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Obsidian in the Chatham Islands

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It has been known for many years that stone tools manufactured from obsidian, can be found occasionally in the Chatham Islands, and perhaps the most notable of these are the *mataa* - a flake tool with secondary retouch on two sides, possibly to facilitate hafting. Much less is known about where this obsidian originated or, indeed, the age of these stone tools. On present knowledge these rare pieces may actually have been brought to the Chatham Islands from New Zealand after the immigration of Maoris in 1835. The *mataa* shape may possibly argue against this conclusion; nevertheless, in the absence of clear archaeological information, a number of interpretations are open.

If indeed obsidian, and perhaps other materials, were transported to and from the Chatham Islands in prehistoric times, then this is of considerable significance. The documentation of the contact between the two peoples will doubtless shed light on the cultural changes which took place in both areas over the last millennium. Moreover, the nature of this contact has implications for the perennial problem of Polynesian two-way voyaging.

As far as is known, the Chatham Islands do not have a local source of obsidian. Haast raised this question in 1885 by noting that:

"The Morioris also used flint "*mata*", which they split into thin, irregular, wedge-like shapes, as knives, there being no volcanic glass (*tuhud*) obtainable in any quantity, although a reef of it is known to exist under water at the south-east corner of the island at Manukau." Haast, 1885: 26.

Unfortunately this tangential reference has not been substantiated by properly reported field observation. Skinner was content merely to refer back to von Haast on the subject (Skinner, 1923: 98), and noted in passing that the information probably came from Shand who had lived on the island for many years. On a visit to the area in January 1973, I questioned many people about this and spent a short time at Owenga and Manukau Point trying to find any evidence

of a local source, all of which gave negative results. The recent Geological Bulletin gives no indication of local obsidian, although reference is made to glassy intrusions in pillow lava flows at Owenga (Hay *et al.*, 1970: 58), which could possibly have been confused with obsidian by Shand. On the other hand, there is nothing in the geological character of the Chatham Islands which counts against the occurrence of a local obsidian source (Professor D. S. Coombs, pers. comm.).

In order to make a start on this problem, I recently subjected two Chatham Islands obsidian objects to X-ray fluorescent analysis to see if the material available was at least different from that in New Zealand. The results argue against a geological origin in the Chatham Islands; in fact the two pieces are unquestionably from Mayor Island in New Zealand. This is not to say that other obsidian finds may not later be found to originate in the Chathams. The present suggestion of a New Zealand origin in some ways is a welcome surprise. As the archaeological history of the Chatham Islands becomes clearer, we may expect a clarification of the seafaring activities of ancient New Zealanders and perhaps also of Morioris. The analytical results are as follows:

Sample GU447 Discoid core tool, collected by H. D. Skinner at Moreroa, grid reference 975170. Otago Museum D24.148. Weight 6.05 gm; 1.8 gm removed for analysis (dotted area in Fig. 1).

Sample GU298 *Mataa* flake tool, collected by Peter Best at Owenga, grid reference 130964. Otago Museum D73.20. Weight 27.4 gm; 3.3 gm removed for analysis (dotted area in Fig. 2).

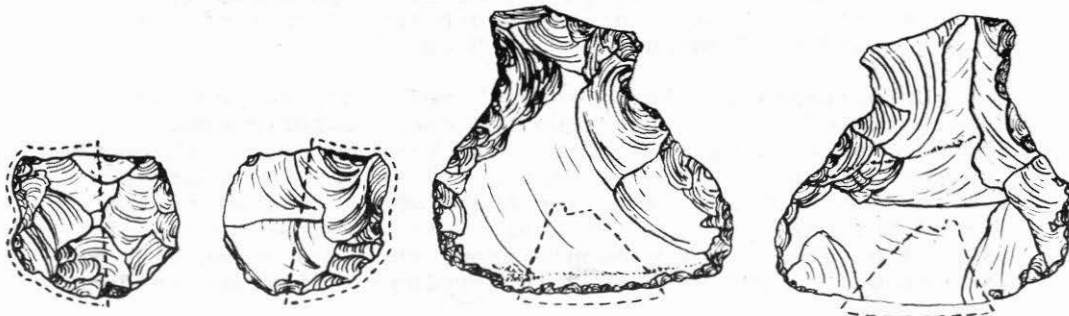


Figure 1

Figure 2

Trace Element Concentrations

	Zr	Mn	Sr	Rb
GU447 - discoid	930	1021	1	203
GU298 - mataa	979	977	1	181
Mayor Island	916	946	3	190

The values for Mayor Island are averages from Ward's figures and analytical details may be found in Ward (1972) and Leach and Anderson (n.d.). These raw figures by themselves could be quite misleading, but considered alongside values for all other varieties of New Zealand obsidian, the proximity of the figures to Mayor Island is most striking. Both Chatham Islands pieces also share the Mayor Island feature of being green in transmitted light. In line with Ward's suggestion that such results should be statistically assessed using a discriminant function based on Mahalanobis D^2 , the information was processed in this manner. Trace element concentrations from 18 major New Zealand sources were compared by computer, and both the Chatham Islands pieces were indicated as Mayor Island ($p > .999$).

Acknowledgments

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