A RELIABLE ENGINE

BY

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Before the First World War, the open triple expansion engine had reached the limit of its development. This machinery was, however, cheap and with no great demands for maintenance, it remained the first choice for the slow, 9 to 11 knots, cargo ship. Steam was supplied to the engine from coal-fired SCOTCH boilers, a state of affairs that was to continue until after the Second World War. Thus, in 1917 with the advent of a programme of standard ship construction by the Shipping Controller, a triple expansion engine was designed by the North Eastern Marine Engineering Co of Wallsend and Sunderland. The three cylinders being of 27", 44" and 73" diameter with a 48" stroke, an output of 2500 hp at 80 rpm which was sufficient for 11 knots in a ship of 7000 gross tons. 171 engines were built for both dry cargo ships and tankers, of which a number of the latter were allocated to the Royal Fleet Auxiliary (RFA). All were given *War* . . . names and in fact several remained in RFA service for many years after the end of the Second World War. Thus the *War Hindoo* (built in 1919), continued to ferry water from Sicily to Malta until the early 1950's (Fig. 1).



FIG. 1—'WAR HINDOO' ENTERING MALTA 1946

The engine continued to be selected for Tyne and Wear built cargo ships between the wars and in 1939 was chosen for the first of the standard *Empire*... ships ordered from J. L. Thompson & Sons of the North Sands Shipyard, Sunderland by the Ministry of War Shipping. These vessels were of rivetted construction and coal fired, this fuel being indigenous and cheap. Thereafter, on the 23 August 1941 the 7157 gross ton *Empire Liberty* was launched, which was to be selected as the prototype for the US built LIBERTY ship, the US built *Ocean* ... type, ordered on behalf of the British Government before the U.S. entered the war, and the Canadian built *Fort*... (FIG. 2) and ... *Park* types. The LIBERTY ships were of all-welded construction and oil fired, but the Canadian vessels were rivetted although some were given oil fired water tube boilers.



FIG. 2—'FORT WAYNE' MALTA 1946. Merchant Fleet Auxiliary on charter to the Admirality

The engines were completely interchangeable and in fact some Canadian engines were redirected to the USA to meet early shortages, being replaced by US built units when these became available. In all 60 *Ocean* . . . type were built to the order of the British Government by the Todd—Bath Iron Shipbuilding Corp of Portland, Maine and the Permanente Metals Corp of Richmond, California, the majority with machinery built by the General Machinery Corp of Hamilton, Ohio. Canada built 435 *Fort* . . . and . . . *Park* ships, while in the USA some 2700 LIBERTIES were completed.

There were in addition twenty three maintenance ships built in Canada to the same hull and engine design. These vessels were intended for the Pacific Fleet Train but four remained incomplete at the end of the Pacific War. The transfer of five others built in the United States on LIBERTY hulls was arranged under the Lease-Lend agreement but of these only two were delivered, H.M.S. Assistance



FIG. 3—'ASSISTANCE' JULY 1946.

(FIG. 3) and *Diligence*. The remaining three, although provisionally given RN names, were retained by the US Navy.

Four of the Canadian built ships were modernized in 1961, the *Mull of Kintyre* for minesweeper maintenance and the *Berry Head*, *Rame Head* and *Hartland Point* as escort maintenance ships, the three latter being re-boilered with Foster-Wheeler water tube boilers supplying steam to a pair of 3 mega-watt AC generators for alongside supplies. Steam for the main engine had to be passed via a de-superheater thus reverting to wet steam.



FIG. 4—'BERRY HEAD' AFTER RECONSTRUCTION 1960-61

In 1968 the *Rame Head* was nominated to relieve the *Hartland Point* in the Far East, based on Singapore, but in the event there were problems with her rudder and *Berry Head* (FIG. 4) was recommissioned in lieu. She had been built by the Burrard Dry Dock Co of Vancouver with machinery by Canadian Allis-Chalmers and in July 1968 I was appointed as WEO. She returned home in April 1970 and today only the *Rame Head* remains in service, nearly 50 years since she was launched and now employed at Portland as the Royal Marines assault training ship. Another is the Canadian (ex H.M.C.S. *Cape Breton* (ex H.M.S. *Flambrough Head*)) still at Vancouver and intended as a preservation project. There is also a clutch of US built LIBERTY ships, and one of them, the *Jeremiah O'Brien* (FIG. 5), took part in the D-Day commemoration.



Fig. 5—'Jeremiah o'brien'

A total of some 3,600 engines over a period of 30 years, with many in service for another 25 years, must be quite a record for any single machinery design!