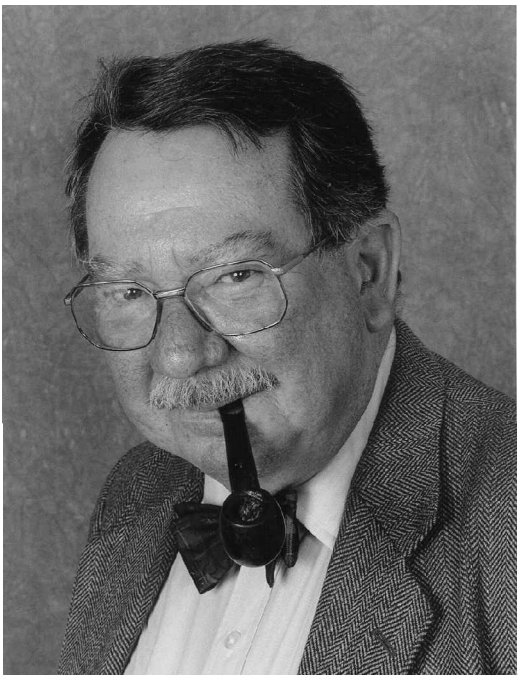
Obituary

Duncan McKie 1930—1999



Duncan McKie

A favourite aphorism of the young McKie was Lord Rutherford's tripartite division of the Natural Sciences. There was Physics; then there was Chemistry; and the rest was Stamp Collecting. Duncan may never have collected postage stamps, but he seemed to collect almost everything else, and in this he was indulging not mere cumulomania, but an intense interest in most things around him. It was in fact his flair in the collection of rocks and minerals — developed during wartime evacuation to Cornwall and Wales — that became a potent factor setting his life path. This might have availed him little but for his proficiency in Rutherford's second category, His father, Douglas McKie, had been a regular soldier, who, after severe injury at Passchendaele, turned to Chemistry and later became a distinguished Historian of Science at University College London. Duncan initially followed by taking a degree in Chemistry at UCL; transferring to Cambridge he then read Mineralogy and Petrology. The National Service Act now closing in on him, he opted for a three year stint with the Colonial Service, and so it was that he went as a mineralogist to Tanganyika, for his African adventure.

Duncan returned as a research student to Cambridge in 1957, a seasoned Africa hand with a trunkful of trophies. Pre-eminent amongst these — *ex Africa semper aliquid novi* — was his new mineral, yoderite. He was not in fact the first to see yoderite — so spectacular a mineral could

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hardly be missed — but it had previously been identified as dumortierite. Duncan, with the thoroughness that was his hallmark, deduced monoclinic optics and, noting its occurrence as a reaction rim between kyanite and talc, made his discovery. The chemistry of a kyanite-talc quartz assemblage seemed so improbable by the canons of the time that Tilley, on first seeing the thin section, insisted the phyllosililicate mineral must be muscovite. Directing the professorial paw to the hand specimen, the ever practical Duncan proved his point. The masterly study of yoderite, in which he deduced its high pressure character and its structural relationships to the $A1_2SiO_5$ polymorphs, gained Duncan not only a PhD, but also a Research Fellowship at his Cambridge College, Jesus. The subsequent highly productive period saw a series of definitive crystallographic studies of minerals from the sole yoderite occurrence at Mautia Hill, on order-disorder in sapphirine, the borosilicates kornerupine and grandidierite, and on layer sequence polytypism in högbomite. A projected petrologic study, however, was never completed, Mautia Hill having become a centre for insurgents soon after Tanzanian independence.

In the early sixties collaboration between Duncan and Desmond McConnell had produced two succinct papers on the ordering kinetics of albite. These gained wide admiration and although Duncan was justly proud of the work he sensed the feldspar field to be overcrowded and moved into less populous pastures. Survey work on the Wigu rare earth deposit of eastern Tanganyika had sparked his interest in carbonatites and at the end of his time in Africa he was able to carry out fieldwork at a proposed damsite on the sovite complex of Oldonyo Dili in the north of the territory. He was thus led to crystallographic studies on many carbonatite minerals, notably the rhombohedral phosphate florencite-goyazite series and the perovskite-type lueshite. An account of the chemistry of fenitization — virtually a study of Oldonyo Dili – was published as a chapter in the Carbonatite volume of Tuttle and Gittins (1966) and remains the only sound and detailed treatment of this unique metasomatic process.

In 1960 the natrocarbonate volcano Oldoinyo Lengai erupted; for the first time petrologists were able to witness the ebullition of these unique lavas ('lengaites') and confirm their truly igneous character. Duncan independently recognized the dominant crystalline constituents of lengaite as two new sodium calcium carbonate minerals, nyerereite and gregoryite, and with E. J. Frankis published the definitive study of nyerereite with its interesting high-low displacive polymorphism. Detailed structural and experimental studies of these minerals and their related extensive and complex carbonate family occupied much of his later research activity, and in this context it is appropriate to record the superb technical support on which he could rely for such high quality work — in particular that of Tony Abraham, Maurice Haslop, and the late Ken Rickson. It may be that, for one of his perfectionist tendency, he kept too many irons in the fire; several important studies virtually completed years ago — notably on deerite and gregoryite — remain unpublished.

On his appointment as University Demonstrator in the late fifties, Duncan found himself teaching students whose grounding in Chemistry — especially in the thermodynamic analysis which he saw as the inevitable way forward for predictive petrology — was imperfect. In the early '60s, the only book presenting thermodynamics specifically for geologists was the French text of Kern and Weisbrod. Duncan's stylish translation into English was a widespread success and undoubtedly encouraged ideas of further writing. In 1966 his marriage with departmental colleague Christine Kelsey initiated a partnership cemented by a wealth of shared interests in addition to their abiding enthusiasm for crystallography. An early fruit of this partnership, the *Crystalline Solids* of McKie and McKie is a comprehensive treatment of Crystallography, Crystal Physics, Optics and Thermodynamics more especially relevant to the then Cambridge courses in Mineralogy and Materials Science. Its practical approach and clarity of exposition was much appreciated by teacher and student alike. Rapid development of technology over the subsequent decade dictated a thorough crystallographic revision. In this second edition it was perhaps mainly Duncan who regretted discarding the stylish methods of spherical trigonometry in favour of vector treatment more suitable for computer usage. However, there is no mistaking the one voice in which husband and wife together proclaimed their intense excitement with crystallography, and their shared delight in its elegance.

Duncan had early been appointed to administrative responsibility in Jesus College. For over 20 years as Steward he superintended not only College catering, but also the maintenance of grounds and gardens. In this role he showed an unusual capacity to inspire devotion and loyalty in

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his staff, so enabling utilization of his organisational skills to greatest efficiency. With his flair for the design of menus and judgement in selection of wines, a dinner in Jesus became a memorable experience. In Council his sagacity helped ease many difficulties; ultimately elected President (= Vice-Master) he steered the College through a potentially contentious magisterial election with a sure and impartial hand.

Increasing preoccupation with affairs at Jesus naturally attenuated his departmental participation and to many younger colleagues he was more familiar as the compact avuncular figure, neat in jacket and bow-tie, proceeding deliberately through Cambridge streets to lecture or to attend the Faculty Appointments Committee on which for many years he served as Secretary. Within the Department he was more often sensed than seen, the Sobranie smoking mixture filling his ever present pipe laying a faint aromatic trail between X-ray labs and fourth-floor office.

At Oakington near Cambridge, Duncan and Christine had settled in a fine Victorian House on the boundary between Greensand and Gault, with ample space for their warm hospitality and indulgence in horticultural enthusiasms. Duncan, a noted plantsman and meticulous collector, was once teasingly congratulated on the fine crop of labels in his garden! By astute purchase over many years he had notably enlarged a superb library of early scientific books inherited from his father. His intention on retirement to start serious bibliographic study was frustrated by the rapid development of the tumour that ultimately ended his life.

Essentially conservative by nature, Duncan's research techniques were essentially those with which he started so powerfully 40 years ago. He was fortunate that colleagues — and above all Christine — could provide him with the advantages of some modern skills that he had not the taste or the time to acquire. He undoubtedly also valued his luck in living most of his life under an adequately-funded University regime, when quality research could be followed where it led, completely free from the grant-application tyranny that so besets his successors.

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