in this opening by a series of wooden wedges.

At the top of the mast was an oval hole, reinforced with a piece of wood (*nos*) through which passed the halliard for the lateen yard (*berga*); a simple tackle was attached to the other end of this halliard. This set-up also acted as the only shroud when it was rigged on the windward side. On occasions it was led aft, with a turn taken on a belaying cleat, to act as a backstay. The halliard was secured to the lateen yard at a quarter of its length from the end and the yard was held to the mast by by a simple parral.

The sail was trapezoidal in shape, the head being the shortest edge. The bolt rope was not attached to the sail in the usual way, but was held in place by short lengths of double line. The bolt rope at the head of the sail was laced to the yard with a light line. There were three rows of reef points, with a cringle worked into the bolt rope on the forward end of each row, and short lengths of line attached to the bolt rope at the other end of each row, to secure the sail when reefed. The tack of the sail was secured to the stem either by a hook, or at times by a line taken through a hole in the top part of the stem and down to the gunwale where it was made fast. The sheet was taken across to a belaying pin on the side abaft the after thwart.

Dornas were very seaworthy craft with good sailing qualities, especially in the hands of experts who could make full use of the potentialities of the simple rig.

They were not colourful vessels. The interior and upper part of the hull used to be 'painted' with black pitch mixed with sardine oil. The planks below the waterline were treated with a mixture of resin, fat and powdered sulphur, applied with a primitive brush made out of a piece of sheepskin.

HULL COMPARISON -AN EXERCISE IN RESEARCH

by Portia Takakjian

For a model builder living in the 80s one of the advantages is the great wealth of information available in the public domain. Much of the material, plans in particular, is no longer held in private or governmental hands, making the job of a researcher a far easier one.

A sophisticated awareness now exists in the community of model builders which brings with it the freedom to question, publicly if one chooses, accepted theories, practices and judgements. Not to exercise this freedom or to suppress it would be a disservice to the group as a whole and would indirectly result in the stagnation of contributions made to the field in general. Surely it would seem that through such questions better and more accurate models are built, more especially when they extend themselves to the individual's work, which will itself reflect the quality and degree of time spent in researching a particular project. As we all know, time spent in this pursuit can, and often does, lead to more questions than we are prepared to answer. This is certainly true with lines which must be prepared for building a model. There are those who feel it is better to have the 'bare bones' to work with, leaving the interpretation to their own instincts and background experience rather than relying on the information provided by others. Since time is a major factor in a model builder's life, the lack of it could explain why there are those who are not disposed to question the reliability of their source material, let alone what is perhaps most important – the designer's intent – an elusive quality to be sure, and one easily lost in the hands of a draftsman. His intent and rationale for doing what he has done is often lost to question. Neverthless it is the draftsman the model builder must depend on if he chooses not to ask the questions. What is important to know is that the wave or ripple effect created by drawing a deviation of the curves set down by the designer results in what amounts to a redesigning of the heart and soul of a vessel – its body lines. How much and to what extent this is acceptable is open to question since when it occurs the resulting hull form constitutes a massive reconstruction bearing little resemblance to the original. In the accompanying figures I will show that this can happen.

In the accompanying examples only the lines forward of midships are shown. It was necessary to project two stations from the Hackett half breadth plan to correspond with those of Chapelle and Baker. The projected lines are shown as a long dash in Fig 2. In addition, several stations close to midships have been eliminated for the sake of clarity, in each of the lines presented.

It is not often that we have the opportunity to observe and compare more than one interpretation of a given vessels' lines, such as shown here in those of the frigate *Essex* (1799), designed by William Hackett and redrawn by Howard I Chapelle and William Avery Baker.

Hackett's original draught was published in the final volume, *Personnel and Ships Data* of *The*

Barbary Wars (1935-45 U S Govt Printing Office). Howard Chapelle's version of the *Essex* lines first appeared in his *History of American Sailing Ships* (1935) and again in *The History of the American Sailing Navy* (1945). William Baker's plans appeared as a supplement to *The Essex Papers* (1974) by Phillip Chadwick Foster Smith and published by the Peabody Museum of Salem.

Both Chapelle and Baker had access to the Hackett original and, as stated, both plans are based on it. Although Baker had the *Essex* papers at hand, it is inconceivable that Chapelle based his lines on the Hackett original alone, and it is assumed (because of his notes in the appendices) that additional data was available to him.

In each example comparisons are made of the lines. In each figure the solid line represents Hackett, the dashed line Chapelle and the dotted line Baker. In addition the reduced housing (9in) suggested by Fox (during his refit of the *Essex*) in January 1808, and accomplished in June 1809, has been included. Since neither Chapelle nor Baker approach this line we can assume it did not influence their lines.

In Fig 1 Chapelle's and Baker's lines are compared to see how much, if any, Baker was influenced by Chapelle. Perhaps the most interesting thing about the comparison is Chapelle's midship line above the main wale. (It is seen more clearly in this figure than when compared with Hackett in Fig 3). The distinct inward curve stands in sharp contrast to the Baker line which follows that of Hackett in this same area.

In Fig 2 Baker and Hackett are compared. Baker's height of breadth line has been raised in the area above the main wale and there is a general fullness to the lines below the wale especially evident at midships. As in the comparison with Chapelle the bowsprit steeve has been made sharper and again the main wale is lowered at midships.

Chapelle's lines in Fig 3 show sharply the excessive curvature which sweeps from the forebody lines to below the main wale at midships. The overall impression of the Chapelle lines is as though a weight had been applied to the top timbers. What seems surprising is that Chapelle agreed with Hackett on the position of the bowsprit and main wale.

What has happened to the designers' intent in the above examples will never be known since neither Howard Chapelle nor William Baker are here to tell us. How many problems and questions were solved by either man is now a question in itself if we take into consideration what William Hackett had envisaged and set to paper. What *is* clear is the importance of checking originals whenever possible. In this way comparisons can be made with all the available material and any ambiguous references can be discarded thus clearing the way for an individual's progress – and perhaps assuring the progress of those who follow after.

Fig. 1

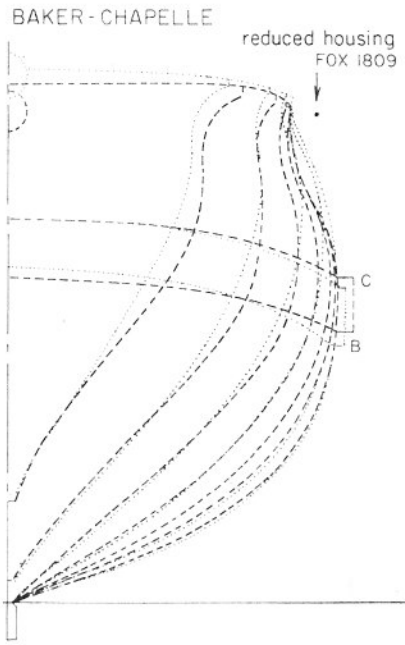


Fig. 2

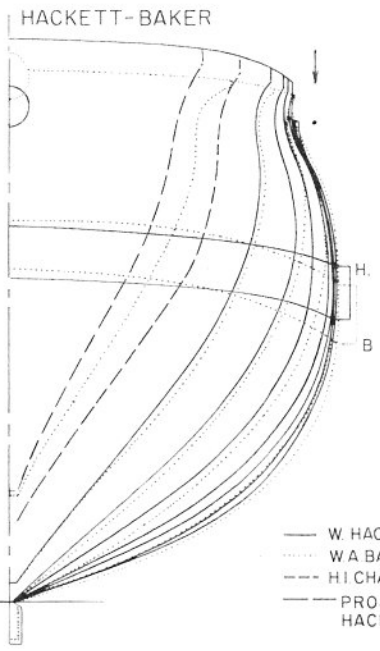
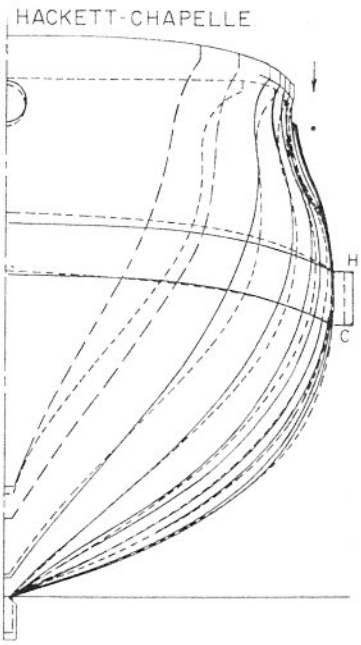


Fig. 3



W. HACKETT 1798
W.A. BAKER 1974
H.I. CHAPELLE 1949
PROJECTED FROM HACKET HALF BREADTH