American Association for Wind Engineering

WWW.AAWE.ORG SEPTEMBER, 2009

THE WIND ENGINEER

NEWSLETTER OF AMERICAN ASSOCIATION FOR WIND ENGINEERING

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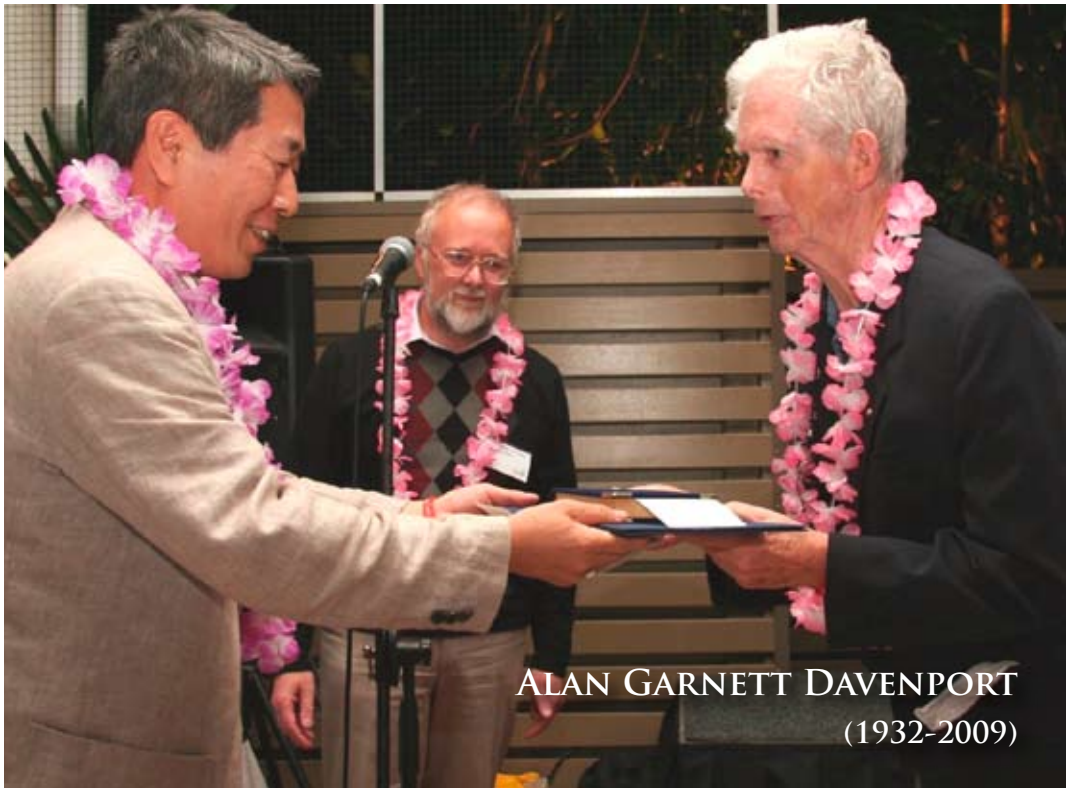
International Association for Wind Engineering



Alan Garnett Davenport (1932-2009)

By Joseph E. Minor

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His achievements are a matter of record and almost innumerable. His legacy is vested in his family: a caring wife, four accomplished children, and nine beautiful grandchildren. Intangible, but very real to all of us, is the legend of the man who was Alan Davenport. To those of us privileged to know him he was quietly supportive and patient with each individual he met. I watched him take the time to respond to a question from a student while an entourage of self-described important people waited impatiently in the lobby of the Pittsburgh Hilton for him to enter a car for transport to yet another meeting. He invited many of us to UWO to present seminars and listened attentively to our contributions, however meager. He did not smile or smirk, although others rolled their eyes, when I meticulously outlined my thesis, known to every schoolboy, that if you throw a rock at a window it will break. Such is the legend of the man who was Alan Davenport: humble, patient, kind, unassuming, and, above all, respectful of all whom he touched.

Alan Davenport, Colorado State University, 1964

By George Walker

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I first met Alan Davenport in 1974 while on my way to England to spend my first sabbatical leave at the Building Research Establishment learning the fundamentals of wind engineering. It set the scene for a relationship with him which continued to grow right up to his death.

I was a relatively late starter to wind engineering. Although I began my research career in 1960 with a masters degree measuring turbulence using an early hot film anemometer, the apparent intractability of the basic underlying mathematics put me off continuing in this field and I switched to the newly emerging field of earthquake engineering to do my PhD. I began my academic career in Townsville primarily on the basis of this work and my subsequent professional structural design experience.

It was not until 1972 that I started my involvement in wind engineering - as a result of my involvement in the investigation of the damage to Townsville from Cyclone Althea. Even then my primary interest was the structural design of houses to resist cyclonic winds and not wind loads on structures which is the core of wind engineering. This was a far cry from the already well established wind tunnel based studies being led by Alan at the University of Western Ontario focused on the design of some of the world's most exciting tall buildings and towers, and long span bridges, at that time.

My visit to UWO had been facilitated by Bill Melbourne on whose recommendation I made the visit. I had known of Alan for over 10 years having read his classic paper based on his PhD studies while undertaking my own PhD thinking it might have some application to earthquakes and held him in awe. I went in considerable fear and trembling as Alan had asked me to make a presentation during my visit. I knew very little about the fundamentals of wind engineering - addressing this was the purpose of my sabbatical - and here I was being asked to demonstrate my expertise in the court of the King!

However, I soon found my fears were groundless. He welcomed me as a fellow traveler, listened attentively to my presentation on some relatively basic work I had done on structural failure probabilities under wind, asked some pertinent questions, and encouraged me to continue my wind engineering studies. I suspect there are many others who had a similar experience. His achievements in wind engineering have ensured he will be remembered as one of the greatest wind engineers, but there will be many like me that consider his greatest gift was this ability to befriend, encourage and inspire young researchers in the field.

Because my area of work was so different from his I did not develop the close relationship with him, that many of those more closely involved with him did, until many years later. Although he was always encouraging whenever we met at conferences. The catalyst for a change in this situation was my increasing interest in the application of wind engineering to insurance. When I began this work it was an even more fringe wind engineering activity than the design of wind resistant houses had been, but Alan was very supportive. He not only encouraged me in my involvement with the insurance industry but also became very involved with the insurance industry himself. It brought us closer together in his latter years in a friendship that I will always cherish.

Not long before he died I was very privileged to spend some time with him talking about a whole range of subjects from wind engineering to cosmology to his early undergraduate life at Cambridge University. In the course of these discussions he told me how he initially enrolled at Cambridge in actuarial science, transferring to engineering after two years of study. I began to wonder, was this the beginning of his interest in risk? Probability and statistics underpinned his studies at Bristol University under the master of structural engineering risk, Sir Alfred Pugsley, which were to form the basis of his subsequent career. Throughout his career he continued to investigate wind risk in one form or another. In his latter years he turned his interest again to the insurance world. Thus, I am indeed very privileged to have shared with him much more in common than I had realized.

Regrettably there will be no more conversations with him. I shall not forget them. I, like many others I am sure, count myself very privileged to have had the benefit of his wise counsel, generous encouragement and good friendship in shaping my own life.

Professor Alan Davenport at the 2002 UWO celebration of his 40 years of wind engineering. (Left to right: John Kilpatrick, Jose Terres Nicoli, unknown, Anthony Akomah, AGD, Rafik Gerges, Seifu Bekele, Lizeanne St. Pierre, unknown and Jongdae Kim)

By Jongdae Kim
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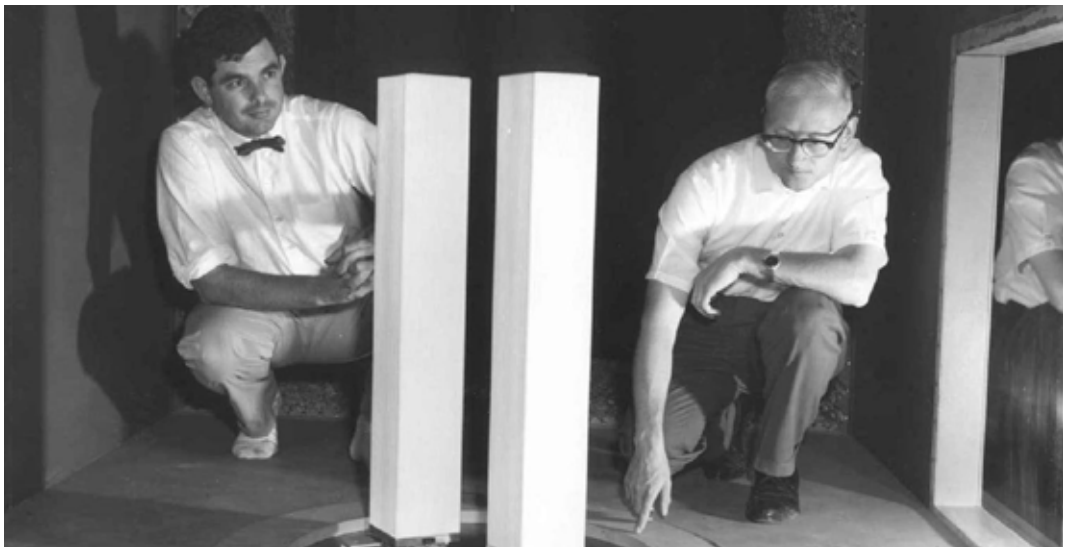
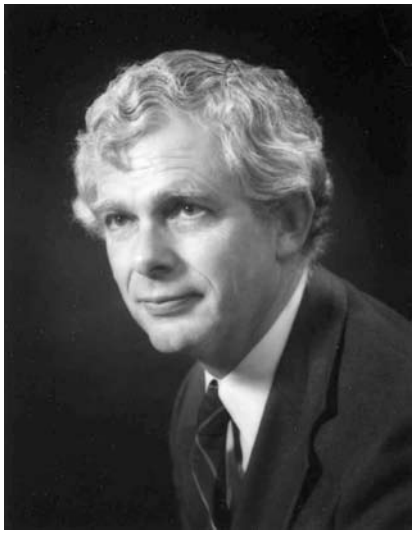
As a PhD student, post doc fellow and research engineer, I worked for the BLWTL from 1998 to 2008. Although Professor Davenport was retired at that time (probably 1998 or 1999), he delivered a one hour wind engineering lecture (in Professor Hangan's class) for the graduate students and shared his experiences. It was a great time for me to see a wind engineering legend.

For the last ten years, we didn't have much time for conversations but he remembered me as a PhD student from Korea. As his disease developed, his wife drove him to the lab but we saw him working very actively. AGD will be remembered as the greatest researcher and engineer, as well as a good dad and grandpa.



Drs. Davenport and Cermak collaborate on the World Trade Center project in 1964



By the Davenport Family

Alan Garnett Davenport passed away on 19 July 2009 in London, Ontario. Alan, who was 76 years old, died of complications resulting from Parkinson's disease. All of his immediate family was with him - Sheila, his remarkable wife of 52 years, his daughters Anna and Clare and his sons Andrew and Tom.

Alan's extraordinary Journey began in Madras (now Chennai) India, in 1932, where he was born to English tea planters. Alan was sent off at a young age to South Africa, where under the supervision of aunts and uncles, he attended Michaelhouse. There he displayed an aptitude for math and sciences, a love of sports (a good tennis and squash player; average at cricket) and a strong and independent mind. Alan left South Africa to attend Cambridge, where after some activities (sports, piano playing and editor of the sports journal) he discovered engineering; completing his B.A. in 1954. His engineering passion took him to Canada, but it was there he quickly found his great love, Sheila Smith. By 1958 he was married and had a MA in Civil Engineering. Alan returned to the UK to complete his PhD at the University of Bristol, England in 1961, studying the effects of turbulent wind on long bridges and tall buildings. He and Sheila (and their first of four children) then returned to Canada - this time for good - where he joined a small but promising engineering faculty at the University of Western Ontario and he never left.

Although still in his early thirties Alan quickly established himself as a wind engineering expert pioneering the use of wind tunnels in the design of tall (and long) structures. In 1965 he founded the Boundary Layer Wind Tunnel Laboratory at Western. In the years since this time the Laboratory has tested many of the world's tallest and most challenging buildings and bridges from an engineering perspective. The Laboratory has been the primary engineering advisor for such prominent structures from the Sears Tower in Chicago, to the World Trade Center in NYC, to Toronto's CN Tower, to the Tsing Ma Bridge in Hong Kong. Beyond these applications he also has contributed to the fields of meteorology, environmental loads, structural dynamics and earthquake loading. He developed the world's first statistically based seismic zoning map for Canada. He has authored over 200 papers on these various subjects and has lectured extensively around the world. He also led and or served on a wide variety of professional and government committees. Following the United Nations resolution in November 1987 declaring 1990-2000 as the International Decade for Natural Hazard Reduction, Alan became a member of an ad hoc Advisory Committee, chaired by Dr. Press, MAE, to assist in the planning. In Oct. 1993 he was appointed Chairman for the newly formed Canadian National Committee for the International Decade for Natural Disaster Reduction under the auspices of the Royal Society of Canada and The Canadian Academy of Engineering. He is a member of the Canadian Construction Research Board (NRC) and on the board of Directors of the Canadian Society for Civil Engineering and the International Council for Tall Buildings and Urban Habitat. In January 1988, Alan was appointed to the Scientific Committee of the Canadian Meteorological and Oceanographic Society for a 3 year term, ending June 30, 1991. Alan became a founding member in 1989 of the Centre for Studies in Construction at UWO. In May 1999 a partnership with the University of Western Ontario and the Insurance Bureau of Canada announced the establishment of the Institute for Catastrophic Loss Reduction, a world-leading research centre dedicated to reducing the impact of natural disasters. Alan served as the Institute's Research Director.

In learned journals, Alan was the founding editor of the Canadian Journal of Civil Engineering and has been on the editorial board of six others. Alan was elected to the Royal Society of Canada In 1972. In March 1987 he became a Foreign Associate in the National Academy of Engineering. In November 1987, Dr. Davenport was elected a Foreign Member of the Fellowship of Engineering in England. Also in 1987 he became a founding member of the Canadian Academy of Engineering. In 1991, he became Vice-President of the Canadian Academy of Engineering and on June 2, 1992 he was elected President.

Dr. Davenport received numerous awards and distinctions throughout his career in recognition of outstanding service to the profession and for noteworthy contributions to the science of engineering. On May 1, 2002, Dr. Davenport received Canada's highest honour for lifetime achievement, when he was appointed a Member of the Order of Canada. The investiture took place on November 30th, 2002.

Dr. Davenport was also awarded Honorary degrees from the University of Western Ontario (2001), Carleton (1996), Guelph (1993), University of Toronto (1989), Waterloo (1986), McGill (1984), as well as the University of La Plata in Argentina (1993), the University of Bristol (1998), the Technical University of Denmark (1983), and the University of Louvain, Belgium (1979).

Alan is survived by his wife Sheila, his four children Tom (Gail), Anna (Dirk), Andrew (Tanya) and Clare (John), his brother Rodney (Betty) In addition to nine grandchildren (Ryan, Locke, Larkin, Sidney, Liam, Tate, Tucker, Thomas and Gemma). His innate curiosity, his modesty, his humour and his warmth will be greatly missed. A memorial service was held at the Boundary Layer Wind Tunnel at the University of Western Ontario on Thursday 23 July 2009 at 2:00 pm.

Sheila and Alan Davenport with Acir Loredo-Souza in London.

By Acir Loredo-Souza and J. Blessmann
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My knowledge of Dr. Davenport's work (Blessmann writing) started when I read one of his earlier papers, entitled "Wind Loads on Structures", Ottawa, March 1960, Technical Paper Number 88 of the Division of Building Research, National Research Council. In this paper there is an extensive and very valuable survey of the literature on wind action on structures. There I have got a lot of useful information and quite a few references (270) which helped me on the study of wind action. A few years later, during the International Conference on Bridges and Structures held at Lisbon, Portugal, Dr. Davenport asked Dr. Jaime Mason (who had been my student at the civil engineering course of my university) if he knew someone that was working in wind engineering in Brazil. Dr Mason passed on my name and, as a consequence, Dr. Davenport sent me an invitation to participate on the second international conference on wind engineering, entitled International Research Seminar, held at Ottawa, 11-15 September 1967. At this time I had already read several papers by Davenport and noticed that his papers appeared several times in references of papers by other researchers. So, when the secretary of the Conference showed me who was Davenport, promptly I said: "so young and so famous!" At this conference Dr. Davenport presented two important papers: a theme paper entitled "The Dependence of Wind Loads on Meteorological Parameters" and a paper with co-author Dr. Isyumov called "The Application of the Boundary Layer Wind Tunnel to the Prediction of Wind Loading". In this paper research carried out at the boundary layer wind tunnel of the University of Western Ontario was described. This wind tunnel started working late in 1965 and in a few years was famous all over the world. During the seminar at Ottawa I visited it, taking account of the excellent and scientifically well conducted research being carried out. At this time we were designing our wind tunnel and, when I came back to my university, the project was modified in order that the natural wind could be reasonably simulated. Later, in 1977, a new modification was made and our wind tunnel and it started to work as an authentic boundary layer wind tunnel.

From November 19 to December 10 1982 I stayed at Dr. Davenport's laboratory, under his supervision. It was a very profitable and nice time, both for the amount of information that I obtained and for the kind treatment that I received from Dr. Davenport and his wife, Ms. Sheila. Not only Dr. Davenport, but also other members of his staff had helped me very much: Drs. Isyumov, Novak, Surry, Vickery and the technical expert Mr. Allen.

Some years later, December 1987, Dr. Davenport visited our university, giving us a very valuable and profitable collaboration with activities such as lectures, technical and scientific advice both on structural and wind engineering, suggestions on practical details of tests on wind tunnel and much more. In 1998 Dr. Davenport also gave us the pleasure of his presence, participating actively of the Jubilee Conference on Wind Effects on Buildings and Structures, 25-29 May 1998. This conference was held as a commemoration of the 25th anniversary of the boundary layer wind tunnel of the Universidade Federal do Rio Grande do Sul, designed and constructed according to the ideas of Jensen and Davenport. During his visit at our university, in December 1987, Dr. Davenport invited me to send someone from my staff to take graduate studies at the University of Western Ontario. I suggested the engineer Acir Mércio Loredo-Souza. I wish to present my hearty thanks to Dr. Davenport for his really tremendous contribution. He must be considered the "father" of the Wind Engineering. For that and for his human qualities, he deserves very much this homage.

As already mentioned by Prof. Blessmann (Loredo-Souza writing), I met Prof. Davenport in Porto Alegre, in 1987. For an undergraduate student already working in wind engineering, that was quite a moment. Five years later there I was, arriving in Canada to pursue graduate studies at UWO not only in the area of knowledge that I love, but under the supervision of nobody less than the Pope of the Wind Engineering religion. The four years at the BLWTL were an enjoyable and fruitful experience. The vision and amount of knowledge acquired were decisive for the continuity and improvement of the wind engineering field, not only in Brazil, but also in neighboring South American countries. During the time that I have been back home, several Brazilian and Argentinean students and engineers were trained and educated in the work and example of Alan Davenport and his co-workers at the BLWTL. The enormous significance for South American wind engineering should be regarded as a tribute to Alan Davenport's life work and to his outstanding contribution to the development of wind engineering. I will finish this by re-writing a part of my PhD thesis acknowledgements – "Most gratifying of all was to discover the "big person" who fills up the "big name". I am very grateful for the warm treatment and hospitality extended to me and to my family by Dr. Davenport and Ms. Sheila Davenport during our stay in Canada".

By David Surry
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I first met Alan Davenport when I was still an aerospace graduate student at the University of Toronto, unaware of the fact that I would spend a career in his company and participate in the creation and maturation of a new field of engineering. He was my external examiner, and later recruited me while I was a post-doctoral student at NPL. The idea of applying experimental aerodynamics to buildings was new and exciting and Alan was doing it in ways no one else had. It's amazing in retrospect how productive Alan was in that period of the late 1960s and early 1970s: the introduction of statistical methods; the rational treatment of turbulent loads on structures in ways adaptable to codes; the synthesis of meteorological statistics with response statistics; the development of aeroelastic building and bridge models, and then force balance models; the measurement of unsteady pressures and how they relate to tributary areas and structural systems; the application of Monte Carlo methods to simulating hurricanes; and the development of criteria by which to judge building accelerations and environmental winds. On the side, Alan was also developing the first statistical seismic zoning map for Canada. Alan, of course, was not the only one involved, but he largely unified these concepts into techniques that were generally applicable in civil engineering over a 10 to 15 year period, starting with the World Trade Center study in the mid-sixties.

Alan's talents were many, but foremost among them was always to be able see the forest rather than the trees. He seemed to have a natural ability to draw from many other fields what was required to resolve civil engineering problems and to see what was important and what was not. He was also a natural collaborator. He knew how to put a good team together and encourage people to do their best. Even the laboratory he started at The University of Western Ontario was innovative to Canada at the time in the way it was self-supporting through industrial contracts. He introduced the concept of the three ring circus: a synergy between industrial work, research and education. But at heart, he was always an educator, not just in the traditional way, but world-wide through his interaction with the profession and through encouragement of others. The steady stream of international students and researchers to Western attests to that, not to mention the equally steady stream of innovative projects, and leading architects and engineers, fueled also by Alan's incredible travel itinerary.

In the latter part of his career, he concentrated more on how to make research advances benefit the most people; how to reduce the impact of natural disasters, as is well documented in his list of accomplishments, and he did this again on a world-wide basis. He was a true internationalist.

My overwhelming memory of him will be as a role model of how to live life. No matter how pressured he was by professional demands, he always found time for his family, for students, for colleagues and all the others who touched his life. He and Sheila delighted in inviting people for casual dinner parties at their London home or for summer weekends at their cottage on Lake Huron. It was he who introduced me to the pleasures of a fine scotch after a long day of work or travel! Alan's interests were eclectic and international; he was interested in almost everything, except perhaps gossip. He really lived the axiom 'if you have nothing good to say, then say nothing'; but, right to his last days, when he did speak, people listened carefully as his thoughts were golden with wisdom. Our friend and mentor, "AGD", was a very complete human being. His impact and inspiration will be remembered while he is sorely missed.

President's Corner

As you may be aware, Alan G. Davenport died July 19 in London, Ontario, Canada at 76. This issue of "The Wind Engineer" is dedicated to Alan's contributions and his legacy.

In many scientific disciplines, the most significant advances are a result of the actions, contributions, and motivation provided by a handful of great leaders. In some instances, these leaders actually come to define their fields.

Wind engineering is certainly a discipline that has benefited tremendously from the vision and leadership of such individuals. Some of us have been privileged enough to work with these leaders and, in many instances, we can credit many of our own accomplishments to what we learned from them, including me, and I am sure, my predecessors at AAWE.

But, as many of you know, these engineers influenced people considerably beyond their immediate domains as well. Though their humility, magnanimity, technical abilities, and humor, they earned the trust and admiration of their peers. Alan Davenport was, of course, exemplary in this respect; he was a leader among leaders.

Alan's contributions to the theory and practice of wind engineering are well-known and documented for posterity, but not only in journals and conference proceedings. We see Alan's influence in the spectacular buildings and bridges whose form and design he influenced. We see it in the programs that have been built around the world by his academic progeny. And of course, we see it through the legacy he leaves at the University of Western Ontario and the Boundary Layer Wind Tunnel Laboratory that bears his name. While his projects are too numerous to mention, large structures on which he consulted include the World Trade Center in New York, the Sears (now Willis) Tower in Chicago, the CN Tower in Toronto, the Hong Kong and Shanghai Bank in Hong Kong, and the Normandy Bridge in France.

We mourn the loss of Alan Davenport, but we celebrate his contributions and the future path he has helped us define. He has trained us, inspired us and challenged us to carry the torch forward - and we will.

Perhaps all of this can be summed up succinctly in John Quincy Adams statement: "If your actions inspire others to dream more, learn more, do more and become more, you are a leader." In Alan's case, I don't think there is a question.

Sincerely,

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Editor's Note

I would like to thank all the people who sent me photographs and text for this special issue designed to honour a great man in our field. In conclusion, I am told that a biography of Alan's life and work is nearly complete and should be published near the end of 2009. It is tentatively entitled "Wind Wizard: Alan G. Davenport and His Ingenious Wind Tunnel" and has been authored by Ms. Siobhan Roberts – a successful composer of technical biographies. The AAWE Newsletter will let its readers know when the biography is available for purchase.

Leighton Cochran

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American Association for Wind Engineering

Objectives:

- The advancement of science and practice of wind engineering.
- The solution of national wind engineering problems through transfer of new knowledge into practice.

Established in 1966

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