

## PREFACE

by J.D. van Manen \*)

For many years now Lips' Propeller Works have been showing us how the right combination of design techniques and manufacturing methods can lead to a high quality product.

This attitude is in principle the basis on which the idea of organizing the first Lips' Propeller Symposium came into being, leading to a programme such as that scheduled for the 20th and 21st May 1970.

A symposium programme that is well balanced in its theoretical, physical, metallurgical and production conceptions.

Moreover, the programme gives evidence of the fruitful cooperation between the Netherlands Ship Model Basin as an industrial service laboratory, and Lips as a research-minded propeller manufacturer.

The rigorous changes in ship dimensions, speeds, required power and special purpose ship types have also put pressure on the research at present being done in ship propulsion. In many cases quick and reliable answers must be given to complicated questions concerning our advanced designs.

Even small errors or simplifications can lead to serious economic penalties for large ships which represent enormous investments.

The specialist in ship propulsion is nowadays confronted with the selection of a propeller arrangement which must meet high demands with regard to efficiency, avoidance of cavitation and vibration, stopping ability, manoeuvring, all of which form part of the total propulsion plant, economics and reliability.

Seen against the background of these facts, the fast growth in application of the controllable-pitch propeller is not astonishing. Twin-screw and overlapping propeller arrangements are competing against the conventional single-screw propeller as never before in the field of high-powered merchant ships. The time is coming when ducted and contra-rotating propellers will

find application in large seagoing vessels. In order to obtain better data on which to base the selection of the propeller type, the N.S.M.B. decided to build a large vacuum towing tank.

For special purpose, small, high-speed boats the screw propeller, either supercavitating or partially submerged, must defend its advantages against the special properties of water jets and air propulsion.

The rapidly increasing number of programmes for tackling propulsion problems on computers is very important for the rate of progress in our knowledge.

The systematic propeller design charts have recently been corrected for Reynolds' number effect.

The optimum diameter from the viewpoint of efficiency showed a noticeable increase. It becomes necessary to optimize the diameter not only on grounds of efficiency, but also on economic criteria.

The propeller designer is daily confronted with new developments such as these.

The need to obtain good solutions often calls for cooperation between various specialists: the ship and the propeller designer, the specialists in propulsion plants, in vibrations, in manoeuvring, the hydrodynamicist and the experts in the propeller factory.

The aim of this symposium is to underline the importance of manufacturing the propeller within the tolerances required by our theoretical considerations and in harmony with our advanced production methods.

We in Holland are happy that in both fields, groups of specialists have grown up under the guidance of such well-known teachers as Troost and Van Lammeren.

May this symposium, with its introductions by Dutch scientists and contributions to the discussion from our colleagues from abroad, be a link in our attempts to build up a better understanding in the theoretical and technological field of ship propulsion.

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