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Russell Black (1930–2009)

Russell Black (Fig. 1) was born on June 20th, 1930 in La Rochelle, France, to Scottish parents. This dual origin became a major characteristic of Russell's personality as he developed into a mature, generous, sensitive, extremely talented adult. Completely bilingual, he possessed two passports, a French and a British one that he selected for use depending on the political situation in the country to which he was assigned. During the early part of his career he migrated between British and French colonial Geological Surveys. This double affiliation was a fantastic asset during the 1960s when few British or European geologists were keen to read scientific papers written in each others' language, and when the geological scientific concepts on both sides of the channel were so different. Bilingual Russell readily accepted the challenge by combining the contrasting styles of Anglophone and Francophone thinking.

He spent the first ten years of his life in France, in La Rochelle, Pau and Niort. His father, initiator of the use of hollow glass floats for fishing nets of trawlers in the 1920s, encouraged his son's intellectual interests in many areas, particularly in science. Following the outbreak of the second World War in 1939, and coincident with the fall of France in June 1940, the family managed to escape by sea to Argyll, on the North-West coast of Scotland, but their ship was the sole survivor en route as two others in the convoy were sunk by the German Navy. This dramatic change of country with different language and traditions, at the tender age of 10 years, strongly stimulated the critical mind of young Russell. Depending on which side of the Channel is your habitat, a country's history such as Napoleon's Waterloo is not taught exactly in the same manner!

After obtaining his Scottish Higher Leaving Certificate in 1946, he hesitated between going to Art School or to University. He finally decided for the latter but remained throughout his life an enthusiastic watercolour painter (Fig. 2). This was an important period for his development. In 1946, only 10% of school students had access to university, the other places being reserved for war veterans whose University entrance had been delayed for 5 years. This meant that Russell had to work hard to gain recognition amongst his older contemporaries who had gained life experience in Europe and North Africa.

Three University members of staff at the University of Aberdeen, North East Scotland, shaped the geological mind of Russell. Stanley Westoll, palaeontologist and expert on Devonian fishes, an early supporter of continental drift, was one of the first to stimulate Russell's interest in geology. T.C. Phemister, Head of Department, crystallographer, was one of the first European geologists, before the war, to study aqueous ternary silicate systems in Norman Bowen's lab in the USA, and to ascribe a magmatic origin for the Canadian Coastal batholith. Russell admired Phemister not only for his earth science but also as an excellent artist who sold his best paintings to Her Majesty the Queen. R.V. Jones, geophysicist, who was then a very young Director of the RAF Intelligence Service, and a friend of Winston Churchill, showed to Russell that Earth Science is a wonderful game in which to be involved. Thus through the influence of Westoll, Phemister, and Jones, Russell graduated in 1950 with a B.Sc. (First Class Honours in Geology).

As part of his B.Sc. degree training, Professor Phemister encouraged Russell to undertake three months fieldwork on the Jos Plateau, northern Nigeria, for his final year Honours mapping project. This experience so impressed Russell that he applied immediately on graduating for a post as Geologist in the British Overseas Geological Survey and returned to Nigeria based at Headquarters in Kaduna. A compulsory requirement at that time for field work in West Africa was to acquire a working knowledge of Hausa, the *lingua franca* for West Africa, which allowed Russell to live, work, and to mingle closely with various local communities. Initially he conducted a series of assignments such as drilling for water at Maiduguri, and studied Pb–Zn mineralization in the Benue valley. However, his main scientific interest culminated with the Survey's mapping project of the Jurassic tin–zinc mineralized alkaline ring complexes on the Jos plateau. Russell was guided in the field by the occasionally cantankerous Director Reginald Jacobson, and ably assisted by the affable Bill MacLeod, both excellent field geologists from Melbourne, Australia. They revealed to Russell the importance of precision in cartography coupled with the artistic aspect of geological observations. During that period, he met Herbert Read and Wallace Pitcher at Imperial College, University of London, and W.Q. Kennedy who founded the Institute of African Geology at the University of Leeds. Read, Pitcher and Kennedy were so impressed by the scientific discovery of the alkaline tin–zinc bearing granites in Nigeria that they instigated the publication of the very first Memoir of the Geological Society of London (Jacobson et al., 1958. Ring complexes in the Younger granite Province of Northern Nigeria, Mem. Geol. Soc. Lond., 1, 72 pp.). For this Memoir, all figures were drawn by Russell in a manner which combined both his artistic and scientific talents.

He participated in the International Geological Congress in 1952 at Algiers during which time he took part in a field excursion to the Hoggar in south-eastern Algeria. He met there several important personalities among whom was Pierre Pruvost who ten years later became his main supporter at the CNRS. He also met Maurice Lelubre, "father" of Hoggar geology, an exquisite man and of great intellectual integrity for whom Russell had much admiration.

Russell obtained his Ph.D. degree at Aberdeen University in 1958 for a field and laboratory study focused on the intricate Rop ring complex in northern Nigeria. During his decade in Nigeria,

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Fig. 1. Russell Black in the Aïr Mountains (Niger) in 1990.

Fig. 2. Watercolour painting by Russell Black, dated 1961. It represents the town of Agadez in Niger. 26 × 33 cm.

Russell communicated regularly with French geologists from the 'Afrique Occidentale Française', AOF, who were working across the northern Nigerian border in Niger. They invited him on a wonderful field trip to the Aïr Mountains, near Arlit, which was to have a substantial influence on his subsequent geological research. It prompted him to change his allegiance to the 'Service de Géologie et de Prospection Minière de l'AOF', based in Dakar, Senegal and later to be absorbed into the BRGM. This initiated a remarkable period of active field work in French-speaking West Africa and gave Russell a great deal of personal satisfaction. He had the complete confidence of his Superiors in Dakar, Mr. Sala and de Villejane, and developed amicable professional exchanges in the French language with colleagues amongst whom was Jean Sougy who remained a solid and faithful supporter for Russell. After a few months in Dahomey (now Benin) during 1959, he was then promoted in charge of the geological mapping of the ring complexes in the Damagaram region in southern Niger. He spent the following three years from October 1960 until June 1963 surveying the Aïr massif, covering a surface area of 60,000 km^2 to the north of the Damagaram, constructing a geological map of the region with the aid of aerial photographs. His observations not only involved the Aïr alkaline ring complexes which in this region are remarkable in number, dimension, and presence of quenched anorthositic margins, but also the superbly outcropping Pan-African granite–gneiss basement country rocks which were to become the main theme of his research endeavours.

As Officer of the 'Ordre National du Niger', Russell returned to BRGM France during 1964 to complete substantial laboratory research on material collected during his Niger field campaign. He acquired 3000–4000 samples from strategic outcrops, and succeeded in publishing a 1/500,000e geological map of this "terra incognita", which remains to this day a major reference source. For this work, he was based at BRGM Paris and at the Department of Geology at Université Blaise Pascal in Clermont-Ferrand, where Maurice Roques totally incorporated him into his West African research team even though they did not necessarily agree on the nature of the metamorphism, and tectonics of West Africa.

During this period, Russell turned towards other fundamental geological problems. He published two remarkable papers, which have become milestones in the history of Pan-African studies (Black, 1966, 1967). He demonstrated conclusively that the Pan-African is actually a true orogen, and not a "thermo-tectonic event" as considered by most researchers at that time, following Kennedy (1964). One can say that if W.Q. Kennedy created the concept of a "Pan-African" episode to embrace the Rb/Sr 500 ±50 Ma thermo-tectonic history of Africa, Russell Black pioneered the term "Pan-African orogeny". His "orogenic" concept based on field observations in the Aïr Mountains, was fully endorsed by the participants attending the fifth Colloquium on African Geology in 1968, which he organized at Université Blaise Pascal in Clermont-Ferrand. During the same period, he was already beginning to be impressed by the petrological similarities and tectonic differences which existed between intraplate magmatism located within and peripheral to cratons and that found within mobile belts. For example, he remarked that silica-undersaturated alkaline plutons always intrude basement older by at least 500 m.y., while it is the inverse for silica-saturated complexes, either post-collisional or truly anorogenic.

After his few years back in Europe completing reports on the Niger BRGM programme, his longing to return to Africa again became too strong. He accepted a position as Overseas Professor of Geology in the Institute of African Geology, University of Leeds, seconded to the University of Addis Ababa, Ethiopia, funded by the British Council, where he remained for 5 years (1970–1974). Robert Shackleton joined him for one year in Addis Ababa in 1970–1971 as Royal Society Leverhulme Visiting Professor.

During the period 1970–1974, Russell Black served as Head of Department of Geology at the then Haile Selassie Ist University, currently Addis Ababa University. It was a critical moment as students were not only academically strong but very much politically