A Tribute to Richard William (Bill) Gale Carter (1946–1993)

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Born in the old coastal town of Bristol, south-west England, and raised in Portishead near the Severn estuary (Figure 1), it seemed perhaps inevitable that Bill Carter would develop an undaunted fascination and love for the coast. Indeed many days were spent playing along the shoreline at locations where Bill would return for years to come.

Bill read for a bachelor’s degree in Geography at the University of Wales in Aberystwyth, and graduated in 1968 winning the University’s Prize for Geography en route. It was during his studies at Aberystwyth that his coastal bent was recognized. At a young age he was indeed influenced by the work of Clarence Kidson and Brian McCann. Bill’s intellectual ability was recognized by the late Professor Joe Jennings at ANU Canberra whom offered him a postgraduate scholarship. Due to health reasons, Bill declined the offer and at a later date took up an offer made by Professor Frank Oldfield at the New University of Ulster, to “do something geomorphological.” Bill entered a young university situated in Coleraine, Northern Ireland, and pursued his doctorate in the multidisciplinary School of Biological and Environmental Sciences.

Bill’s doctoral dissertation was a beautiful, two-volume piece elucidating aspects of the historic evolution and morphodynamics of Magilligan Foreland—a late Holocene beach ridge complex along the north coast of Ireland (Plate 1). Bill would return to this site for the remainder of his life introducing students to coastal processes and continuing to refine his theories on evolution and morphological maintenance of the Magilligan complex.

On graduating with the doctorate in 1972, Bill joined the faculty in the Department of Environmental Studies at Coleraine, where he moved through the ranks becoming senior lecturer in 1981, reader 1987, Head of Department 1989–1992, and Professor 1991. Bill’s long time friend and colleague Julian Orford, notes that “… the strength and vivacity of the Environmental Studies department … is a full reflection of the input of Bill who became a mainstay of department life and direction.” It was also at the New University of Ulster that Bill established his other force in life, that of his family, when he met and married Clare Binny, a doctoral student at the university.

Several of Bill’s papers emerged in the late 70’s based on the Magilligan work, and it was here that his earliest batch of students including myself, Phil Lowry and John Shaw, underwent their first formal training in coastal morphodynamics. Several additional papers on Magilligan emerged on aeolian dynamics, beach ridge development and sediment transport. Although Bill ultimately became engrossed in coastal problems around the world, Magilligan beckoned him time after time. Twenty years after his doctoral work, he continued answering questions about Magilligan Foreland and indeed his more recent work in Marine Geology on Magilligan’s beach ridges has shed new light on old arguments (Plate 2).

Unequivocally, Bill revolutionized coastal studies in Ireland. His keen awareness that subsurface sediments held the key to a more complete interpretation of coastal systems, and that morphodynamics was indeed the precision tool needed to elucidate the longer term evolutionary cycle became quite apparent in a series of papers published in the 70’s and 80’s. Bill rapidly gained recognition as an expert in late Quaternary sea-level change and he became deeply involved in the IGCP projects 61, 200 and 274. His comprehension of late Quaternary sea-levels provided the background necessary for work on Greenhouse warming, and potential coastal response to accelerated sea-level rise (Plate 3).

It was during this period of his career that Bill became very aware of the applied aspects of coastal science, and the necessity for coastal management. Undoubtedly this realization partially stemmed from the multidisciplinary department in which he resided. Certainly while he walked the halls with some of the most powerful academicians of the time, such as Professors Palmer Newbould and Brian Wood, and whom undoubtedly influenced his appreciation for the importance of applied science and management, the casual and persistent abuse of the environment by humans wrought a profound disgust in Bill. He had outspoken views about those who committed fouls in the coastal zone and got away with it. In part this philosophy fueled his desire to visit the coastlines of the United States and he embarked on a trip to Tallahassee, Florida, where he worked at Florida State University for a semester with Professor William F. Tanner. He was stunned at the density of development along the fragile shores of Florida’s coasts, the recurrence of life threatening hurricanes and the complacency of coastal residents. Bill returned to Florida many times and placed several of his students at Florida universities. Although he complained bitterly about coastal atrocities in Ireland, and became actively involved in their amelioration, he shivered at the thought of New Jersey and Miami Beach, Florida.

Bill spent many hours in the Florida surf zone during his stay with Professor Tanner at FSU. He, Clare and one of
Figure 1. Map of the Bristol area and mouth of the Severn where Bill spent much of his youth.

Plate 1. View of the Magilligan beach ridge complex in Northern Ireland, where Bill spent much of his career (courtesy of Phil Lowry).
Tanner's students, Jim Balsillie, were refining the now well known LITTORAL ENVIRONMENT OBSERVATION (LEO) program for the U.S. Army Corps of Engineers. He was influenced by the work that Tanner and his students had been doing on sediment transport in the Gulf of Mexico, which helped him develop a new and original perspective on large-scale coastal behavior and the nearshore sediment budget back in Ireland.

Bill now had developed a graduate student body and his vivacity was noted by all. Coastal researchers with international rapport began visiting the Coleraine campus and Bill's small coastal group. Lively discussions with visitors such as Paul Komar on the proportionality coefficient, and Richard Weggel on coastal engineering practices became commonplace.

It was in the early 1980's that Bill joined forces with Julian Orford at Queen's University, Belfast, possibly one of the most productive professional relationships in coastal science (Plate 4). As Bill would write about their relationship at a later date "... I think we have learnt more from each other than could have been provided from years of formal training". Bill and Julian began investigating coarse clastic beaches in southern Ireland, and have made a substantial contribution to our present understanding of these systems. In 1982 while presenting some of their findings at a meeting in Hamilton, Bill and Julian made the “Canadian Connection” with Bob Taylor and Don Forbes of the Canadian Geological Survey (Plate 5). The connection enabled Bill and Julian to expand significantly, their work on coarse clastic beaches and tackle problems of beach evolution under rapid rises in relative sea-level and detailed examinations of the sedimentary architecture of various beaches in Canada.

In 1987 Bill delivered a paper at a special session of the Association of American Geographer’s annual meeting in Portland, Oregon, on dune/beach interaction, sponsored by the International Geographical Union. Bill’s long time interest and knowledge of dunes was quickly realized by many at this meeting, resulting in Bill joining a new research group...
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with similar interests which included James Allen, Norbert Psuty, Bernie Bauer and Karl Nordstrom. Bill returned to the U.S. the following year to assist James Allen and Bernie Bauer in investigating various interactions between near-shore wave hydrodynamics and a barred profile along the east coast of Florida at Canaveral National Seashore (Plate 6). Aspects of that particular study were presented at Coastal Sediments '91 by Bill, and by James Allen at the Carter Memorial Symposium in San Francisco in 1994. Much of the data are presented in this issue of the Journal also.

Plate 4. Julian Orford (holding survey rod) and Bill on the gravel barriers in southeast Ireland (courtesy of Simon Jennings).

Plate 5. The "Canadian Connection"! Left to right; Julian Orford, Don Forbes, Bob Taylor and Bill at Misat Cove, Nova Scotia.
By the late 1980's, Bill's research program spanned both sides of the Atlantic and parts of Europe. Remarkably, he found time to make professional contributions by helping establish the journal *Littoralia*, which later became the *Journal of Coastal Research* and serve as book review editor from 1985–1990. Bill was renowned for his objective, critical, and often humorous, reviews of the literature. In addition to all of this, he was quietly working behind the scenes on a project that would ultimately bring much satisfaction to both he and the scientific community, his text, *Coastal Environments,*
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