

to barges. But they had to be loaded by shore-based cranes. The next evolutionary step came in 1954 with the introduction of self-dumping barges. But these barges still had to be loaded by shore cranes. In 1961 the cranes and barges were combined; loading was simplified and deep sea tugs were able to move timber to mills faster and at less risk.

World's first

The inevitable step came in 1975 when the *Haida Monarch*, the world's first self-propelled, self-loading, self-dumping log ship, went into service on the British Columbia coast. By eliminating the tow line and adding engines and a bow thruster, the hybrid vessel gained speed and manoeuvrability. It could move with ease in the small coastal bays used for long storage and loading. Another economic advantage over tug and barge operations was even less time lost due to weather as even tugs and tows are delayed by fierce winter storms pounding the Pacific coast. Even more improvements in the design and concept came with the launching of the *Haida Brave* by Burrard-Yarrows in 1978.

Logs are brought down to the tide line for sorting. There they are grouped according to size, quality and species; bundled with steel bands; and are ticketed for delivery to the mill that is best suited to process the logs for the greatest economic return. The bundles then are hoisted aboard the carriers by the cranes.

On board the *Haida Brave*, the crane operators sit 15 metres above the cargo deck, controlling 30.5-metre booms.



Log boom is towed by tugboat — the old-fashioned way.

Since the bases of the cranes are only 49 metres apart, *Haida Brave* crane operators must co-ordinate their movements to avoid mid-air collisions between 36-tonne log bundles. The pre-bundled logs are deposited in a staggered formation on deck. It can take five to six hours to load the *Haida Brave*. When the crane operators are finished, the load can measure 104 metres long, 29 metres wide and 15 metres high.

Swinging the massive long bundles aboard, the scurrying about of two dozer boats, carried by the *Haida Brave*, and shoving the bundles into position for a hoist on board is hectic, but the log carriers' most dramatic moments come at the other end of its coastal voyage — the dump.

Principle is simple

The self-dumping operation is based on simple principles. After the carrier is secured and positioned fore and aft by tugs, ballast tanks along both sides of the hull are partially flooded to lower the centre of gravity and settle the carrier deeper in the water. This extra ballast also reduces the tendency of the carrier to jump sideways when the load starts to slip.

Water is then transferred from starboard to port tanks, causing a list to port. The list will gradually increase until the log bundles slide off under their own weight. When the load is dumped, water is pumped back into the starboard tanks to put the carrier back on an even keel. Unlike the barges, the self-propelled carriers take on additional water ballast to keep their propellers submerged. This ballast is, of course, pumped out when the carrier begins her next loading operation.

Self-propelled barges have required some unusual modifications for their special job. Engine beds and custom fittings enable the vessels to reach a 40-degree list without putting any undue strain on engines or other gear on board. As the crew's quarters are in the foc'sle arrangement and the engine room right aft, a 107-metre tunnel runs under the cargo decks of the *Haida Brave*. The tunnel also provides access to the cranes atop their pedestals.

With just two self-propelled carriers, MacMillan Bloedel, through a subsidiary, Kingcome Navigation, can manage all of its coastal log barging needs. The *Haida Monarch* and *Haida Brave* are manned by crews of 13-15, and are regulated as vessels.



Dozer boats shove logs into bundles.

Rivtow Straits, a major towboat company, looked at adding a self-propelled carrier to its two self-dumping barges. Citing ease of maintenance and less stringent government regulations, the company chose to build an \$18-million self-dumping barge and a \$6-million tug. Building a new barge was also more economical than modernizing some of the older barges available.

The 122-metre barge is equipped with 45-tonne cranes and has a log carrying capacity of 13 608 tonnes. The new barge, which went into service last fall, also carries its own dozer boats. Special care has gone into the design and construction of the barge so it will withstand the bruising job of log transportation with lower maintenance costs. Thicker steel plating has been used in such critical areas as the log deck and additional supports have been built into the hull.

The advantages of self-dumping carriers are obvious along the British Columbia coast where logs must be moved to sawmills over long distances of storm-tossed ocean.

Logs are an expensive commodity. Logging companies cannot afford to lose them or have them damaged. Today's self-dumping carriers deliver the goods — with kid gloves. Well, as gently as 30- and 40-tonne bundles of logs can be handled.

(Article by Stephen Rybak in *Transportation*, 82, spring.)