

Memories of and Tributes to

Prof. G.M. Lilley

OBE, MSc(Eng), DIC, DSc, FRAeS, FIMA, FAIAA

**Professor of Aeronautics & Astronautics
University of Southampton 1964 – 1983**



**on the occasion of the Symposium on Noise and Turbulence
held on 11 December 2009 at the University of Southampton
in honour of his 90th birthday**

Noise and Turbulence: Perspectives Past & Present

*University of Southampton
11 December 2009*

This Symposium was held in recognition and honour of the 90th birthday of Emeritus Prof. Geoffrey Lilley.

The Symposium was attended by over 50 delegates, including very many of Geoffrey's colleagues and students both past and present. Some of them prepared written tributes, which are recorded here (in alphabetical order). These recognise the great contributions that Geoffrey has made, not only to the field of aircraft noise and turbulence, but also in many cases to the writers' personal lives. Some are humorous, reflecting another of Geoffrey's great talents: his ability to make us laugh and not to take ourselves too seriously.

A number of invited delegates were, unfortunately, unable to attend the Symposium, but nonetheless provided tributes; these are included herein. The full list of Symposium delegates is given towards the back of the volume.

We very much hope that Geoffrey and his family will enjoy perusing this 'Book of Memories' and that it will remind him of what, we hope, he will remember as an extremely enjoyable event to mark this great occasion.

Ian Castro and Graham Roberts

Geoff,

Warmest congratulations on your ninetieth birthday. We first met in 1975 when I came to Southampton to join the undergraduate course in Aeronautics and Astronautics - you were my tutor for my first year. I well remember the stimulating tutorials you gave. In particular, in technical writing, you taught me the importance of having a clear sense of one's target audience - this is advice I have often passed on to my own staff in more recent years. I also remember your wide-ranging first year course in Fluid Mechanics, which engendered a lasting interest in the subject.

After graduating, I stayed on to study for my PhD under Ken Bray. You provided much valuable advice on the statistical theory of turbulence, which was of great help in my work. You were also very much in evidence at social events - my wife Pam recalls a dinner party at Ken's house at which you gave her an in-depth exposition on the theory of insect flight.

Following my PhD, I spent a couple of years with the CEGB before returning to Southampton as a lecturer. Soon after I arrived, you were instrumental in introducing me to Mehmet Kavsaoglu at METU in Ankara; this led to a most interesting and memorable series of exchange visits to Turkey. A few years later you provided me with invaluable help in the supervision of Jyothi Punekar's PhD in non-linear acoustics.

I have since moved on from academia to a scientific management role at AWE. However, I will always remember your inspiring presence at Southampton. You are a founder of Aeronautics at Southampton, you have consistently shown kindness and patience to your students and colleagues, you are a leading figure in your field, and, above all, you have conveyed a seemingly boundless enthusiasm for your subject.

I look forward to receiving an invitation to your hundredth birthday party.

Many happy returns

Graham Ball

Professor Lilley, President of the Solent Branch of the Royal Aeronautical Society

Writing a short note on Geoff Lilley in his role as President of the Solent Branch of the Royal Aeronautical Society, it seems obvious to start with the dates that he has held the position. And there I have a problem: I don't know!

Certainly, by the time I first took on the Branch Chairman role, about 15 years ago, Geoff was already the long-established President. So I thought I would ask some of my very longstanding Committee members. Again, no one, apart from Geoff himself I assume, knows. We are pretty sure that it is more than 30 years, but quite simply none of us can remember a time when it wasn't Geoff.

And that goes to the heart of the man. Geoff is still an amazingly enthusiastic Branch President, equally happy to act as figurehead or office boy. His unassuming but patently obvious academic brilliance is an inspiration to us all. He provides the most amazing role model because we all hope that we will still have the energy and clarity of vision that Geoff possesses today when we in our turn reach his age.

So, Geoff, on behalf of the very many branch members to whom you have been a much loved and hugely respected President over the last 30 and more years, I would like to say an enormous thank you.

Phil Boyle

Geoffrey Lilley

Congratulations, Geoffrey, on reaching your 90th birthday. Your contributions to the University, the Department and more personally to Ken's career were most valuable. You and Peggy were so much part of our life in Southampton, which we remember with a great deal of pleasure.

With our warmest good wishes

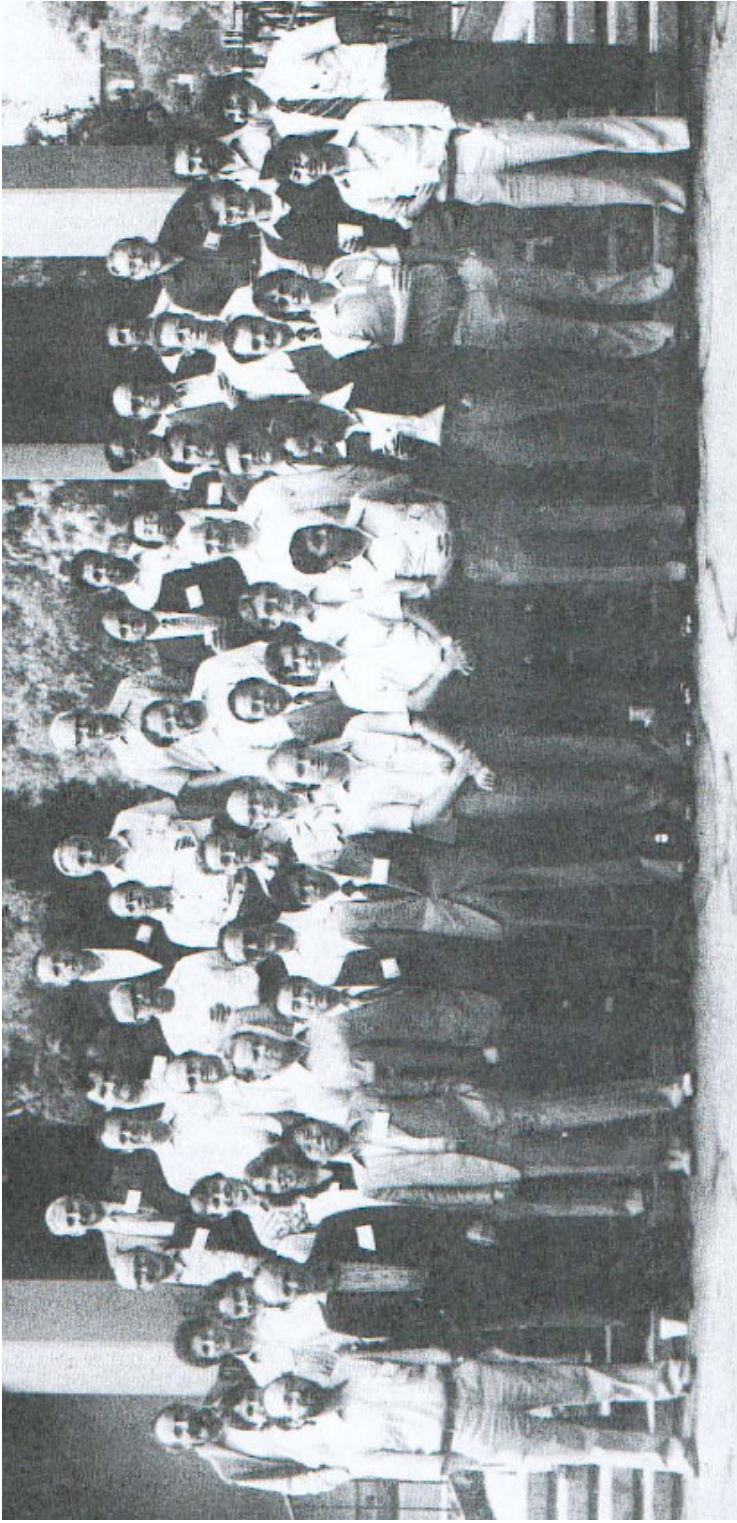
Ken and Shirley Bray

My recollections of Geoff since the very early 1970's are only intermittent but always memorable. The first major interaction was when, as a ridiculously young applicant, I was interviewed with five others for a lectureship at Southampton, by a panel chaired by Geoff. After all six candidates, having been interviewed, had been sitting around in the library for a while, looking furtively at one another, someone came in and invited (I think) Dr Moss to step outside. That was it. I only secured a position at Southampton 16 years after Geoff had retired when, of course, he had no chance to do anything about it.

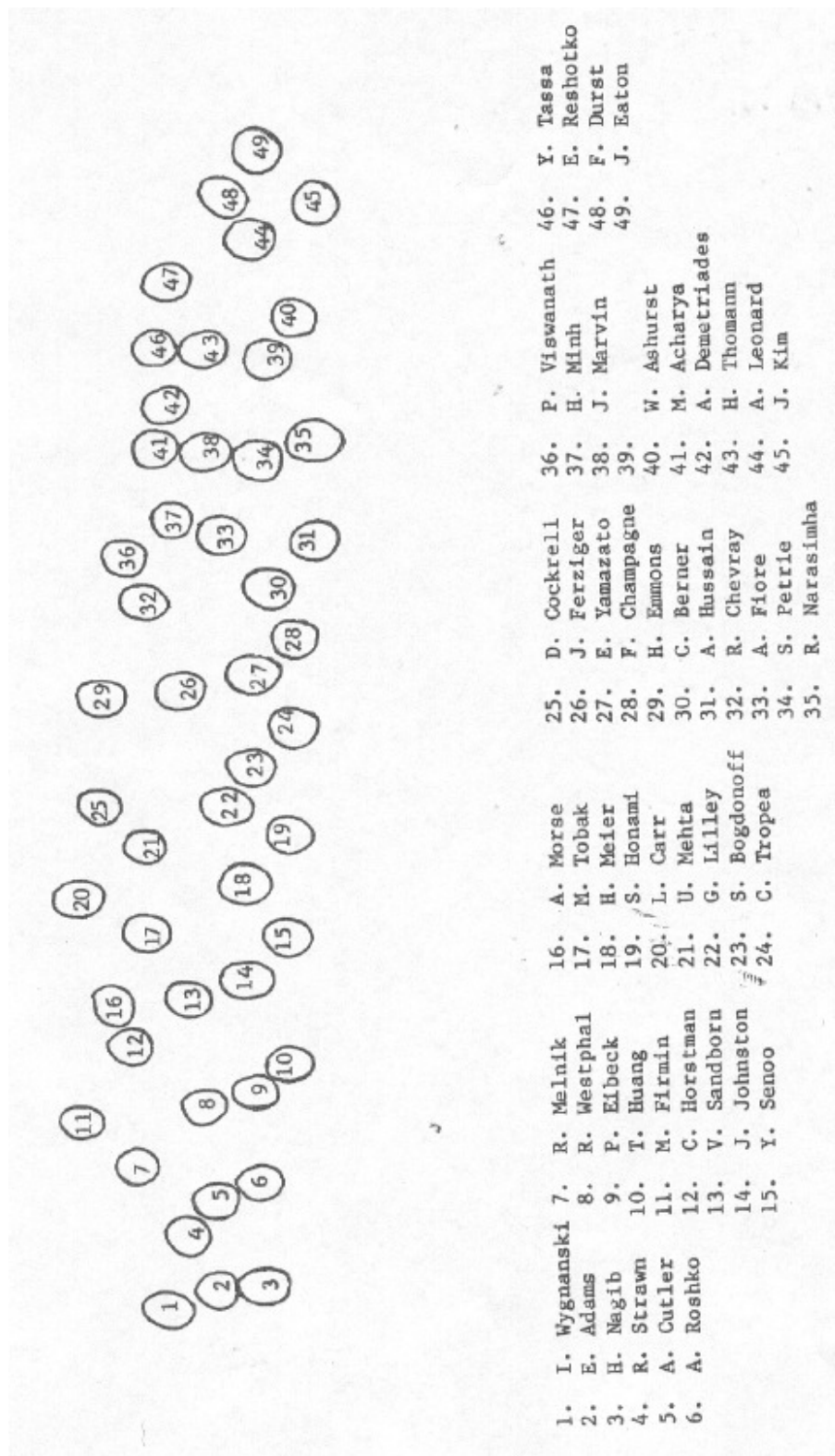
Next, I recall his numerous inputs to discussion and conclusions during the AFOSR-HTTM-Stanford Conference on Complex Turbulent Flows: Comparisons between Computation and Experiment, in 1980 & 1981. He played an important role on the evaluation committee, but did not confine himself to that, providing pertinent and incisive remarks over a whole range of topics on a wide variety of flows, from both experimental and computational perspectives. Given our somewhat divergent areas of interest we subsequently met at conferences relatively rarely, although we had some correspondence on various topics over the years (before the age of email), which I invariably found very helpful. It was a great surprise, on arriving in Southampton in 2000, to find that there was (and still is) a Professor Geoffrey Lilley nameplate on an office door down the corridor. And he even turned up to sit in the office from time to time – or, rather, to regale our graduate students and anyone else who would listen with his long but uniformly amusing tales, and to attend our group seminars occasionally. This all still happens!

Many lives would have been poorer by far without personal knowledge of Geoff Lilley; his enthusiasm for science and life, his generosity of spirit and his irrepressible sense of humour have been – and indeed continue to be – an inspiration to countless students, colleagues and friends. We look forward to the 100th Birthday Celebration with eager anticipation!

Ian Castro



Some participants at the 1980 Stanford Conference on Complex Turbulent Flows



Herewith a few words for Geoffrey Lilley's book of memories:

First of all are the memories of Cranfield and of the major part that you played there, especially in helping to get me started on research into the aerodynamics, and chemistry, of very high-speed flow.

Amongst many things that began then, I remember our trip to the University of Aachen, which included a walk round a very large cemetery that we had somehow mistaken for a zoo!

It was all part of my early attempts to become a research-oriented academic, which wouldn't have turned out as well as they did without your help and guidance.

Thank you, Geoffrey. Have a very happy birthday; we all look forward to many more of them.

From: *Professor John F. Clarke, FRS*

Tribute to Professor Geoffrey Lilley
from
Peter W. Duck, University of Manchester

I was an undergraduate in Aeronautics from 1970 until 1973, and then studied for my PhD under the supervision of Geoff, Werner Mangler and Jim Craggs, from 1973 until 1975.

I recall Geoff lecturing on the first day of my undergraduate studies: this was Aerodynamics I; there was no pussyfooting around - it was straight into turbulent boundary layers! Coming (now) from a mathematics environment, I look back at this with some incredulity - most mathematics students barely reach Blasius boundary layers after three years study of fluid dynamics at university. The Aeronautics programme was tough, but incredibly wide-ranging, with lots of great mathematics – I am sure Geoff must largely take the credit for this – and it served me in good stead for a career in (applied) mathematics. Indeed, when I first worked in mathematics departments I used to have some concern about my inadequacies with regard to Lebesgue integration (and other arguably esoteric mathematical matters and concepts). However, on reflection the programme in Aeronautics more than offset this with an excellent background in applying sophisticated and useful mathematical tools (for example conformal mapping and Cauchy's Theorem were both presented in the context of 2D aerofoil theory), and the large component of aerodynamics proved invaluable to my later career. I doubt if these days many engineering graduates would have such a smooth transition to mainstream mathematics as I did.

Another facet of Geoff was his leadership - my lecturers as an undergraduate (in the Aeronautics Department) were inspirational and passionate about their areas of expertise. One of my most memorable times with Geoff, which was some years on from my student days, was one summer at ICASE, NASA Langley. For a number of years I visited Hampton over the summer, with my (then young) family. On one occasion, my visit coincided with Geoff's, and we invited him around to our apartment for dinner. My two daughters and son were enthralled by Geoff's tales, my favourite being his organised mutiny of a BA Boeing 747 from San Francisco to London, followed by a rollicking from the then BA Chairman, Lord King. My family were delighted with him joining us to watch the 'Tidewater Tides' baseball team (along with a number of other visiting 'fluids Brits') one balmy Virginian summer evening. However what really impressed them was to see Geoff as a regular at Michelle Macaraeg's NASA Langley aerobics classes!

As a fifty-something, a lot of people ask me what I will do after retirement; I usually reply by saying that I have no such plans; in truth, I have aspirations of following Geoff's example in a few years time - still sharp intellectually, still working hard on a subject dear to my heart and still globetrotting!

In conclusion, I am sure I am not alone in finding Geoff a source of great inspiration!

It is a pleasure to record my memories as a colleague of Geoffrey for more than 40 years at the University of Southampton. In fact, my first contact was before his arrival at Southampton and occurred at a meeting of the Hypersonics Sub-committee of the Aeronautical Research Council in the early 1960s. I was a young researcher presenting my work on a new form of hypersonic wind tunnel we were developing at Southampton and Geoffrey was attending in his role as Professor of Experimental Aerodynamics at Cranfield and I recall him being supportive of my work.

From my perspective as a recently appointed lecturer when Geoffrey arrived at Southampton as the Professor of Aeronautics and Astronautics and Head of Department in 1963/4, his wide range of interests, capacity for hard work, his intellectual energy and enthusiasm were quickly apparent. It should be remembered that in that period headships were appointments until relinquished by the occupant. I recall the drive and leadership that you brought to this role and which were of great importance to the continued success of the Department.

Your activities in course development, stimulating research and pioneering new developments in Ship Science that ultimately led to a new Department were central to building on and enhancing the international reputation of the Department of Aeronautics and Astronautics at Southampton that it has enjoyed over many years.

Your achievements during that period and subsequently as Emeritus Professor are far too numerous to record in this memoir, but I have huge admiration for your penetrating insights into so many diverse applications of fluid mechanics, ranging from the flight of owls to cosmology. Your work on noise and turbulence is known and respected in many countries and the awards of the OBE, the Royal Aeronautical Society Gold Medal, the AIAA Aeroacoustics Medal, the Honorary Fellowship of the International Institute of Acoustics and Vibration and the Honorary DSc of the University of Southampton, are so richly deserved.

Your interests in promoting and encouraging young people into the engineering profession have been a feature of your career. In the University your support for undergraduate and post-graduate students who encountered personal problems leading to disruption in their studies has been outstanding. Your home has always been open to them and many owe their ultimate success to your efforts on their behalf. Outside of the University it is a pleasure to note your dedicated work in enabling school children to experience the excitement of engineering through the medium of the INTECH interactive engineering exhibition and planetarium at Winchester, of which you were a founder member and are now Vice-President.

On a personal note, I am sure we have all been stimulated by the stories you have relayed about your exploits during your overseas visits when so many unusual circumstances have arisen. Your adventures, such as being a passenger on the first commercial flight of Concorde, piloting the human powered Gossamer Condor aircraft and many tales so vividly recounted from your visits to China, South Africa, the USA and many other countries on many occasions, have provided us with much pleasure.

It is a pleasure to record these few words on the occasion of the Symposium arranged in your honour to mark your 90th birthday. Your lifelong contributions both to engineering, aerospace and more widely to the community in a working life of more than 70 years since you left school have been remarkable and are set to continue in your 91st year. Your personal support and friendship over a period of some 45 years are gratefully acknowledged.

Robin East

Professor G M Lilley

I recall that Geoff was telling a story to about a dozen diners at a terribly posh restaurant in Paris, paid for by SNECMA no doubt, when the waiter came and showed everyone the cooked fresh trout that had been ordered, all nicely arranged around a large serving dish. Geoff was far too involved in his story to give the fish more than a cursory glance.

Several waiters appeared later with individual plates, each having a fish arranged carefully to make the best impression; Geoff was still telling his story as his plate was set before him, only looking at it for the first time as every one started eating. Then Geoff called over the head waiter and complained loudly that his fish had no head; it clearly had a head when all the fishes were presented for approval, he had approved of and wanted his fish head.

The waiter disappeared soon to return with a single trout head on a large platter and with satisfactory ceremony positioned the head at the right end of Geoff's plated fish. Geoff examined the arrangement very carefully and then announced that the waiter had brought the wrong head. The waiter took the head back, disappearing only to return with a dozen fish heads which he offered on a platter to Geoff. Geoff examined them closely before assuring the waiter that the one he was pointing to was his fish head!

Shon Ffowcs Williams.

Dear Geoff

I first met you when I started my undergraduate course at Southampton many years ago. One of the phrases I'll never forget from your lectures was the infamous 'it can be shown'. After a few lectures I started getting a shiver down my back each time you said it. You said this when you were going from one equation to another one on the following line but what you forgot to mention was that if we went to a text book there would probably be a couple of pages of rather complicated equations missing between your two equations.

I was very grateful to you for the assistance and encouragement that you gave me during my undergraduate course. When I knocked on your door with any questions I remember I wasn't allowed to leave until I'd shown that I understood what you were explaining.

Your help continued during my PhD work at Southampton and into my career in the aero department.

I always regarded you very highly as a person and also the enthusiasm with which you undertook your work and the help you were willing to give everyone. I remember being at some conferences with you and was always impressed by the respect that everyone showed you.

One point I'll never forget though was after I had come back from a visit to the US shortly after the Mount St Helens eruption. I remember telling you about how I'd met someone who lived locally and told me all about the event. I had a very interesting discussion with you about it but I'll never forget you saying that you had seen it yourself and that it was the biggest Reynolds Number flow that you had ever seen. A true aerodynamicist!

I also remember going to a meeting at BR Research in Derby with you. We got the train back but I'll never forget you telling me about some of the escapades that you've had around the world. I never realised that train journeys could be so enjoyable.

Thanks Geoff for everything that you have helped me with over the years and I'd like to wish you a very happy 90th birthday.

Best Wishes

David Hurst

"Do you think your parents are deaf and dumb?"

In the summer of 1976, my parents came over to the UK for a short visit. My father asked to pay a courtesy call to Prof Lilley, my PhD supervisor.

"My parents are here and they would very much like to meet you."

"Yes of course, I'd be delighted to meet your parents. Invite them round for Sunday tea at my place."

After a pause...

"But Professor, there's a slight problem. I still haven't told my parents I'm married. Please do not refer to Angela as my wife when you meet them, and please remind Peggie."

Geoff looked somewhat perplexed before his face brightened...

"Are you telling me that after all these years, you still haven't told your parents? Good lord! I thought it was a temporary thing." He burst out laughing, "Do you think your parents are deaf and dumb? Of course I won't say anything, but how much longer do you intend to keep it secret?"

As they left the office, Geoff walked straight towards his secretary.

"You won't believe what NG told me just now..."

Soon the whole department was going to have a good laugh about it. The Sunday tea went smoothly; it was a very English affair, and rather enjoyable. Angela was there, helping out, taking care of all the tea things.

Dan Ing

To Professor G M. Lilley -- on his 90th birthday

Knowing Geoff Lilley has been a long learning experience for me.

Said Mark Twain: "My father was an amazing man. The older I got, the smarter he got"

Meeting you first as the solemn head of Aeronautics and Astronautics.
Unaware of your fame in Aeroacoustics.
Now you even publish in Astrophysics.

You, Professors Bray, East, and Grafton Hui helped me in Hypersonics.
Then you rescued me from Nonweiler's critiques
Of my thesis on waverider aerodynamics.

We've met in many places since my years at Southampton.
Stanford, Los Angeles, Jerusalem,
Phoenix, Hong Kong and Hampton.
Many evenings your humor has brought us to laughter.
Hearing hilarious stories from your past.

Your research topics are many and varied.
Pioneering works in blade flutter, wind turbine design and reacting flow were a handful!
Then you carried out turbulence modeling and aeroacoustics to the full.
What about your daring unified acoustic/EM theory for relativity.
-- watch out for the troubled physicists, for they can be picky.

Ask you, Geoff, how Owls hunt in silence at night.
And your experiences in man-powered flight.
Your versatile research and talents we all admire.

Continuing your research for sixty years and more
You, Geoff, are still going strong
Creating new theories for two generations to grasp.

Your colorful life is a living model for us all !!

Danny Liu

Geoff!

I clearly remember the first time our paths crossed at Cranfield, 60 years and two months ago. It was day 2 of my first term as a student at the College of Aeronautics and as a lively bunch of students (some older than you) we waited in an H-block lecture room for your first lecture to us. You entered, shyly grinning and in your distinctive sartorial style - the bow tie. This elicited mirth and wolf-whistles, the mirth turning to respect as you taught us applied aspects of aerodynamics, plus a bit of turbulence. With W J Duncan and Alec Young as senior colleagues, you certainly had fine mentors in the art of lecturing. Your lectures to us were enjoyable, interesting and instructive. Your cheerful good humour was appreciated.

As students, we sometimes met you in the aerodynamics laboratory sessions. One assigned experiment was to calibrate a wind-tunnel, using a tunnel which (we were told) had been deliberately poorly designed to exaggerate the defects which calibration is meant identify. Students suspect such stories. Was it true, or was it Geoff Lilley's first attempt at designing a good one? In my maturer years I'm prepared to give you the benefit of the doubt!

Eight years passed before our paths crossed again. By then I was a lecturer in our own Aero Dept under Elfyn Richards. He had already drawn me into researching the effects of jet noise on airframe structural vibration and how that could be reduced. My work on structural damping had therefore just begun, so my task was to lecture on the subject in the second of our annual "Aeronautical Noise and Vibration" short courses. You, Geoff, were one of the delegates attending that course, and were seated in the front row before me! No wolf-whistles from you to me, but attentive listening and a kind word of encouragement from you at the end of the talk. That was much appreciated.

Another seven years went by before you succeeded Elfyn as our HoD. We saw your tenacious character in leadership, especially in protecting the Aero Department's interests when inter-departmental rivalries arose within the Faculty over staffing, finance, lab space "and so on". We could depend on you to argue our case to the bitter end! You were tenacious too in supporting our weaker students at Examination Boards (not always with my agreement!) when their exam results were somewhat marginal. But you usually won your case and the students appreciated it! When you had a long spell of ill-health, your tenacity often brought you into your office when perhaps you should have been warmly wrapped up at home. And outside University life, you locked your tenacious teeth on the Highways Authority in a gallant, but forlorn, attempt to move the line of the proposed M27 further away from our city.

You have been one of those people to whom "things happen" when you go on overseas trips, and you've enjoyed telling hilarious stories about them when you return. I remember the one about the threat you incurred in China after you had given your pocket electronic chess-set to your young Chinese guide. In all innocence you admitted this to the customs authorities just before you left to fly home, only to be told that both the gift and your ignorance of Chinese law about it were both punishable by long-term imprisonment. You were taken to an isolated side-room pending further consideration. Did they actually tell you why they freed you in time to catch your plane?

Your tenacious and indomitable spirit kept you researching in USA for many post-retirement years, and with that now behind you, has brought you to your 90th birthday. We congratulate you and thank you for all you did for us as a department and for me as a member of it. We wish you God's blessing of happiness and contentment in your continuing "post-post-retirement" years.

Denys Mead

Geoffrey

We cannot let a book of memories exist without reminiscing about your role in establishing Ship Science in Southampton.

Your Birthday Symposium has concentrated on noise and turbulence, so many people 'not in the know' might well ask what you had to do with Ship Science!

During the early sixties, research into yachts was taking place in Southampton under the auspices of the Aeronautics Department. This concerned work on sails which gained world- wide recognition, together with tank work in the newly acquired Lamont Towing Tank, tucked in behind the 7' x 5' wind tunnel. There were a number of reports from the Yacht Research Group (ACYR) which are still regularly referenced.

At about that time, in the mid sixties, you were approached with a view to establishing a degree in Ship Science. You and your colleagues duly set up the course and the first Ship Science students arrived in 1968. Geoff Goodrich was appointed to the Chair of Ship Science, closely followed by John Wellicome as a Lecturer.

I did my Ph.D. part time in the Aeronautics Department through the seventies, making good use of the high speed section of the 7'x5' wind tunnel to test my *ship* rudders! I was appointed to a lectureship in 1978, with one Geoffrey Lilley as my Head of Department.

Shortly after my appointment, Ship Science went for UDI and it became a separate Department of Ship Science, housed in Building 28 (where it still is). As you know, Ship Science has gone from strength to strength, gaining a high reputation and world-wide recognition.

I am sure that John Wellicome, David Cooper and Philip Wilson would wish to join me in sending you our best wishes and what I really wanted to say when I started writing this is: thank you Geoffrey Lilley for setting up Ship Science!

Tony Molland

It is a pleasure to be able to contribute to a "Book of Memories" for my mentor, colleague and good friend, Geoffrey Lilley. I could spend much of this page describing our technical collaborations. Suffice it to say that much of my success, such as it has been, is due to Geoffrey's guidance and the example he has given me in how to behave professionally as well as in my personal life. My goal has always been to emulate his example in my dealings with my colleagues, students and family. But, rather than discussing work, I have a few recollections to share that perhaps say more about how he has become a part of my family.

All of us know how wonderful Geoffrey is at telling stories. Since they rarely change in the details, I have to assume that they are all completely true. Whether they involve smuggling secrets about soviet supersonic aircraft to the British Embassy in Moscow, straying into a militarized zone in the Middle East, being held at customs in China for importing electronic products (a gift of an electronic chess set for a friend), lying down in an aircraft aisle to avoid sitting next to a passenger who was smoking (on Turkish Airlines), fighting off robbers and an angry mob in South Africa, or so many others, they are always worth hearing for a second or occasionally a third time. Of course, Peggy must have heard them more than that. So often, when Geoffrey and Peggy were visiting, we would sit down after dinner and Geoffrey would regale us with a new story. It would not be long before Peggy, who had been sitting quietly, would drop off to sleep.

When Geoffrey was spending time in the US, both at Penn State and NASA Langley, Bing, my wife, and I would lend him a spare car. We always seemed to have one available. Geoffrey proved to be a magnet for bad drivers and on one occasion, our Infiniti was totalled. Fortunately no one was hurt and the insurance covered the cost of a replacement. Another time we lent him a Honda CRV. Once, when I was visiting NASA, we were standing behind the CRV trying to figure out where the spare tire was located in case it was needed. We opened the rear door of the SUV and looked under the floor of the trunk. The only thing we could find was a collapsible picnic table. This had us both completely baffled. It was only when we replaced the floor mat and closed the rear door that we both realized that the spare is mounted on the outside of the rear door – right in front of our eyes. So much for rocket scientists!

All my family, including children and grandchildren, know Geoffrey from his many visits to State College. My oldest grandchild who is about to start university was especially impressed. When she was much younger, Bing found a small article in "Science News" concerning the silent flight of owls. After she had finished reading the story, she looked up, wide-eyed, and said "Wow! That's Professor Lilley!" Another fond memory of his many visits to Penn State is when Bing and I would get home from work (I would walk to the University and Geoffrey would often drive) we would be greeted by beautiful music from our old upright piano. Geoffrey claims not to be able to play the piano well, but his short extracts from opera sounded really good and relaxing to us.

In closing, I would like to express my appreciation to Geoffrey for all his generosity in our collaborations and for all the pleasure and enjoyment he has brought to my family. With all best wishes on your ninetieth birthday.



*Philip J. Morris
State College, PA
November 25, 2009*

I know that most colleagues call him by his Christian name, but to me he will always be Prof.

I first met him when I started my MSc in Aeronautics back in 1974. His course was the one on boundary layers with all the flute music you could ever wish to see. It was also at that time that he was quite the dapper man about town with his bow ties – usually emitting photons like there was no tomorrow. I can still remember the 9 o'clock lecture on boundary layers, with the wind and rain thrashing against the windows, the sight of his favourite bow tie – the black one with orange flowers - assaulting my retina, my brain stuck in neutral and trying to get the hang of mixing length theory. I still get the sweats now!

However, once past the MSc I became one of his colleagues. He still had that Prof. look about him and his reputation of keeping a tight ship was still very much apparent. However, there were times when I found myself being puzzled by some basic concepts which I should have known instinctively but had lost again. He would sit me down and deliver his guidance. This was always bang on the nail and as clear as a bell. It was at those times that I realised that I wasn't so bloody clever and that even at his advancing years he was still streets ahead of me.

That he was clever was never in doubt, but his endearing quality was his magnetism for fate's wrath! Amongst his many trips aboard we always waited for news of another tornado hitting his accommodation, the occurrence of race riots in the city he was visiting, his doffing up of muggers, the requirement to drop his trousers in the middle of an American airport, to finally buying a house where the drains went uphill.

Life with Prof. Lilley would never be dull, particularly when he announced his lecture to a learned society about how Newton got it wrong!

One of the tragedies of his life was not being able to complete his PhD. Fate drew him a short straw, but it was with the greatest of pleasure that I was able to prepare his hood for his Honorary Doctorate at Southampton.

One must never forget his beloved wife Peggy. Usually on another planet, but deeply supportive of him and very much missed. Whatever you say about Peggy – she was always a hoot.

Making 90 years is an achievement in itself but with the mind still going full pelt – now that is a bit special.

Simon Newman

Dear Prof,

I am so grateful for all the help and guidance I have received from you over the years. Back in 1990, my joy knew no bounds when I was offered the Spitfire-Mitchell Scholarship to pursue research at Southampton University. I vividly remember the wintery day in January when I first landed in Heathrow. You were there to receive me at 6am in the morning! You gave me lessons not only in Fluid Dynamics but also in the etiquette and language of this part of the world, which I have embraced ardently. You and Peggy treated me like your own daughter and made me so welcome, which more than compensated for me missing my family back home. Peggy was always concerned about my welfare and had a hot meal cooked for me whenever I visited. While I was down with a fractured leg, you accompanied me to Southampton Hospital several times to ensure that I got the best medical care. I will never forget these moments of kindness.

While at the University, you were always very protective of me. Whenever you saw me working late, especially during winter, you made sure that I didn't walk alone in the dark and took the trouble of dropping me home. You always had the time for my queries. You lucidly explained the concepts and clarified my doubts. You answered all my queries patiently, even the stupid ones! You are the best thing that has ever happened to me. It has been a privilege and a blessing knowing you.

My life has been enriched by your association and I sincerely wish that it will continue to do so for a long time to come!

Best regards

Jyothi Puneekar

Professor Geoffrey Lilley

Like some other contributors to these “memories”, my first recollection of Geoff was as an undergraduate student, at Southampton in my case. At that time he was Head of the Department of Aeronautics & Astronautics and as a fresher it seemed rather daunting to have the HoD lecture to you. As reported elsewhere, he took no prisoners in his Part I Mechanics of Fluids (perhaps it was called Aerodynamics 1 then) class. Within what seemed like no time at all he was carrying out a dimensional analysis of the boundary layer equations, whilst other lecturers had barely moved on from revising material we had been taught at A-level. Whilst struggling with the lecture material, one of the main topics of interest amongst fellow students was the question of which of a seemingly endless array of colourful bow ties (his trademark attire at that time) he would be wearing that week.

Another memory of Geoff was when I was a postgrad student. At that time we had regular Departmental seminars, given by fellow postgrads and staff, at which attendance was all but mandatory. GML (as he was known to all the postgrads) would be there, sitting in the front row. It would seem to me that often during these seminars he would sit in restful repose, with his eyes closed. However, it would be incredibly unwise for the speaker to think he was asleep, because at the end of the seminar GML was often the first to ask a question, which was always pertinent and often completely flummoxed the hapless postgrad (my memory might not be so accurate here: perhaps this only ever happened to me). Now I seem to have developed Geoff’s habit and shut my eyes during seminars, but evidently haven’t developed his skill in asking pertinent and penetrating questions afterwards.

Although we did not work closely together, Geoff was kind enough to offer some advice and valuable suggestions during my PhD. This enabled me to formulate a plausible story concerning the possible effect of particulates on the dissipation of turbulence and hence their influence on heat transfer in an unsteady turbulent boundary layer. Since this turned out to be the main strand of my PhD, and provided me with the excuse to test this idea by carrying out some experiments in a test facility in Australia, I am forever indebted to him for this.

Geoff, as is evident in reading many of these memories, you have been a shining example and a true inspiration to many of us. I find it quite incredible that, at 90, your enthusiasm for your field of study remains as strong as ever. Long may this continue!

Graham Roberts

Dear Geoff,

It has been my misfortune to only know you for the five years that I have been at Southampton. However, your reputation reached me before I met you in person. When I told former colleagues at MIT's Aeronautics and Astronautics Department that I was coming to Southampton, it was your name that they associated with the University. I was suitably impressed! This recognition is a significant testament to the international reach of your technical contributions and also your personal commitment to putting forward your arguments in a forthright and effective manner.

Since I have been at Southampton I have unfailingly enjoyed our conversations, notably your potted histories of the University, the School and its predecessor departments. I have a particularly fond memory of sitting chatting with you in the Houses of Parliament for half an hour or so, waiting for a briefing on the "Silent Aircraft Programme". This conversation covered a remarkably wide range of topics, as always discussed with real insight and humour on your part. It is very clear to me that you have had a strong and beneficial impact on your technical field, the associated community and also the Institutions you have worked within.

Many congratulations on your landmark birthday.

Best wishes

Mark Spearing
Head, School of Engineering Sciences

My first encounters with Geoffrey are recent, only in the last decade, when I started in aeroacoustics research working for Prof Xin Zhang. I found a fascinating, and fascinated, neighbour in the office next door at Southampton. Knocks on the door every once in a while to fix this or that on Geoff's computer were always welcome, as his story-telling talents were always a joy to behold.

One day he came into my office and asked if I could help him on a research question. I went into his small office, sat down and Geoff then launched into an excited flurry of movement, drawing diagrams and scribbling equations on the whiteboard. I was intrigued as he explained to me that Einstein had rather overcomplicated the derivation of his Special Theory of Relativity! He then proceeded to reach the same answer using acoustic theory in a truly elegant manner. Geoff went to present this at the 7th International Congress for Sound and Vibration in Germany and the audience loved it. His ongoing battle with the physics community that we spent many hours debating is on his fluid dynamic theories of the universe, but this is looking more like a 100 year war!

I remain amazed at Geoff's innate ability to gain fresh perspectives across the whole spectrum of science, as the greatest scientists in history have done.

A handwritten signature in black ink, appearing to read 'Kenji Takeda', with a long horizontal flourish extending to the right.

*Kenji Takeda, University of Southampton
December 2009*

Geoff,

We first met in 1966 when you interviewed me for the MSc course in High Temperature Gas Dynamics and kindly offered me a place even though my Applied Maths degree had contained little physics, if any. Perversely, by choosing a course project on 'Combustion Noise' under Phil Doak, this new gas dynamics knowledge was hardly ever used because upon my return to Rolls-Royce I was almost immediately converted to a Noise Engineer to work on the first RB211.

I became an enthusiastic aero-acoustician and when I joined the Lockheed-Georgia research team to work on high speed jet noise in the early '70's you introduced me to your 'Lilley equation'. This gave me and others, like Chris Morfey, an opportunity to work on the first numerical and analytical solutions and to apply these to jet noise generation and radiation. I salute you for this seminal contribution to aeroacoustics and thank you for the insight it has brought to this complex process.

Thank you also for your countless stories which so many of us have enjoyed over the years and still do, to this day.

Geoff, may I wish you many happy returns on the occasion of your 90th birthday.

Brian Tester

I would like to express my appreciation and great gratitude for the inspiration that Geoffrey Lilley brought to me and to many others in the early days of research at Cranfield, and especially for the following sixty years of loyal and enjoyable friendship.

Bob Westley

I have known Geoffrey since January 1988 when I started my post-doctoral research fellowship under him.

A seemingly small thing can change one's life. For me it happened at the end of my PhD viva when Rob East mentioned that Geoffrey was looking for a research fellow and he suggested I came up to see him. I was trying to decide which University I should go to: Imperial, Queen Mary, or universities in the United States. When I came to see him I was deeply impressed by the conversations we had and thinking back over the past twenty years, I can see that he has influenced my decisions at major junctions of my career and life.

Also when I think of Geoffrey, I think of many enjoyable talks that we had in his office such as relativity, black holes and his adventures in China and South Africa, etc. Often when I went to his office on a technical matter we spent most of the time talking about something completely different. He is the tutor I never had in undergraduate years. When I started my lecturing career, I got the first set of notes (on Concorde and its economics) from Geoffrey and I based my lectures on that set of notes. When I was designing an axial fan for a cooling tower, Geoffrey provided a computer code based on BASIC written by him and I was able to use it straight away.

I have enjoyed his wise guidance and treasured his friendship and wish Geoffrey a healthy and happy life for many more years to come.

Xin Zhang

Greetings and memories from colleagues not able to attend the Symposium:

Please give my heartfelt congratulations to Professor Lilley and my best wishes for a very happy birthday party.

Ronald So

Geoff Lilley was the instigator for me coming to Southampton in 1987; we had been friends for some time before through our joint association with Cranfield. I have always considered Geoff as an outstanding role model for an academic and scholar and have tried to emulate his contributions to science. However, I have a long way to go to catch up with Geoff! I am unable to attend this wonderful celebration of Geoff's career on 11th December as I am returning from the Americas on that date, but please offer the above comments and my very best wishes for him on this special day.

Please tell him I am looking forward to the 100th celebration!

With very best regards

Chris Harris

Thank you for the kind invitation. Unfortunately I shall be overseas on 11 December and unable to attend. Please give my best wishes to Geoff and also to Robin, Norman and Graham. It would have been good to catch up with life on the south coast: it is quite some time since I was last in Southampton. Good luck with the Symposium.

Regards,

Barrie Moss

Thank you for the invitation to participate in Geoff Lilley's celebratory symposium. Unfortunately I will be unable to attend, but would be very interested in seeing the record of the event when it is available. I would like to offer the following reminiscence for consideration if you feel it is appropriate.

I was always amazed that Geoff could be attending to business in his office in Southampton at 5 o'clock in the afternoon, and then would be at the Covent Garden opera in London that same day. However, having also been his passenger on the occasional road trips to places like the old RAE and NGTE, I understand how it was possible. While no laws of physics were actually violated, I fear a few temporal ones were!

My best wishes for the occasion.

Regards

Mike Judd

Dear Geoffrey:

WHEN GEOFF WAS EVEN YOUNGER THAN HE LOOKS TODAY

In October 1947 the second Cranfield student intake wondered “who was this nice quiet guy with large glasses who seemed to have joined us in Mitchell (Aah!!) Hall?”

He was too young and too nice to be a second year student, most of whom treated us with disdain and he certainly didn’t seem to want to, or even try to, attend any of our lectures.

The mystery was solved when we found ourselves being very strictly supervised in our practical Wind Tunnel work by one Geoff Lilley. No more Mr Nice Guy, particularly if your report was late or written up badly.

I remember claiming that some aerofoil tunnel test at high alpha had shown the development of a laminar bubble and associated separation, some new phenomenon that I had just read up on in a recent NACA report. Geoff was very fierce that I should give myself airs on such a sketchy acquaintance with the matter – but I had my own back nearly 40 years later when, after encountering wing rock in a sailplane I was flying, the aircraft's designer told me that I had encountered laminar separation, so perhaps I was right after all.

Geoff was always a pleasure to be taught by even though his blade element theory for propeller design seemed a little unnecessary when all of the new aircraft were going to be jets – weren’t they?

But that apart, throughout the time at Cranfield and the following 60 years he has always been a charming and illuminating companion whose intellect has bestrode the aeronautical world.

Long may it continue Geoff and I hope to be able to come in 10 years time?

Peter Hearne

In talking on the phone to Ian Castro the other day I learned that later this week there is to be a *festschrift* to celebrate your 90th birthday (which I understood from Ian has already occurred). Having missed the latter and being unable to get away for the former (I've a double lecture that day which I cannot re-schedule this late in the semester), may I nevertheless wish you a most enjoyable occasion and a productive continuation of your technical work? Ian tells me you are still forever jetting off to faraway places on some technical mission or other. As a 'youngster' of merely 70 that fills me with a mixture of awe and admiration!

I recall with a good deal of pleasure the occasions when we have interacted in the past. I suspect the last time we met was on the occasion of the Osborne Reynolds Day we held at Manchester to mark the centenary of Reynolds presenting his "Reynolds-averaging" paper to the Royal Society in May 1894 when - I seem to recall - you joined an array of other notables (Peter Bradshaw, Alan Townsend, Bill Reynolds etc, etc) at my little apartment just across the street from UMIST for an eve of conference get-together.

Our most extensive interaction, however, was in the period around the 1980/81 Stanford conference. Your contribution to those meetings was enormous because of the huge amount of diagnostic work that had to go into choosing the test-cases and consolidating the predictions submitted by groups all over the world. The three-volume set of proceedings you produced with Steve Kline and Brian Cantwell was a definitive statement of what were the most searching and reliable data sets and where calculation schemes had then reached. It speaks volumes for the quality of that work that the proceedings are still in continual use!

I wish you all the very best for the future and hope that one day our paths may cross again.

Yours very sincerely,

Professor B. E. Launder, FREng, FRS,



Osborne Reynolds Centenary Day, 24 May 1994

PROFESSOR LILLEY IN TURKEY

I guess the first connection of Professor Lilley with Turkey began when I found him as the external examiner sitting next to my supervisor, the late Professor C.M. White. The foundation of the Aeronautical (now Aerospace) Engineering Department within the Faculty of Engineering of Middle East Technical University, in Ankara, gave reason to search for professors to close the gap of missing specialisations. The medium of AGARD was a good opportunity to communicate the need and to make contacts. It was fortunate that this need somehow reached Professor Lilley through the good offices of Professor I.C. Cheeseman to which he responded affirmatively.

The link was created and Aerospace Engineering Department benefitted from yearly visits of Professor Lilley, who created and taught the Aeronautical Engineering Design Course in the spring semester for about ten years. Later, Professor Lilley visited the Department on different occasions for conferences on turbulence and aeroacoustics.

His presence in the Department also gave us the possibility to contact other scholars from England, such as Professor A.D. Young , J. Seddon , J.P Jones and others who also gave a hand when the need arose. Discussions with Professor Lilley in the planning period of the Department were an invaluable advantage.

While we appreciate, acknowledge and thank him for his contributions in the formation of the Department, we also remember the warm atmosphere he created with students and especially his lively talks in more private gatherings about interesting events he experienced in different parts of the world.

Dear Professor Lilley, your past students and friends in Turkey all wish you:

Success and acknowledgement of your theories on cosmology;

The design of the quiet airplane;

Efficient modelling of unsteady turbulent flows;

More adventures

and above everything

Good health.

Professor (EM) Cahit Ciray, Ph.D; DIC; MS in Eng.

I first met Geoff in 1967 when I was a rookie undergraduate. Geoff was “God” to all of us, and “Professor Concord” (without the “e” in those days).

At some point during my undergrad’ time I found myself as the first (I think) undergraduate in Aero & Astro elected to the A&A Management Board. I probably had no idea what Management was or what a Board did, but it seemed a good opportunity to find out.

I don’t actually remember too much about the Board meetings, except that Geoff was very kindly (and no doubt patient) towards me and made me feel welcome. I do remember discussing the possibility of a staff vs. student squash match with Mike Goodyer at some point during one of the Boards; Mike was keen, I was keen, no-one else was the slightest bit interested. OK, I learned then that fixing squash wasn’t one of the functions of the Board.

My next recollection of Geoff was a year after I graduated. Having gone to work for Hawker Siddeley on the Harrier I soon got bored with trying to make any impact on aircraft design and returned to Southampton with the offer of a Spitfire Memorial Scholarship. I was offered the princely sum of £700pa which was £25pa more than a standard grant. However, almost immediately grants were increased to £725pa. I politely (or so I thought) inquired of Geoff as to whether there was any chance of an increase in value of the scholarship. I got a reply along the lines of “he should be bloody lucky to have got the scholarship in the first place”. I was well and truly put in my place, but behind the scenes Geoff was already lobbying for an increase for me, which I soon got, a sign again of Geoff’s kindness. Thanks Geoff☺

Roll forward to my PhD viva: the examining panel was Geoff, Terry Nonweiler (a close friend of Geoff) and Bob Janssen. It lasted what seemed like a lifetime but probably only a couple of hours. I expected to be told at that point “pass” or “fail”. However Geoff’s closing remark was “right, we’re going for lunch now, we’ll see you later”. On reconvening what seemed like a year later, but in fact just an hour or so, Geoff spun out the agony but finally said, with a smile on his face, something like “yes you’ve passed, we knew that before lunch but thought we’d make you sweat – serves you right for asking for a pay increase three years ago”☺

Since then I’ve met Geoff several times. To me he is still “The Boss”. I once ran into him at an Aerospace Sciences Conference in Reno Nevada. The conference venue happened to be a Casino. I lost a few \$\$’s. I bet Geoff didn’t!

Last but not least, just so Geoff knows he now owes me a beer sometime: Last year Geoff was elected (long overdue) a Fellow of the American Institute of Aeronautics & Astronautics. What Geoff doesn’t know (until now) is that, as I’m a fellow Fellow of the AIAA, I was sent Geoff’s nomination form to assess (which needless-to-say I fully supported). So I believe I can take at least some miniscule credit for Geoff’s election. So Geoff, although I can’t be with you to celebrate your 90th birthday as I’m hosting a visit of the NASA Associate Administrator on Friday, I fully expect an invite to celebrate your 100th Birthday, and to receive the beer you owe me.

With very best wishes,

Richard Holdaway

Noise & Turbulence: Perspectives Past & Present

90th Birthday Symposium for Professor Geoffrey Lilley

Friday 11 December 2009

University of Southampton, Highfield campus

Building 19, Room 3011

FINAL PROGRAMME

	10:30 – 11:00	Assemble & Coffee	
Chairman	11:00 – 11:05	Welcome	Prof Mark Spearing Head of School (SES)
Prof Ian Castro	11:05 – 11:45	<i>Keynote address:</i> The role of large-scale turbulent structures in jet flow and noise	Prof Philip Morris
	11:45 – 12:15	Application of the Lilley equation to jet mixing noise, jet shielding and spectral broadening of tones	Dr Brian Tester
	12:15 – 12:45	Aeroacoustics has long been our joint interest but I could never understand Geoff's enthusiasm for turbulence	Prof Shon Ffowcs-Williams
	12:45 – 14:00	LUNCH & Group photo	
Dr Graham Roberts	14:00 – 14:30	Geoffrey Lilley's early research at Cranfield, including jet noise and supersonic booms	Prof Bob Westley
	14:30 – 15:00	My Southampton years and beyond – from Prof Lilley to hypersonics	Prof Danny Liu
	15:00 – 15:30	Turbulent combustion: how Geoff gave me the best advice of my professional career	Prof Ken Bray
	15:30 – 15:45	TEA	
Prof Chris Morfey	15:45 – 16:15	Leading edge contamination – the Bleeding Slot	Prof Mike Gaster
	16:15 – 16:45	Recent progress on some model problems in aeroacoustics	Prof Neil Sandham
	16:45 – 17:30	Personal Reflections	Dan Ing, Denys Mead, Tony Molland, Jyothi Punekar, Kenji Takeda
	17:30 – 18:30	Transfer to the Terrace Restaurant, Staff Club, for pre-dinner drinks	
	18:30	DINNER Reminiscences & Reflections	Prof Robin East

Delegate List

Professor Jeremy Astley
Dr Mahdi Azarpeyvand
Dr Graham Ball
Mr David Baxter
Dr Bharathi Boppana
Mr Phil Boyle
Professor Ken Bray
Professor Ken Brentner
Professor Ian Castro
Mr Peng Chen
Professor John Clarke
Dr Gary Coleman
Miss Nishka Draska
Professor Peter Duck
Professor Robin East
Professor Steve Elliot
Professor Shon Ffowcs-Williams
Professor Mike Fisher
Professor Mike Gaster
Professor Joe Hammond
Dr Zhiwei Hu
Dr David Hurst
Mr Carols Ilario de Silva
Dr Dan Ing
Dr Lloyd Jones
Mr Aditya Karnik

Dr Jae Wook Kim
Professor Geoffrey Lilley
Professor Danny Liu
Professor Kai Luo
Professor Denys Mead
Professor Tony Molland
Mr Juan Molina
Professor Chris Morfey
Professor Phil Morris
Professor Phil Nelson
Dr Simon Newman
Dr Norman Pratt
Dr Jyothi Puneekar
Dr Graham Roberts
Dr Richard Sandberg
Professor Neil Sandham
Professor Mark Spearing
Professor John Stollery
Dr Victoria Suponitsky
Dr Graham Swinerd
Dr Kenji Takeda
Dr Brian Tester
Mr Bob Westley
Mr Phil Winfield
Dr Zheng-Tong Xie
Professor Xin Zhang



Group photo



Professor Phil Morris

PENNSTATE

Summary

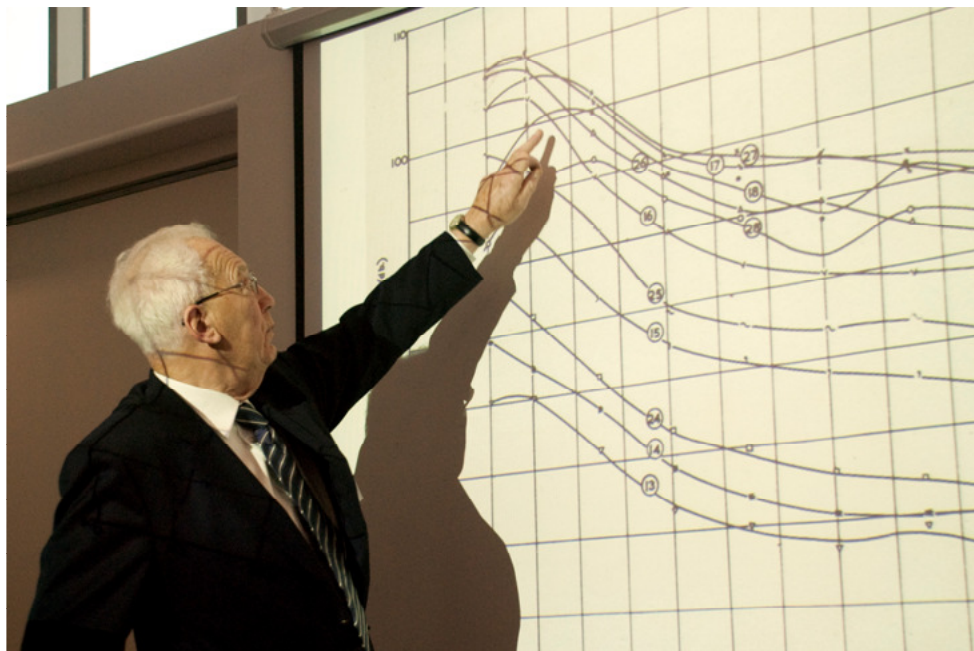
- G: Generous, Gentleman
- E: Energetic, Enthusiastic, Engineer
- O: Opinionated, Opera, Owl
- F: Fair-minded, Fighter
- F: Friend of the Family
- R: Respected, Retired(?), Renaissance
- E: Educator, Entertaining
- Y: Young at Heart



Dr Brian Tester



Professor Shon Ffowcs Williams



Mr Bob Westley



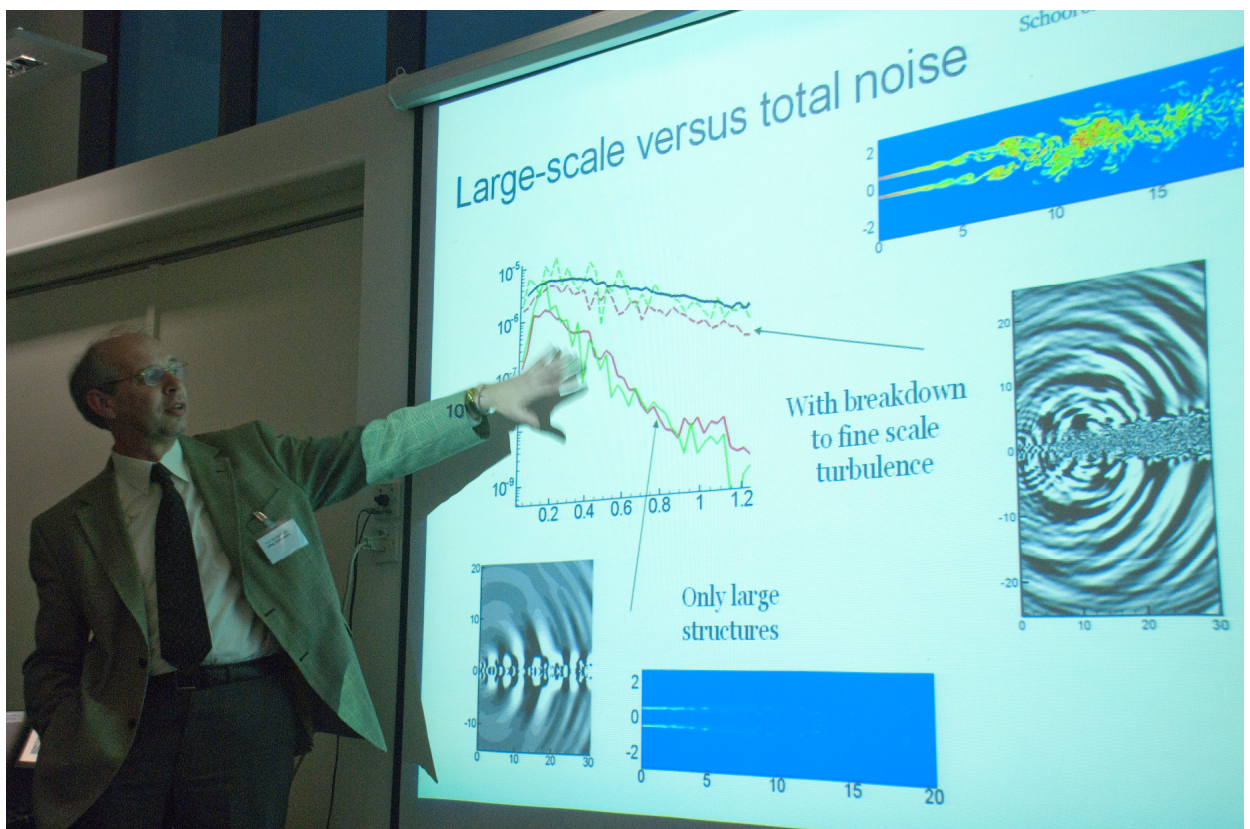
Professor Danny Liu



Professor Ken Bray



Professor Mike Gaster



Professor Neil Sandham



Professor Robin East

Successor to Geoffrey as Professor of Aeronautics & Astronautics, Robin provided the after-dinner tribute.

Geoffrey responded by providing an illuminating, and at times highly amusing, insight into the problems (both technical and political) associated with the noise certification of Concorde.



Pre-dinner gathering



Professor Geoffrey Lilley

With thanks to:

Dr. Kenji Takeda (photographs)

Miss Jayne Cook (layout)

The Linwood Quartet (pre-dinner music), hired by Danny Liu.

Prof. Ian Castro and Dr. Graham Roberts (co-organisers)