Association of Applied Geochemists

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OBITUARY FOR JOHN ALEXANDER HANSULD (1931–2019)

John A. Hansuld, a founding member of the Association of Applied Geochemists (AAG) (originally named the Association of Exploration Geochemists, AEG), died at the age of 88 on 26 November 2019. John played a key role in establishing the AEG/AAG. Stimulated by the well-attended International Geochemical Exploration Symposia (IGES) of the late 1960s, John and fellow geochemists – including Alan Coope, Herb Hawkes and Eoin Cameron – recognised the need for a professional organization of exploration geochemists and, thus, the AEG was formed in 1970. John became President of the AEG in 1971. In a remarkably short time, the AEG had taken over responsibility for the IGES series (the 4th took place in London, UK, in 1972) and John had negotiated with Elsevier the launch of the association's flagship journal (*Journal of Geochemical Exploration*) which would be published from 1972 onwards. In the following years, John focused on the role of business editor. The early association newsletters (later to become *EXPLORE*) make for very interesting reading and can be found at https://www.appliedgeochemists.org/explore-newsletter/explore-issues. Recognition of John's numerous important contributions to the AEG are shown by the Distinguished Service Award of the association presented to him in 1982 and the Past-President's Medal in 1999.

Ontario-born, John earned his BSc (Hons) in geology from McMaster University (Canada) in 1954, followed in 1956 by an MSc from the University of British Columbia (Canada) where his work focused on the factors influencing the rate of leaching from ore at the Britannia Mines (British Columbia) copper sulfide deposit. While having a beer on a train to a Prospectors and Developers Association of Canada (PDAC) convention, John was recruited to do a PhD at McGill University in Montreal (Canada). That chance meeting led to a blossoming of his fascination for geochemistry, specifically into the mobility of metals (especially Mo) in the surficial environment using Eh–pH phase equilibrium diagrams. He essentially establishing this technique in predictive geochemical studies.

After obtaining his PhD in 1961, John joined Amax Inc. and, in 1962, he was promoted to Chief Geochemist at their headquarters in Denver (Colorado, USA), followed by a further promotion to Manager of Exploration Research. In 1967, John returned to Toronto where he was responsible for managing exploration in Eastern Canada; the following year, supported by Amax, he obtained a Professional Master's Degree (akin to an MBA) from Harvard Business School. In 1973, John was further promoted to Canadian Exploration Manager and, by the late 1970s, Amax Exploration (Canada) was one of the largest groups in the country, with 91 active projects. In 1978, he became Vice-President of Amax with responsibility for the worldwide exploration budget. In 1983, John persuaded Amax to spin out its Canadian operations into a new company – Canamax Resources – of which he became President and CEO. The spin-out raised $30 million in its initial public offering, a major achievement as the financing introduced 'flow through' shares, already used by the oil and gas industry, to the mining sector. This tremendous boost to financing mineral exploration, especially for junior companies, led to the positioning of Canada as a global leader in the mining industry. John was dubbed "The father of flow through" and was named "Mining Man of the Year" by the *Northern Miner* in 1988 and "Developer of the Year" by the PDAC in 1989.

John left Amax in 1989 to take on executive and directorship positions with various mining companies. He was President of the PDAC in the period 1993–1996 when, again, his leadership had a major impact through his strategic plan to revitalise and expand the organization beyond its North American focus to an international one that had extensive influence. In 2012, John was inducted into the Canadian Mining Hall of Fame (https://www.mininghalloffame.ca/john-a-hansuld), and it was at the ceremony that the presenters demonstrated to all present the full breadth of his accomplishments, as a geochemist, entrepreneur, mine-finder, financial investor, and leader. John remained active in the mining community up to the age of 85.

John and his wife of 64 years, Jane, travelled the world extensively. He was very much a family man. Jane, their three children, six grandchildren and two great-grandchildren were his priority and his delight.

John Hansuld was a trailblazer and leader in the exploration and mining industry. The AAG benefitted greatly from his talents.

Gwendy E.M. Hall

RECENT ARTICLES PUBLISHED IN *EXPLORE*

The following abstract is for an article written by **C.U. Ibe, S.C. Obiora** and **T.C. Davies** (all from the Department of Geology, University of Nigeria) in issue 185 (December 2019) of the *EXPLORE* newsletter.

"Petrological and Geochemical Study of the Precambrian Basement Complex Rocks in Katchuan Irruan Areas, Southeast of Ogoja, Southeastern Nigeria"

This study shows that Katchuan Irruan and its adjoining areas in southeastern Nigeria are underlain by Precambrian Basement Complex rocks, namely: migmatitic banded gneiss, garnet mica schists and granitoids. The gneisses show positive anomalies in Rb, K, La and Sm and strong negative anomalies in Th, Ta, Nb, Sr, Ti, Tm, Yb, Zr and Y, with an overall enrichment of the large ion lithophile elements (LILEs) and a depletion of the high field-strength elements (HFSEs). This confirms their protoliths as sedimentary. There is a dominance of shale in the protoliths of the garnet mica schist unit, whereas greywackes, iron shale, iron sand and arkose originally formed the migmatitic banded gneiss unit. Both major element data and trace element ratios (i.e., Th/Sc, Th/U) indicate that the protoliths had an average upper crustal composition. Detritus from a mixed sourced is indicated for the two units, with clastic material resulting mainly from both andesitic and felsic/recycled detritus. The overall data consistently suggest a continental island arc and/or active margin setting as the probable geodynamic setting for the deposition of the sedimentary precursors of these units. Geochemical data also indicate that the granitic rocks are generally shoshonitic, alkali-calcic to calcic, ferroan and peraluminous. They are enriched in both LILEs and HFSEs. Their trace elements and rare earth element (REE) patterns are similar, indicating that they are co-genetic. They are slightly to strongly light REE–enriched [$(La/Yb)_N$ = 3.04 to 228.44] and have pronounced negative Eu anomalies (Eu/Eu* = 0.23–0.71). Their overall geochemical features indicate that they were most likely derived from partial melting of crustal materials in an orogenic (post-collisional) tectonic setting. They are, therefore, related to other Pan-African granites, which were emplaced during the Pan-African orogenic event.

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