

STRICTLY FOR THE BIRDS ...

this newsletter is distributed.

The only bar to attendance is sex (do we run foul of the Discrimination Act?) - all associates, member's wives, casual visitors and friends are welcome to attend. Tickets will not be issued and once the price is fixed I would ask you to send your money and name to the Secretary. If you wish to attend but have no transport please ring me at 296 8068 after 5 p.m. I hope as many as possible will be able to be present, and look forward to meeting those ladies who are new to our club.

PAT TEDMANSON

CONTRIBUTIONS

LUFT IST DER WIND

Yachting has become increasingly an international affair. In keeping with the trend of free exchange of technical information and interpretation of nomenclature, and in the interest of international harmony, the following list of nautical terms has been prepared and translated into the popular "Free Germanic" dialect.

Sailboat	-	-	-	-	-	LUFTMAKENGESLIDENBOTTEN
Iceboat	-	-	-	-	-	LUFTMAKENGESLIDENFROZENBOTTEN
Sail	-	-	-	-	-	LUFTONNERGEPUSHEN
Sailmaker	-	-	-	-	-	LUFTONNERGEPUSHENSTITCHENMAKER
Halyard	-	-	-	-	-	LUFTONNERGEPUSHENUPPENHAULER
Sheet	-	-	-	-	-	LUFTONNERGEPUSHENPLACENPULLER
Luffing	-	-	-	-	-	LUFTONNERGEPUSHENFLAPPEN
Mast	-	-	-	-	-	UPPENSTICKER
Mainmast	-	-	-	-	-	GROSSENUPPENSTICKER
Mizzenmast	-	-	-	-	-	AFTENUPPENSTICKER
Stay-Shroud	-	-	-	-	-	UPPENSTICKERUPPENKEEPEN

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Boomsprit	-	-	-	-	-	FRONTENOUTENSTICKER
Boom	-	-	-	-	-	JIBENZOOMENNOGGENSPLITER
Tiller	-	-	-	-	-	STERENSTICKER
Wheel	-	-	-	-	-	WORLENSPOKENSTERENSTICKER
Spinnaker	-	-	-	-	-	MITDERLUFFENLOTSAPULLEN
Keel	-	-	-	-	-	ZIDDENSLIPPENFIXENSTIFFEN
Centreboard	-	-	-	-	-	ZIDDENSLIPPENFIXENUPPENDOWNER
Bilgewater	-	-	-	-	-	SLOSHENWASSER
Tacking	-	-	-	-	-	ZIGGENZAGGEN
Capsize	-	-	-	-	-	UPPENZETTENGEPLOPPENHIMMEL
Corinthian	-	-	-	-	-	KOUPONSCHNIPPENYATENSKIPPER
Motorboat	-	-	-	-	-	MECHANIZENSCHMELLENBOTTEN

A NEW DIMENSION IN YACHTING - "HEEL-KEEL"

Hartleigh Kelly, one of the inventors who has participated in competitive sailing for almost the whole of his life, had often pondered the thought of 'how to move that lump of lead from immediately under the hull to a more favourable windward position'. Swinging the keel from the lateral line of the hull was certainly the answer, but how to achieve it? The answer seemed to be in the use of the force the wind exerts on the sails which normally makes yachts heel. Why not isolate the hull from the heeling movement which otherwise includes mast, hull and keel?

The inventors considered it necessary to prove the principle that the deflections of the keel would counter-balance the heeling movement of the wind in the sails and several models were built.

It was recognised that testing the models would involve several hull shapes and to do the job hydraulically or by internal hull means would take up unnecessary time. The

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method decided upon to establish the principle was one where the main shrouds would extend beyond the deck level and down to the ballast which was to be hinged. To ensure smooth operation and to give support, a solid cross-tree was introduced at above deck level high enough to allow a mast deflection of about 30° . Beyond this the hull would come into the picture and commence heeling but with the added advantage of having the ballast already canted to windward. It was also considered necessary to have the shroud lengths adjustable in order to test the effect of having the ballast canted to windward beyond what would be normally achieved by the mast deflection.

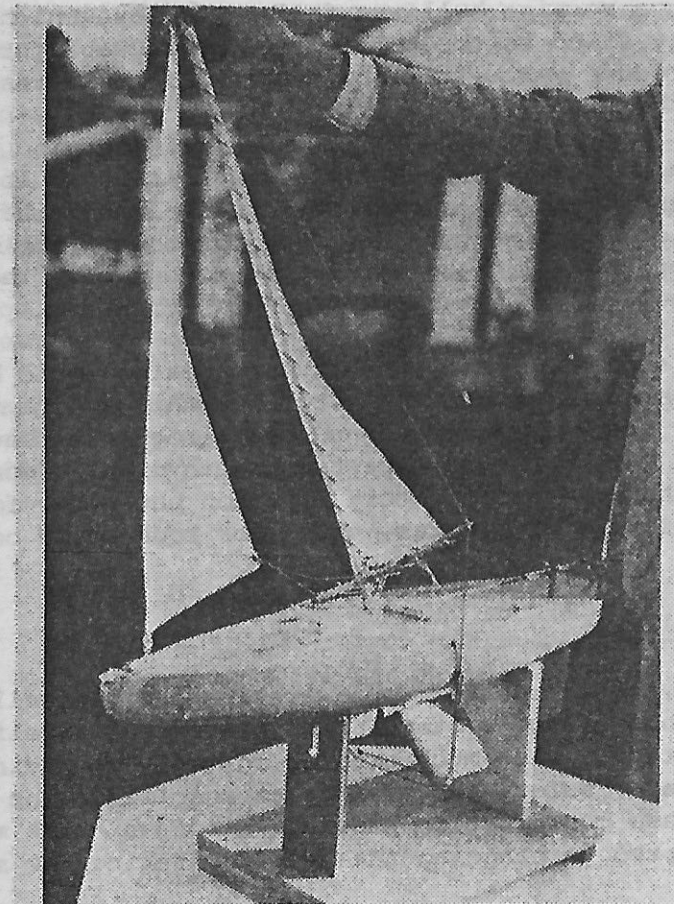
Tests on the models gave some interesting results such as:

1. Insufficient ballast allowed the sails to lay over and to give very little drive.
2. Attaching the shroud to varying lengths of the ballast which varied the leverage ratio, gave either a stiffer or a softer sailing effect. Stiffness was also affected by the hull beam and bilge shape.
3. Canting the keel to windward reduced the lateral resistance of the hull causing poor course holding and excessive leeway. It was found to be necessary to have either an area of fixed keel or to have a hull shape with a skeg.
4. The keel, if canted to windward beyond the deflection brought about by normal mast control, gave an upright attitude with improved speeds as one expects of racing dinghies.
5. It was difficult to balance the models and their sails sufficiently to produce straight line sailing, particularly in a park lands pond with wind

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obstructions such as mounds and trees. However, it was much easier to maintain courses with the hull relatively upright with the mast and keel free to heel than when they were locked to the hull. Providing for locking the mast and keel was to obtain comparisons and both speed and directional control were improved by using the new system and keeping the hull relatively upright. There was also less griping to windward, the effect being similar to easing the sheets in gusts.



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6. Canting the keel does not remove all the righting moment of the ballast from the hull. Attaching the shroud to the bottom of the ballast still leaves about half the load on the bottom of the boat when the keel is lifted to near horizontal.
7. There is some tendency for the hull where sufficiently free of the sail and keel deflection to respond to the movement of the waves. This is where the hull is too independent. It was not possible to determine whether or not a rocking hull was faster than one which is rigidly fixed to the ballast and where wave formation may produce very little roll when sailing across or into the wind.
8. Although it may be proved to be necessary to lock the mast and keel when running before the wind, the model tests did not indicate any need for this. The hull sat upright and there was little movement in the mast and keel.

It is not suggested that the ultimate design would be through control by 'outside' wires but this may be the answer for some lightly designed boats regularly hauled out of the water. It is expected that hydraulic control would be the most satisfactory solution but other forms of internal linkage with wires, chains or rods could be devised.

Hydraulically

The system, if hydraulic, would probably be basically very simple with a closed system. This would lend itself to sophistication giving much greater control, producing greater speed, safety and comfort as required. The advent of fibreglass construction provides stronger hulls more easily adapted to hingeing the keel and taking the strains

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involved. It would not appear to be very difficult to adapt many modern hulls with fin type keels to this new concept.

Conclusions

The tests conducted have indicated that the hingeing of the keel and mast produce a remarkably stable hull with little heeling until the limit of the mast movement is reached. At this point additional heel commences but because the sail is already leaning to leeward and the keel canted to windward, the heeling moment is reduced substantially and the resulting boat heel is only slight. This would make for a more comfortable boat - much safer to work upon - and if the system is handled correctly and manipulated with skill the result could mean increased speeds. The limit of the mast movement is something which would be determined after allowing for the designer's preferences and the prospective owner's comfort and safety requirements. However, this could be made adjustable.

A patent application has been taken out (Aust. P.C.5451/76) and interested parties should contact H. Kelly, P.O. Box 155, Hindmarsh, South Australia, 5007.

