Robert Merlin Carter 1942 -2016:

The Climate Sceptic, A personal view

Christopher Jeans

Bob Carter died on 19th January earlier this year (2016). He was the best known of all earth scientists in this age of near instant communication. He had neither discovered the elixir of life nor had he found a gold nugget vast enough to pay off the World's debts. What he had done was to dare to challenge very publicly— standing head and shoulders above the parapets— the quality of the logic and the completeness of the evidence that linked the concentration of carbon dioxide in the atmosphere to present changes in the climate and for predictions in the future. Thus Carter became involved in the **Great International Climate Controversy**. This controversy pitted industries and their sources of energy generating carbon dioxide against the future of the human race. It started around the claims of the United States politician and presidential candidate Al Gore and his slide show on what he considered to be the deleterious effects of present and past human activity on present and future climates and their threat to society. Based on this the Hollywood director Davis Guggenheim produced a 'documentary' film " *An Inconvenient Truth"* [2006] which was widely viewed in the western world. It is credited with not only raising international public awareness of dangerous anthropogenic warming and its possible consequences but also re-energizing the environmental movement. Onto this international and popular bandwagon jumped greens, environmentalists, economists, politicians and their public followers looking for causes and fame, but also, it seemed, scientists looking for grants and social purpose. Less expectedly many major scientific societies that should have known better embraced somewhat rashly this popular fashion with very little detailed critical examination of the evidence.

With this came the different approaches taken by countries that had industries dependent on coal-fired power stations, nuclear reactors, hydroelectric power or open fires. It is not difficult to imagine how important it is for a great country such as China, Russia or America, with coal-derived power for their industries to want to be fully conversant with all aspects of the evidence for such a claim—and if the claim was correct to decide whether drastic action should be taken. Few people seem to realise the immense responsibility that rests on the shoulders of those who have to order their ship to change direction prematurely.

It was into this complex political situation that the geoscientist Robert Carter launched himself from his base in Townsville in Queensland. A man, widely read and travelled, with an extensive range of

active interests and abilities, and, particularly important, with extensive experience in the interpretation of the environmental conditions under which sedimentary rocks and their fossils were formed both on the land and in the oceans ranging back from the present day to nearly forty million years back in time. Sediments laid down often in climates, ocean circulations and temperatures that were very different from those of today—including the Quaternary Ice Age and if general predictions are correct we are within an interglacial period and heading for another glacial phase. Perhaps more importantly Carter believed in vigorous and rigorous argument as the basis for the progress of science. This harks back to the very public battles between the supporters of the theory of evolution and the Church in the nineteenth century or the slightly less public debates at Burlington House in the 1920's between those developing the new science of astrophysics. Carter had a strong creative and artistic streak combined with being a very skilful and personable speaker and presenter of evidence and argument. This allowed him as the leader of the small group of scientists who had the courage to publically express their doubt, to influence greatly the path of this on-going international controversy. But behind this seemingly easy manner was a man who drove himself to achieve as near enough perfection as was possible for him in whatever topic or project his fertile mind became interested in.

Parentage and New Zealand

Robert Merlin Carter was born on the 9th of March 1942 in Reading, Berkshire, England. His father [Charles Carter 1897–1955] was a pharmacist with a shop in Reading; his mother Constance Ramell was a teacher. After his father's death Robert's mother emigrated with him in 1956 to the Hawkes Bay area in the North Island of New Zealand where his elder brother David was working on a dairy property. At the age of 14 the young Carter was sent as a boarder to Lindisfarne College in Hawkes Bay. He graduated from there in 1959 with a scholarship to Otago University, Dunedin in the South Island to study geology.

The geology department at Otago was headed by D.S. Coombs one of the pioneers of zeolite facies metamorphism. Coombs, a New Zealander, had done much of his seminal work while he was a research student in the relatively new Cambridge Department of Mineralogy headed by C.E. Tilley. However the young Carter was more drawn to fossils and softer rocks and came under an exceptional teacher John Douglas Campbell, a stratigrapher and palaeontologist, who had recently joined the Department from Canterbury University in Christchurch.

It must be realised that in those days and for many years afterwards New Zealand geologists, either in academia or in the New Zealand Geological Survey, were very different from what most of us are today. They were still much more akin to the pioneers of geology in Britain in the early 20th century epitomised by E.B. Bailey ….in 1972 I discovered that a definite modernistic twist had been added! The science was still based on extensive fieldwork and the detailed study of the rocks they found. They were a tough bunch and whether in the New Zealand bush or in the Southern Alps they had minimal regard for comfort.

Bob's summer vacation of 1962 was spent as a research assistant helping the famous New Zealand naturalist, Charles Fleming, a palaeontologist with the New Zealand Geological Survey. In 1963 he completed with flying colours the BSc honours degree in geology specialising in palaeontology. For a year he taught in the department as well as going as the geologist to survey Pitcairn Island [*Geology of Pitcairn Island* 1967 R.M. Carter] attached to an Otago Museum party of archaeologists led by Peter Gathercole. The Pitcairn Islands are a group of four disparate volcanic islands in the southern Pacific Ocean, located some 5,500 kilometres to the northeast of New Zealand. That year was particularly important for his future life, it saw him marrying his University sweetheart Anne Verngreen from Invercargill, an Arts student, who graduated at the same time. It turned out to be an excellent choice—strong minded and adventurous, capable of bending her ways to deal with a very strong-minded Bob, who at very close quarters was not always the easiest person to deal with, particularly if you did not fancy a vigorous argument! With their MAs and with a Commonwealth scholarship under his belt, Bob and his new bride set forth to Cambridge by boat arriving late in 1963.

Why did he choose Cambridge? Clearly there were departmental links, but in particular he was following in the footsteps of his mentor J.D. Campbell who, with his wife Ann and their large [4 children] and every increasing family [a fifth-born in Cambridge], had recently spent a sabbatical year [1962–1963] at the Sedgwick where they had fed and trained a host of research students in excellent suppers and babysitting. Bob's future skill as a scientific debater may have benefited from his contact during his student days and later with Ann Campbell, in her University days she had been a champion debater. In common they always had a twinkle in their blue eyes, melodious voices, an unruffled nature and, with this combination and flexible minds, they could hold their own against anybody. For the young Carter this may have been a proving ground for his apparently thick skin when accepting unflinchingly whatever the public, the newspapers, the consensual scientists, and James Cook University were to throw at him when he faced their wrath on his views on climate change.

Cambridge [1963-1967]

Arriving in Cambridge in late December 1963 the Carters set up in a small ground floor flat [costing four pounds a week] in Clare College's St Regis House on Chesterton Road. Bob's original intention when he arrived in England was to research a stratigraphically based project in France but after a short time it was discovered that someone else was actually working on it. But soon M.J.S. Rudwick, his supervisor, had convinced him to nail his flag to his favourite invertebrates, the bivalves, and consider their functional morphology.

Rudwick, the Senior Assistant in Research, had introduced functional morphology into the rather more descriptive atmosphere of the Sedgwick Museum. Martin Rudwick's own interests were in brachiopods and the logical basis upon which functional deductions could be based: He had recently spent some post-doctoral time in New Zealand and in particular studying living brachiopods at Canterbury University in Christchurch and later at the Portobello Marine Station on the Otago Peninsula just a stone's throw from the City of Dunedin. This marine station was an extension of Otago University's Department of Zoology. It was sheer coincidence that Bob was being supervised by Rudwick who had met neither J.D. Campbell, Bob's much admired teacher—an expert in fossil brachiopods—nor Bob during his stay in New Zealand. For the research students at Cambridge in the Sedgwick Museum with even a slight palaeontological interest the presence of Martin Rudwick provided an unexpected rigour in the interpretation of the form of invertebrate fossils and this rigour spilt over into other aspects of soft rock geology. The arrival of Bob, half way through the academic year, in the midst of us research students and junior researchers was a very definite new presence we had been missing— a New Zealand Doer happy to challenge the status quo. Within the year research students were allowed to have keys to the Department and were able to work to a timetable more agreeable to their choosing. His stocky form, always tidily dressed, in the summer his colonial length shorts, knee length socks, and lace-up shoes, combined with his easy and pleasant manner hid not only an appetite for concentrated work and thought but also the intention of getting the best out of his and Anne's time in Europe. His brother in law [geologist Bill Lindquist] said that the reason why Anne had taken a job at the Bell School of Languages was to keep Bob "in red wine" but I suspect it also helped to finance many of their European travels. Those of you of a younger generation may not realise that the Bell Language School was one of the best known and most expensive in the country. With no shortage of wealthy playboys, the occasional one is said to have presented their landladies—or may be their daughters—with fine Arabian horses.

Sharing a room with Bob, I soon learnt that here was a consummate individual who set himself goals, large and small, and accomplished them on time with little regard to his own comfort — sometimes working through nights and days to achieve his goal. Bob's curiosity took in all the aspects of earth sciences that were based in or were accessible from the Sedgwick----the marine oceanographers such as Jenny Friend, Michael Fisher and Brian Funnell who were collecting and studying ocean sediments: the biometrics of fossil populations driven by John Cutbill's focused passion: the stable isotope work that Nick Shackleton was developing in the Botany Department under Harry Godwin. Hovering in the background was the excitement of the geophysics circus at Madingley Rise under the light touch of Teddy Bullard. Some of Bob's contemporaries have strong memories of the pleasure he took in discussion and robust argument, often being one of the last to leave the coffee room in the morning. He was a generous loser, and when he did there was little hesitation in admitting his argument had failed, standing beers and sometimes supper to the victors. His thesis entitled "Functional studies in Bivalvia" was completed in November 1967.

By this time the Carters had graduated from their battered VW to a Triumph 2000 and with additional roof racks they planned their overland trip back home. An extended fossil collecting adventure— partly paid for by the University of Otago to add to the geology department's reference collections— through France, Spain, Morocco, Algeria, Tunisia, Sicily, Italy to Bari, Athens, Turkey, Iran and finally Pakistan where they gave in to the extreme heat, broken shock absorbers and 10 punctures a day. Foregoing India they shipped their overloaded car from Karachi in May 1968 back to New Zealand.

Return to Dunedin, New Zealand 1968 –1981

There he took up a lectureship in Geology in his Alma Mater. Perhaps the Department was expecting their returning 'son' to be a Cambridge-trained specialist at the forefront of palaeontological research — there was no doubt that he was—so as to strengthen their teaching in this area, but Bob had other ideas. He switched with the characteristic Carter gusto to Tertiary and more recent stratigraphy where he could combine his interest in palaeontology, palaeoecology and sediments and their environmental interpretation. With his energy as a teacher, field geologist and researcher he soon built up an enthusiastic team of students and researchers. It was at this stage in early 1972 that our paths crossed again when Bob and Anne had finally persuaded me to cut my Cambridge ties and get as far away from England as possible! Professor Douglas Coombs invited me to be a visitor in his department for 8 months. My intention was to take a very careful look at the lowest grades of zeolite facies metamorphism described earlier by Coombs from the Hokonui and Tarangitura Hills in S.E.

Otago. Similar sediments of Triassic age were magnificently exposed in low lying intertidal reefs at Kaka Point, a little village on the coast 100 kilometres to the east. Both Doug Coombes and John Campbell were particularly interested, the former because of it was a test for his zeolite facies, the latter for its palaeontology and stratigraphy.

The generous Carters not only provided me with their best room with its turret in which there was just space for a little desk—with a magnificent view over Port Chalmers and the Otago Peninsula — but they also put up with me for the first two months of my stay! Anne had just given birth to Jeremy, their first child. The house seemed to buzz with geology, geologists and many other activities. Without delay Bob was arranging my induction into New Zealand style fieldwork. Within days I was a field assistant to an MSc student on the West Coast of the Southern Alps. With a “Mountain Mule” [special rucksack designed for the bush and being thrown out of helicopters], a “Fairydown” [fantastic NZ sleeping bag] .22 calibre rifle [to shoot deer if cut-off by swollen rivers], basic food, and a fly camp —little more than just a fly sheet —we set forth to collect rocks among the Keas, the highly intelligent mountain parrots that have a partiality for food, boots and camping equipment. Luckily we got out with our boots and undrowned and unstarved.

My second venture was a grander affair, again the West Coast with its unpredictable and extremely heavy rain. This time the mix was Bob, Loppe [his Dutch Barge Dog], the departmental Land Rover, a shortage of food, an excess of sherry—and how these could be applied with the help of a local hunter’s Jet Boat to achieve one’s geological objectives amidst rapidly rising rivers and flooding alluvial flats. It also taught me it was possible to dig a Land Rover out of the gravel bed of a small river, and that trying to sleep in water rising inside a leaking tent with its sown-in ground sheet was not as easy as Bob and Loppe seemed to find it! At the end of my eight months in New Zealand I had been introduced [not by Bob] to winter camping in the snowfields and only just missed the pleasure of spending a weekend in a snow hole on the Fox Glacier. I was grateful that my own field area was on the drier and more predictable east coast and also that I had my own camping gear from England!

It was not long before Bob’s eyes were wandering eastwards and seawards from the relatively shallow marine and terrestrial Tertiary and more recent deposits on the eastern coastal strip of Otago to the vast expanse of oceans that lay to the east— little explored and without doubt retaining a record far more detailed and comprehensive than was available on land. He managed to do some limited marine survey work making use of the University’s small research vessel but this dream did

not really come about until after he had moved to James Cook University in Queensland, Australia in 1981 when he was offered and accepted the Chair of Geology.

Townsville 2007

The next time our paths crossed was in April 2007. By that time Bob was an adjunct research professor at James Cook University in Townsville, Queensland, Australia. He had actually retired from the University in 2002, having been professor and head of the school of Earth Sciences at James Cook from 1981 until 1999, adjunct research professor at their marine geophysical laboratory (1999 to 2005) and a visiting research professor at the Department of Geology and Geophysics at the University of Adelaide (2001-5). He had played an important role in developing his department and on the Australian National Science Research committees*. His New Zealand dreams had been realised and he and his team's research activities stretched into the off-shore and oceanic regions, to the Great Barrier Reef and its setting and to the deep sea drilling project in the Southern Oceans—on the Gloria Expeditions of 1986 and 1989 on the DSIR oceanographic research vessels, *The Raphuia* and *The Cook,* off the east coast of New Zealand, and as co-chief scientist [with Nick McCave] for IODP leg 181 [South West Pacific] in 1998,and as a support scientist for IODP leg 317 [Canterbury Basin, to the east of New Zealand] in 2009.

This time we met in Cairns in north Queensland and with typical generosity and hospitality the Carters had rented for us a flat at Clifton overlooking a secluded beach with fine views out to sea. We visited the surrounding tropical rain forests of the Atherton Tablelands, and the Great Barrier Reef before motoring along the coast southwards, stopping to look at birds and crocodiles at certain choice spots, to Townville and Jacaranda Crescent, their home.

It was only then that I realised that Bob had a very large bee in his bonnet – that was David Guggenheim's film " *An Inconvenient Truth*" based on Al Gore's slide show that was first shown in 2006. Soon we were watching it and I had no trouble in understanding why Bob had become so concerned that this scientific propaganda had been swallowed hook line and sinker by a large section of the public and was being misused by those who should have known better. Personally having taken little or no notice of the United Nations IPCC it came as a rather unpleasant surprise. Once Bob had decided that the Great Climate Controversy was at least, partly, a swindle involving ignorance, a lot of vested interests, including new band waggons to jump on for scientific research and political advantage, he set his scientific sights on dealing with its shortcomings. He had many advantages over the opposition—that is the majority—he had studied the effects of changing climates, sea levels, and ocean circulation on the geochemistry of ocean waters and the faunas in

deep time going back at least tens of millions of years and more particularly during the last 4 million years.

Consensual climate science

To what extent were the geological and related fraternity swept along by this new environmental religion is hard to say. Included in this fraternity were palaeoclimatologists who modelled climates at any time from the early history of the Earth to the beginning of the Western World's industrial revolution. The first regular and systematic measurements of proxies for the components of climates started perhaps 180 years ago. Not so long ago judged by the fact that climates refer to average conditions over 50 years periods. The Blair government were swept up by the movement —no doubt advised by the Royal Society of London - and fell into the Al Gore trap. Every State secondary school in the UK was destined to be indoctrinated by this film and its message. Luckily a high court case [*Dimmock v Secretary of State for Education and Skills 2007*] was brought against H.M. Government concerning possible errors in the film. Bob Carter was recruited to act as the expert witness on behalf of the plaintiff supplying email scientific commentary during the process of the court case. As a result nine points in Al Gore's film had to be modified before being presented to school children throughout the UK.

The research councils were a different matter and I remember clearly the discussions around the coffee tables in the Sedgwick when it was realised that any new grant application with a hope of success needed to include a climatic slant. For at least part of the palaeoclimatic fraternity this new religion and its acceptance by governments and scientific societies in many western countries must have been a godsend —a politically acceptable "save the human race" project for their egos and their research grants. The extent and reality of some of these scientific opportunists was revealed by what became known as the "Hockey Stick Controversy" and also the swathe of emails that revealed what some of these well-connected and influential scientists had been up to. By this time I was already associated with the Quaternary Environments Research Group in the Department of Geography (Cambridge) and have not forgotten the astonishment and shock of my colleagues at what was revealed.

The way that Bob dealt with this David and Goliath situation in the clash of scientific views when abuse from nearly all sides was rained down on him with few colleagues brave enough to stand up and be counted suggests he was no mean a strategist. He was always interested in gadgets and

particularly those that made life a little easier or better. His website, and all the modern means of digital communication and publicity suited his nature. On a person-to-person level he was always a genuinely friendly and charming individual even if opinions were different. He was a very skilled, slightly flamboyant and personable lecturer never trying to force a conclusion or an idea down your throat. He had a winning way—rather like a skilled barrister pleading a scientific case— of presenting the data so you came to the same conclusion before or as he suggested it to you. His style of writing and lecturing was direct and to the point. To his students he emphasised the importance of not over specialising in the minutiae of geology as this often distracted from the larger picture of what was going on in geological time. I suspect his detailed studies on bivalves showed him that it did not lead to the geological freedom that he sought.

His first two books on climates were widely read, rapidly going out of print but now Kindle versions are available. The first one entitled "*Climate; the Counter Consensus*" [2011] was a well-argued scientific case supporting his views. I suspect it represented his position after his three years of fully acquainting himself with the many areas of science and physics involved in modern climatology. His second book "*Taxing air: fact and fallacies about climate change* [John Spooner and Robert Carter 2013] published two years later was of a different character; this really was Bob at his best. It was aimed rather more specifically at the Australian market and political scene. He had combined with a talented and well known cartoonist, John Spooner, who illustrated the many foibles of Australian climate politics, but these were scattered amidst Bob's clearly argued scientific points and discussion of climate change, the evidence for the possible role of carbon dioxide —if there was one—and how any emerging dangerous changes could best be dealt with by adaption locally and not on a worldwide basis. Many engineers who tend to be rather more practical and have their feet firmly on the ground support this view.

Intergovernmental Panel on Climate Change [IPCC/UNFCC] versus **Nongovernmental International Panel on Climate Change [NIPCC]**

The launch of Guggenheim's *An Inconvenient Truth* came between the United Nations meeting at Kyoto and Robert Carter's decision to learn all the science there was in climatology. The extent of international agreement reached at this meeting in Japan [the Kyoto Accord and Protocol 1997] was not great, only 59 states accepted the Doha Amendment whereas 144 were necessary to enter this amendment into force. The objective was to commit countries to reduce their greenhouse emissions based on the **premise** that global warming exists and carbon dioxide emissions caused by the human

race have caused it. Looking through the list of countries supporting the binding targets, most of them were relatively small countries or with small populations. One notices the complete absence of China, India, and the reluctance of the United States of America, Russia, and a range of significant countries. Why were they absent and if they were present and the evidence so overwhelming why did they not join the 44 signatories? Perhaps one should put oneself in the shoes of the head of a huge country with a large proportion of its population dependent on coal fired and carbon dioxide emitting industries for their livelihood. The responsibility of the head of state is to his nation: if the changes that are being suggested are going to better his people either in the short or long term that's great, if they are only going to benefit the rest of the world but not his own people, that's good but less great, but if it is not to benefit either his own people or the world, and waste their taxes, that is something quite different! So it is a very important question whether the idea of a direct correlation between global warming and carbon dioxide is only an acceptable hypothesis worth testing both at the present and in deep time, or whether it is sufficiently proven that great industrial social upheavals would guarantee the success of the overall objective, or instead is it better to wait until wear and tear takes its toll?

It was in this situation that Bob Carter found his calling. Here was a scientist, eloquent, fearless of being in the minority, capable of vigorous scientific argument, equally if not better equipped than many who were involved in the controversy, and a man who could present the complexity of the climate science debate in clear straight forward terms of what he saw as the problems. He had the advantage of one other great asset, a cool head. Clive James described it so well in the *Guardian Newspaper* "The Australian Scientist Bob Carter died far too young. The climate change orthodoxy can be a tough proposition to be skeptical about if you mind being accused of betraying the future of the human race. Carter knew how to maintain a gentlemanly vocabulary even when the guardians of dogma were calling him names. It's a hard trick to work: sometimes it's just easier to join in and call your persecutors intensely dense. But Carter always behaved as if they might have had a point. Perhaps he was working on the principle that politeness is an argument in itself". No wonder people listened, particularly those like the then-Australian Prime Minister John Howard who refused to meet with Gore or agree to Kyoto because of the movie: "I don't take policy advice from films." as many people appear to have.

Between 2009 and his death Carter lectured and presented his case widely sometimes at conferences, invited lectures in front of select committees across the world, from North America, through Europe, Africa and the East as well as various oceanic islands. The last time he stayed with

us in Cambridge in June 2013 he was on his way to China to lecture and help launch the Chinese translation of *Climate Change Reconsidered* I & II. People listened and no doubt they felt in a better position to make up their own minds on the balance of evidence instead of having to accept the sanitised version of consensual scientific opinion. He was helped in this by the well-known Heartland Institute, an US charity whose purpose is free speech and thought on world problems.

It is hard to judge to what extent Carter's and his fellow sceptics efforts were reflected in the reactions of nations attending the United Nations Climate Change Conferences at Copenhagen [2009] and most recently in Paris [2015]. One suspects quite a lot. The Copenhagen Conference ended with little agreement other than to try to keep any temperature changes to below 2^{o}C. At least most of the major world players were taking a more active role including China, India, Brazil and South Africa. Environmentalists did not consider it a success. The more recent one at Paris produced more accord but of limited substance with a consensual agreement that the 195 countries should plan to limit the increase in temperature to below 2^{o} C by reducing their carbon output but without any firm commitments. In Paris at the same time as the United Nations meeting the Heartland Institute ran their own show COP 21 Conference on December 7, as well as launching the 4th volume of *Climate Change Reconsidered* and W*hy Scientists Disagree about Global Warming* [Bob was the lead author and editor of both reports], and, with Bob's participation, launched their documentary film *Climate Hustle.*

What a normal citizen makes of all this is not certain, one thing in my mind as a geologist is that we are thought to be in the middle of an interglacial stage during a cold phase in the Earth's history. Is this postulated human-induced global warming going to change the situation, perhaps returning to the warm Earth conditions which prevailed when the Chalk was deposited and the ocean level was perhaps a hundred metres or more above the present one? Or are glaciers and ice sheets going to advance again over Cambridge? In both instances we would be forced to take our Sedgwick Museum to a more comfortable place— perhaps on a Noah's Ark for fossils making use of the River Cam to escape to the sea and more equitable parts of the Globe.

Bob Carter played a very major role in this controversy and we must be grateful to him whether we are convinced by the scientific facts or not in this very international controversy on what controls and how to react to, the climate changes that have taken place since the Earth's formation and will continue long into the future when the human species is no more.

* An excellent obituary by a colleague Ian Plimer of Adelaide University [http://www.thegwpf.com/ian-plimer-on-his-friend-

and-fellow-geologist-bob-carter-1941-2016/] gives an idea about his activities during his James Cook period. No doubt the Geoscience Society of New Zealand and the Royal Society of New Zealand will be publishing more comprehensive obituaries for Bob in the near future.

Robert Carter, librarian of the Geography Department, Cambridge, has tracked down a comprehensive bibliography of Bob's publications.
<http://members.iinet.net.au/~glrmc/new_page_4.htm>

The author has been greatly helped by Anne Carter, Hamish Campbell, Simon McMillan, Martin Rudwick and Michael Fisher in checking his memories of times long ago when he shared a room with Bob in the Sedgwick Museum, in Dunedin when he was Anne and Bob's guest for some months during 1972, and when paths crossed again in 2007 in Townsville.