

Object of the Month

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Carrie - a work experience student - talks about her choice of object of the month.
[Video transcript here \(/accessibility/transcripts/les/lapworth-object-shotton-map.aspx\)](#)

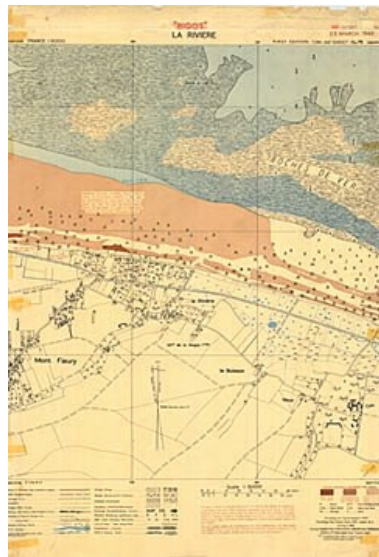
Fred Shotton's maps of the Normandy beaches – La Rivière

Dated: 23rd March 1944

Fred Shotton (1906-1990) was born in Coventry and went on to become Professor and Head of the Geology Department at the University of Birmingham. He is best known for his groundbreaking research on the Pleistocene geology of the English Midlands. But less well known is the vital role he played during the Second World War as a senior military geologist.



Between May 1941 and September 1943, whilst based in Egypt, he used his expertise in hydrogeology to find water supplies for British forces operational in the Middle East and northern Africa. From October 1943 to D-Day (6th June 1944), Major Shotton worked on creating the maps of the French coast that would be necessary during the Normandy invasion as part of a team including Professor J. D. Bernal and Lt. Col P. Johnson, both physicists.



Their main aim was to study the geological conditions of the invasion area to find suitable beaches, and from this to select a British beach and area of coastline that was as similar as possible for testing. The British beach that the team identified was at Brancaster, Norfolk, where many heavy vehicle trials and bombing raids were carried out to assess the suitability of the selected similar beaches in Normandy.

Shotton used many methods to examine the geology of the Normandy beaches. He studied historical French publications, post cards with images of the French coasts supplied by the British public, and took part in various aerial sorties over occupied France in a Mosquito aircraft with a modified glass-bottomed fuselage for viewing.

Beach sediments were identified and their load-bearing capacities calculated. This involved studying the tracks left by the local farmers' tractors which were used to drag obstacles over the beaches. Augers were also used to obtain sediment samples, with commandos swimming ashore at night to take them. On one occasion, an auger was left behind, prompting the suggestion that the RAF should drop augers on all other beaches between Norway and Biscay to conceal the site of invasion until it was realised that the UK did not have enough augers to do so. Examining the Normandy beaches was not a fast process – for every reconnaissance flight made, flights had to be made over other beaches to ensure the proposed areas of invasion remained a secret.

The information that Shotton collected was drawn up into maps at 1:5000 scale. This map of la Rivière is an example from the Anglo-Canadian invasion area. On it, the scientists show that the majority of this beach was thinly covered with sand, with many hidden yielding areas which would be problematic for

heavy vehicles and troops.

Shotton's work proved to be invaluable, and enabled the Allies to be successful on D-Day, providing vital safety information highlighted by the treacherous conditions shown and identified on this map. Following D-Day he remained in Northern France to provide information and maps to source further water supplies, aggregates for construction, and provided assessments of terrain in connection with the rapid construction of airfields and military vehicle mobility. All of the top secret work of Shotton and his colleagues contributed to the ultimate success of the Allied campaign.

