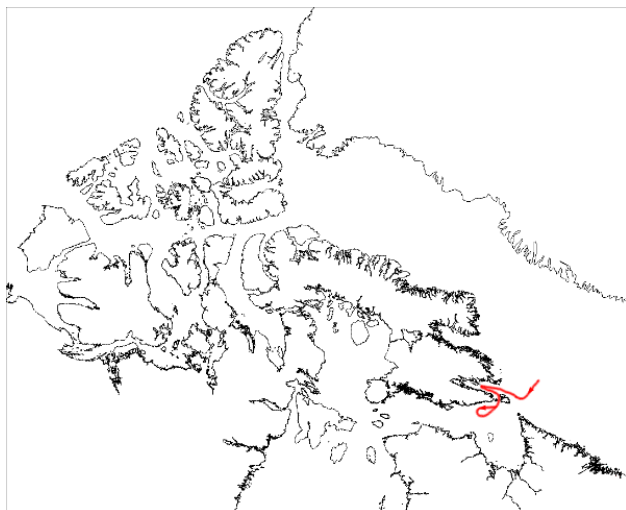


Réginald AUGER<sup>8</sup>

Kurzvortrag und Filmvorführung mit CD/short lecture and movie from CD

*Martin FROBISHERs Baffin Betrug: Archivalische- und archäologische Untersuchungen zur Klärung, inwieweit Betrügereien bei der Gewinnung von Edelmetallen durch die Expeditionen im Spiel waren*



Die erste Expedition von Martin FROBISHER zur Erkundung einer Northwest Passage brachte neben den ersten Kontakten zu den Ureinwohnern auch die ersten geowissenschaftlichen Erkenntnisse in Form von Erzproben in das England des 16. Jahrhunderts. Archäologische Ausgrabungen auf der Insel Kodlunarn erbrachten den Beweis dass die FROBISHER Expeditionen insgesamt drei Versuche unternahm, um Gold und Silber führende Erze – sogenannte „black rocks“ – in größerer Menge zu finden. Die ersten „Probiererergebnisse“ hatten die beiden Edelmetalle nachgewiesen, jedoch erwiesen sich die späteren Erzproben als

taub. Die Grabungsergebnisse beweisen, dass schon vor Ort Erzprüfungen durchgeführt wurden, ebenso später auch in London. Die Studien an vorhandenen Dokumenten und die archäologischen Grabungen sind auf den Verdacht des Betrugs bei der ersten Expedition zentriert, um weitere Fahrten finanziert zu bekommen. Es ist jedoch auch die Edelmetallführung durch bereits benütztes und daher verunreinigtes Blei, das zur Trennung von Gold und Silber in der „Probierschale“ benötigt wird, nicht auszuschließen.

*Martin FROBISHER and the Baffin Fraud: Archival and Archaeological Enquiry into a 16<sup>th</sup> Century Mining Venture*

The effervescent political and economic situation with regard to the expansion of England at the end of the Renaissance is at the heart of Martin FROBISHER's voyages in search of a passage to the Northwest of England at the end of the 16<sup>th</sup> Century. FROBISHER's voyages of discovery stand out as one of the most extensively documented mining ventures of the New World; accounts of those travels contain information on the logistics of undertaking an exploration of unknown lands as well as, descriptions of encounters between European and Inuit. Archaeological excavations at the FROBISHER's site on Kodlunarn Island have produced a time capsule of information on mineral extraction and its transformation in an attempt to recover precious metals. The methodology for this research programme has combined the use of various sources of information such as: travel accounts, oral history, archaeological research and experimental archaeology. Our 50-minute documentary focus on a narrow aspect of that research project, namely, the speculations the field, and the laboratory research carried out to discover what went wrong with the assayers in search of precious metals.

Stirred by the results of the assay on the black rocks brought to England, a second expedition was mounted in 1577 with the sole purpose of exploring for new sources of ore; discovering a passage to China was no longer a consideration. Saxon-trained Jonas SHUTZ, who was to become chief assayer for the group in London, was master assayer.

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Documentary and archeological evidence indicate that small-scale mining and metallurgical operations took place on Countess of Warwick Island during the second and third FROBISHER voyages. The third voyage produced 1136 tons of "*black ore*" from a 25x4m trench on Countess of Warwick Island and from six mines on the north shore of Frobisher Bay and one on Resolution Island. Meanwhile, small-scale assays of Frobisher's ore were made in England, first near the Tower of London and at other sites in the city.

Gold and silver were determined in much the same way as in fire assays today. The ore was melted and precious metals were dissolved in molten lead. The lead was then oxidized and the remaining impurities went into lead oxide. Finally, the silver from the gold-silver alloy remaining was dissolved by adding a suitable acid, and silver was then precipitated from the solution as a chloride. Technology was similar to the London furnaces but the plant operated on a grander scale: the old foot bellows (used in the London melting operations) became "*great bellows*" activated with a water wheel; crushing and grinding was accomplished in a water-powered circuit instead of mortars and pestles. However, despite improved efficiency, little gold appeared. The metallurgists blamed the furnaces, not the ore. There were charges and counter-charges concerning the abilities of these furnaces. Finally, in 1583, William Williams, assay-master of the Mint in the Tower, checked the ore and found neither gold nor silver. His work agrees with modern determinations using modern methods, showing that gold can only be determined in the FROBISHER ores after pre-concentration and is present in the ore in about the same grade as the average of the crust of the Earth. Curiously enough, Elizabethan assays gave results 10.000 times too high.

How was it possible that the five assayers hired for FROBISHER's 1578 expedition failed to recognize that the ore they were assaying was worthless. Mineralogist Donald HOGARTH has suggested that the assays were skewed by the presence of gold and silver in the lead additive used by the assayers in their assays. This hypothesis is impossible to test from documentary sources because, as FROBISHER reported, the logbooks containing the records of the 1578 field assays "*blew out*" of his cabin window during the homeward voyage and were lost. Of course, forgery is another likely hypothesis, because FROBISHER and Michael Lok, the master mind behind the voyages had much at stake in the venture. Still another explanation that cannot be summarily dismissed is that FROBISHER's assayers were untrained or lacked metallurgical experience.

We assess these various claims through analyses of lead fragments (Pb) recovered from the two assay shops on Kodlunarn Island in FROBISHER Bay, Canada. Those lead scraps are believed to be a by-product of assaying rocks mined from various locations by Martin FROBISHER's expeditions in 1577-1578. Lead compositions suggest that Shop 1 leads are derived from England whereas lead samples from Shop 2 show a composition typical of Cyprus ores and of some England deposits. The composition of the lead beads indicates that the flux and collector used for the assays on Kodlunarn Island did not introduce a gold-rich contamination. Silver was likely added from the flux or collector used to assay the rocks, a contamination well-known to Renaissance assayers.



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