room No. : 310  
Arrival : 05.10.10  
Departure : 07.10.10  
Page No. : 1 of 1  
Folio No. :  
Adult/Child : 2/0  
Cashier No. :  
User ID : IA 07.10.10

Date	Description		Charges	Credits
			EGP	EGP
05.10.10	Lobby Bar 11/22 Food	460220101005173146	91.57	
Total			91.57	0.00
Balance EGP			91.57	
Balance USD			16.12	
Balance EUR			11.65	

Guest Signature: .....

Thank you for choosing the Radisson Blu Hotel Cairo , Heliopolis





WEDNESDAY 06<sup>TH</sup> OCTOBER 2010 - CAIRO CITY TOUR.

After breakfast at your hotel you will visit the Egyptian Museum of Antiquities housing the largest collection of Egyptian monuments in the world 250,000 items. also see the jewelry of the famous King Tut Ankh Amun, dates back to 1352 B.C. PM visit Giza Pyramids to See one of the seven wonders of the ancient world, Giza pyramids built by the IV Dynasty Kings Cheops, Chephren and Mycrinus 2569 B.C. Proceed on tour to see the Valley Temple where they used to mummify the body of the dead King also to see the mysterious Sphinx guarding the cemetery for almost 6000 years. Back to your hotel.

Overnight at Radisson Blu Heliopolis Hotel – breakfast and lunch



*Cairo Museum of Antiquities*



*King Tut Ankh Amen*



*Pyramids of Giza*



*Pyramids of Giza*



*Sphinx*



*Sphinx*





Pyramid of Saqqara

Thu. Oct.7, 2010

Fly from Cairo to Luxor

THURSDAY 07<sup>TH</sup> OCTOBER 2010 – CAIRO TO LUXOR.

Breakfast at hotel and check-out, transfer to airport for a short flight to Luxor 01hr, arrive and escort to your Nile cruise which will be your home for the next 4nights.

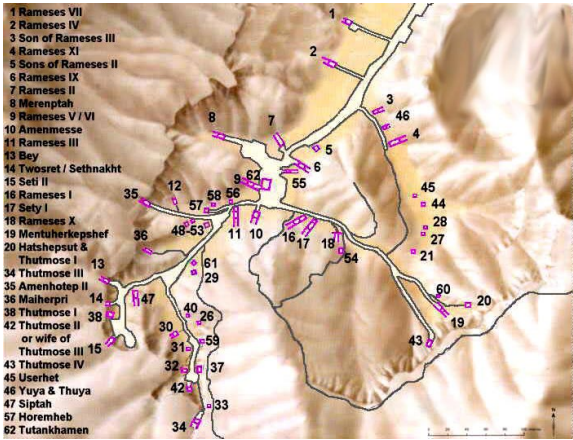
AM. You will Cross the River Nile to the West Bank to visit the Valley of the Kings housing tombs of the Kings of the XVIII Dynasty. Continue on tour to El Dier El Bahari Temple of Queen Hatshipsut one of the strongest women in the Egyptian history that went against the rules and ruled Egypt for more than 18 years. On your way back to the East Bank stop by the Colossi of Memnon of King Amenophis III, once stood in front of his Temple.

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Continue on tour to visit the Temple of Luxor built by King Amenophis III (The magnificent) one of the greatest Kings of XVIII Dynasty, overnight and dinner on board.

Overnight on the cruise – full board



Valley of the Kings



Valley of the Kings





*Tomb of Rameses, Valley of the Kings*



*Tomb of Rameses, Valley of the Kings*



*Temple of Hatshepsut*



*Temple of Hatshepsut*



*Colossus of Memnon*



*Colossus of Memnon*



*Karnak*



*Karnak*





*Karnak*



*Karnak*



*Karnak*



*Luxor*



*Luxor*



*Luxor*



*Luxor*





Nº 060464



Fri. Oct.8, 2010



Balloon ride over Luxor



THIS IS TO CERTIFY THAT

*Magic*  
**HORIZON**

ASCENDED INTO THE SKY IN A HOT AIR BALLOON  
OVER THE SPLENDOR OF EGYPTIAN ANTIQUITIES IN LUXOR

PILOT IN COMMAND: *Ahmed Mahmoud*

DATE:

**HORIZON**

Badr street, Television street, Luxor  
E-mail: [booking@magic-horizon.com](mailto:booking@magic-horizon.com)  
Tel. Luxor :0952274060 - 0105688439 - 0122261697 Fax: 0952276651  
[www.magic-horizon.com](http://www.magic-horizon.com)





### FRIDAY 08<sup>TH</sup> OCTOBER 2010 – LUXOR TO EDFU

Sail to Edfu crossing Esna lock.

Overnight on the cruise – full board

Sat. Oct.9, 2010

### SATURDAY 09<sup>TH</sup> OCTOBER 2010 – EDFU TO ASWAN.

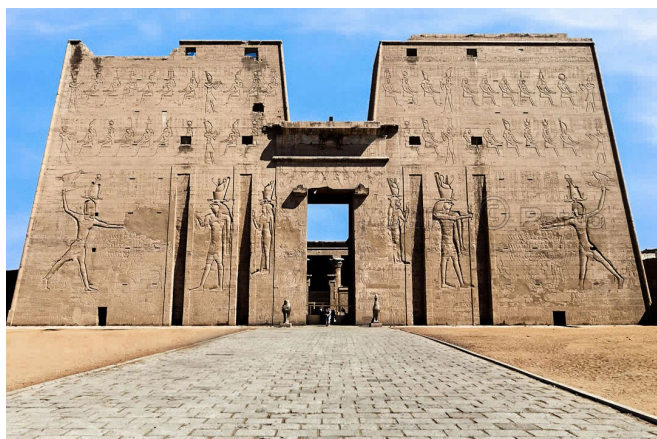
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Arrive in the afternoon at Kom Ombo, walk to that beautiful unique double Temple of **Kom Ombo**, which was, dedicated to the two Gods Sobek the Crocodile God. And Horus the Falcon God, This is a Greco Roman Temple, where you will view the oldest Calendar in history, as well as the surgical instruments used in operations in ancient Egypt.

Back to your boat and sail again to Aswan.

Overnight on the cruise – full board



*Temple of Horus, Edfu*



*Temple of Horus, Edfu*

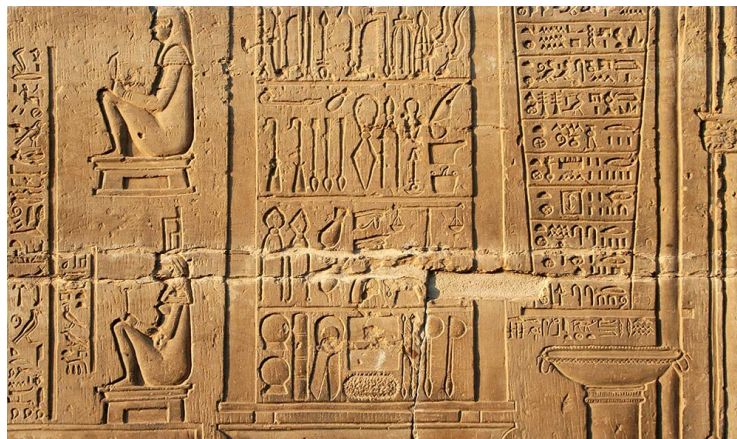


*Temple of Horus, Edfu*





*Temple of Kom Ombo*



*Surgical Instruments, Kom Ombo*

Sun. Oct.10, 2010

**SUNDAY 10<sup>TH</sup> OCTOBER 2010 - ASWAN.**

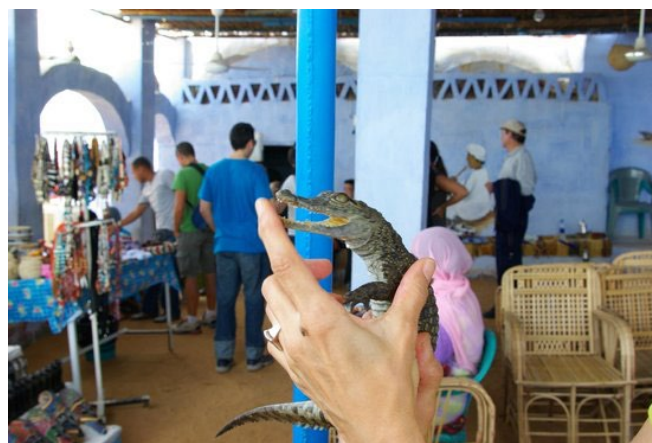
Morning is free

Afternoon you will have a **Felucca** (sailing boat) paste Aswan islands; where you can view the Mausoleum of Agha Khan and Aswan Islands while sailing, rest of day free.

**Overnight on the cruise – full board**



*Nubian Village, Aswan*



*Nubian Village, Aswan*

Mon. Oct.11, 2010

**MONDAY 11<sup>TH</sup> OCTOBER 2010 – ASWAN TO CAIRO**

Disembarkation and check-out after breakfast then tour to see the **High Dam**, the Temple of Isis in **Philae Island** and the granite quarries where you will see the **unfinished obelisk**, then transfer to airport to fly back to Cairo.

Arrive and escort to your hotel.

**Overnight at Radisson Blu Heliopolis Hotel – bed and breakfast**





*Temple of Philae, Aswan*



*Temple of Philae, Aswan*



*Unfinished Obelisk, Aswan*

**Tue. Oct.12, 2010** Fly Aswan to Cairo and Cairo to JFK

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

05/12/10	SW	2991	BDL	MCO	TC	
05/14/10	SW	2104	MCO	BDL	TC	
05/31/10	SW	985	BDL	BWI	TC	
05/31/10	SW	3654	BWI	LAX	TC	
07/08/10	SW	1320	LAX	LAS	TC	
07/08/10	SW	3428	LAS	BDL	TC	
08/03/10	SW	851	BDL	LAS	TC	
08/03/10	SW	604	LAS	LAX	TC	
08/17/10	SW	838	LAX	CHW	TC	
08/17/10	SW	1835	CHW	BDL	TC	
09/09/10	SW	3220	BDL	DEN	TC	
09/09/10	SW	2114	DEN	LAX	TC	
09/21/10	SW	838	LAX	CHW	TC	
09/21/10	SW	1835	CHW	BDL	TC	
10/26/10	SW	206	BDL	LAS	TC	
10/26/10	SW	1964	LAS	LAX	TC	
11/26/10	SW	2416	LAX	CHW	TC	
11/26/10	SW	2853	CHW	BDL	TC	
12/26/10	SW	1214	BDL	LAS	TC	
12/26/10	SW	420	LAS	LAX	TC	