

## Peter Beighton on Rapa Nui (Easter Island), 1964 - 1965

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In 1964, during his postgraduate training in Internal Medicine in London, Peter Beighton spotted an announcement on the St. Mary's Hospital notice board. Dr Stanley C Skoryna of McGill University in Montreal was seeking medical personnel to join an international team of scientists bound for Easter Island; experience in tropical medicine would be an asset. This challenge appealed to Beighton, who had recently returned from military service as a medical officer with the United Nations in the Congo. He had the experience, the desire to see more of the world, and was curious about research; he saw no reason to hesitate.

Skoryna's project – called Medical Expedition to Easter Island (METEI) – was to document the entire biosphere of Easter Island, the world's most remote community. The project emerged as UNESCO launched the International Biology Programme to explore the 'biological basis of productivity and human welfare'; METEI would be Canada's contribution to the Human Adaptability branch of that effort. The World Health Organization offered USD5 000 as seed money, and Skoryna then convinced Canadian Prime Minister Lester Pearson to donate a navy vessel and crew to convey his team to the island. Only a few historians have examined this project and its impact.<sup>[1,2]</sup>

Easter Island had leapt into fame in the 1950s with the Kon-Tiki and Aku Aku voyages of Norwegian Thor Heyerdahl. The mystery of its *moai* statues, the disappearance of its once-dense forest, the decimation of its people, and its utter isolation fascinated the reading public. But Skoryna knew that its protector, Chile, was planning to build an airport to connect the small island to the rest of the world. Who could anticipate what that link would bring to its sheltered people? It now seemed urgent to gather as much information as possible about its status in terms of biology, including microbes, physiology, diseases and genetics. Given enough human and technological resources, the population of just 1 000 could be thoroughly studied individually and collectively, while other scientists could gather specimens of fish, birds, insects and microbes. The researchers assumed that the isolation had led to inbreeding and that the genetic and epidemiological aspects of the work would have implications further afield. They argued that the project would be complete only when repeated 50 years or more later.

Beighton flew overnight to Halifax, Nova Scotia, where he met Skoryna and the other travellers on board the ship *Cape Scott* (personal communication, 20 July, 5 and 17 August, and 29 October 2015). Although the expedition had been put together quickly over the course of just a year, some aspects were well planned. The team brought along its own buildings for accommodation and laboratories in the form of 24 collapsible portables that they would erect in a square 'campamento' compound, jokingly called the 'Rapa Nui Hilton' and situated themselves in Hanga Roa, the only village on the island. They carried an X-ray machine, laboratory facilities, hundreds of tubes for blood tests, casks of formalin for preserving biological samples, specialised freezers and a red four-wheel-drive jeep. Two physiologists from Scandinavia, Björn Ekblom and Einar Gjessing, brought a stationary bicycle to measure 'work' and oxygen consumption (personal communication, Ekblom 27 August 2015; Gjessing 29 November 2015).

The METEI team set sail from Halifax on 16 November 1964, encountering rough weather for the first few days. The *Cape Scott* made stops in Bermuda and Puerto Rico before traversing the Panama Canal. Some scientists joined the expedition in Balboa before the ship headed across the South Pacific to Easter Island. Planning continued on the long journey, especially the logistics for unloading equipment, and the team members took Spanish lessons twice daily with Isabel Griffiths and Ana Maria Eccles. Upon arrival on 13 December, the women team members were vexed that they were not allowed to go ashore over the 5 days spent unloading equipment. But Beighton and Ekblom happily set out to explore the island, sleeping rough on the first night to the great consternation of Skoryna, who had half expected to encounter cannibals and savages.

Beighton was one of seven physicians in the 38-member scientific team. They included the leader, Polish-born surgeon and gastroenterologist Stanley C Skoryna, American surgeon Garry S Brody, Swiss plastic surgeon Denys Montandon, Toronto paediatrician Helen Evans Reid, Canadian naval doctor Richard Roberts, born in England, and his Scottish wife paediatrician and geneticist Maureen Roberts. Two veterinarians, a dentist, two epidemiologists, a sociologist and an anthropologist also participated. At 30 years of age Beighton was the youngest doctor, although even younger members had been recruited, including biologist 28-year-old Ian Efford and his 22-year-old assistant, Jack Mathias, both from the University of British Columbia (personal communication, Ian Efford 29 May 2015; Jack Mathias 26 June 2015; Isabel Cutler 12 and 18 November 2015). A filmmaker, a photographer and journalists documented the journey along with English writer Carlotta Hacker, whose intrepid verve had convinced Skoryna to bring her along for 'research assistance'.<sup>[3]</sup> The physicians were responsible for physical examinations of the entire population: age, height, weight, nutritional status, dentition, throat and anal swabs, chest X-rays and blood tests. Beighton remembers the great efficiency of the organisers, who were helped by young women from the island. A small label with a list of the various examination and investigation stations was affixed to the clothing of every human subject; as each task was completed, the station would be crossed off and the person conveyed to the next post. A small crisis emerged when the inhabitants of the island refused to allow blood samples from children under 7 years and would grant permission only to women doctors to examine the women and children. Within those parameters, every man, woman and child was examined.

While present on the island, the team offered medical services as needed. The Chilean doctor had been recalled and had left with the *Cape Scott* when the ship made a goodwill visit to Chile in December. They were intrigued to learn that 15 people suffered from leprosy, some of whom lived in a sanatorium; 1 man with leprosy was treated for ptosis (drooping eyelids) by surgeon Brody. The team physicians were alert to the possibility that they might have brought an influenza type of infection with them. The islanders had a name for illness that followed the arrival of newcomers: *kokongo*. But fortunately no *kokongo* appeared.

In his free time, Beighton assisted the biologists by helping to gather fish samples, and also explored the cliffs and volcanoes. He got to know some of the islanders and would visit them in the evenings. The people were more open, friendly and tolerant than the organisers

had assumed. He was known as one of the more adventuresome of the travellers, unafraid to mingle with the locals and energetic in hiking and swimming as the weather allowed. The other travellers named a path intersection in the island's interior as 'Beighton's Corner'.

The political situation on the island became tense during the METEI sojourn. Islanders legitimately complained that the promised annual supply ship was late, and they objected to Chilean lack of interest in their own views. A young leader emerged, Alfonso Rapu, an islander who had been sent to school on mainland Chile and had returned as a teacher and an articulate spokesman. Just before the Canadians arrived, he had been elected mayor, but the authorities disallowed the outcome. The presence of journalists with the METEI expedition brought international scrutiny and blew the little 'rebellion' out of proportion. Rapu went into hiding, seeking refuge in the campamento, and a ship of Chilean troops arrived to squash the non-revolt. Peace was established and Rapu continued to serve as mayor.

When it came time for METEI to leave on 12 February 1965, no doctor had yet appeared from Chile. Beighton volunteered to stay behind to ensure medical coverage. Already familiar with the island, he had many friends and his solitude was relative. Apart from an elderly man's death from pulmonary tuberculosis and a woman with acute cholecystitis, he does not recall any serious ailments or accidents during this period. The portable buildings were left behind to serve as a clinic and eventually a research station. Beighton recalls the competence and dedication of the Chilean medical orderlies. He remained until 3 April when a Chilean ship carried him to South America, where he travelled in Chile, Peru and Bolivia before flying home to England. By August, he had joined a British Army Expedition to the Sahara Desert.

Beighton was invited to speak about his adventures on Easter Island at the Royal Geographical Society in London, and his presentation was published in the *Geographical Journal*.<sup>[4]</sup> Scientific papers appeared slowly from the scientist travellers: Helen Reid wrote about the health of children,<sup>[5]</sup> and Ekblom and Gjessing explained the maximal oxygen uptake.<sup>[6]</sup> Taylor described dentition.<sup>[7]</sup> Robert Meier wrote his PhD dissertation on the anthropology of the islanders.<sup>[8]</sup> Reid and Hacker wrote book-length memoirs,<sup>[9,10]</sup> and most of the travellers were called upon to speak about their journey in public and on radio and television. *Life* and *Maclean's* magazines ran feature articles.<sup>[11,12]</sup> A half-hour documentary 'Island Observed,' directed by Hector Lemieux and produced by the National Film Board of Canada aired on television. Some artifacts and 384 fish specimens are preserved at the Beaty Biodiversity Museum of the University of British Columbia, findable on the collaborative database, Fishbase. Skoryna was proud that the mission had accomplished what it had set out to do – a thorough documentation of a remote place; he often boasted '100% success.' Nevertheless, grumbling over unpaid bills and personality clashes marred the celebrations back home. Skoryna never wrote a final report.

Through lack of advance planning, METEI encountered a number of surprises. For example, the population was far more heterogeneous, genetically speaking, than had been anticipated.<sup>[13]</sup> In particular, newcomers brought from Tahiti in the 1860s, following decimation of the Islanders by smallpox, had made a significant contribution to the gene pool. The islanders were well aware of the problems of

inbreeding and it has been suggested that in the past they eagerly encouraged relations with travellers. The genetic diversity was evident in the later analysis of the blood groups and enzymes; some of this work had been accomplished by a Chilean team on a visit 1 year earlier.<sup>[14]</sup> Unfortunately, a set of METEI's blood samples were spoiled. Virologist Armand Boudreault identified a lack of immunity to polio.<sup>[15]</sup> Consequently, in March - April 1967, Isabel Griffiths and Carlotta Hacker returned to Easter Island, now with an airstrip, bringing sufficient vaccine to immunise the entire population.<sup>[16,17]</sup>

One other discovery arising from the journey took years to unfold. A Montreal bacteriologist, the Hungarian-born Georges Nogrády, had brought back hundreds of samples containing soil microbes. One of these organisms, *Streptomyces hygroscopicus*, was specific to Rapa Nui and was found to have antifungal activity. He gave the sample to Suren Sehgal, a pharmacologist working for the Ayerst pharmaceutical company, who persisted in investigating the microbe and its secretions even beyond the sale of the company to Wyeth. The work eventually resulted in the drug, sirolimus (rapamycin), used not only as an antibiotic but also in transplantation medicine and cancer chemotherapy. It is the first in the important class, now known as mTOR inhibitors, the acronym deriving from 'mammalian target of rapamycin.'<sup>[18,19]</sup>

No follow-up study was conducted, and Peter Beighton never returned to Easter Island, but he kept up with some fellow travellers over the years and has many vivid memories and photographs from the adventure. METEI had opened his eyes to the possibilities of research, and the system used to keep track of Easter Islanders moving through investigations is one that he used again in research studies elsewhere, including large-scale epidemiological investigations of bone and joint disorders in indigenous African populations at the Universities of the Witwatersrand and Cape Town following his move to South Africa in 1970.

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