

IN CONFIDENCE: Not to be quoted without reference to the Laboratory.

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5MR65CRUISE REPORTF.R.V. "MARA"31st May-19th June, 1965.PersonnelDiving Personnel

Hemmings, C. C.  
 Chapman, C. J. C.  
 Main, J.  
 Mowat, M. J. D.  
 Brooks, Commander J. ("Mobell" Designer)  
 Lythgoe, Dr. J. N. (M.R.C. Vision Research Unit)  
 Holford, B. (M.A.F.F., Lowestoft)

Divers undergoing openwater training, some of whom had experience in the "Mobell"

Mair, J.  
 Dalgarno, D.  
 Moodie, Miss V.

Surface Staff

Mr. Parrish and Mr. Foster were present and helped on a number of occasions.

Narrative

All work was carried out on a day-to-day basis from Buckie because of the number of personnel involved. Much of the first week's operation was taken up in rigging and learning to handle the "Mobell" at the surface. Commander Brooks gave able instruction in the operation of the craft underwater to C. C. Hemmings, C. J. Chapman, J. Main and Dr. J. N. Lythgoe who all subsequently instructed others in its use.

A small film for T.V. showing was made by a B.B.C. team on 15th June.

Mode of Operation

The sequence of operations arrived at was as follows:

- 1st Launching of divers in rubber boat.
- 2nd Shooting of trawl.
- 3rd While slowly towing trawl, launching of "Mobell".
- 4th Entry of divers into "Mobell" on surface.
- 5th Diving "Mobell" and location of net.

On the completion of a haul, the sequence operated in reverse.

The limiting factor to operations was sea movement controlling the launching and recovery of the "Mobell", and a solution to this problem must be found if this, or a similar vehicle, is to be used in future. Some form of crane or derrick is essential. Continual minor running repairs to the "Mobell" had to be carried out throughout the cruise and this wasted a considerable amount of working time.

A tape-recorder was used to record all conversations between "Mara's" bridge and the "Mobell".

## Observations

Most work was done in Cullen Bay where there was a large population of small flat-fish. Round-fish were not located in suitable depth at any time during the cruise.

Observations were made on the orientation and direction of swimming of fish to different parts of the gear, which showed some interesting differences from behaviour near the seine net. Experimental investigation is required.

Photographs taken of the trawl have proved to be of great interest to the gear section.

## Conclusions

The "Mobell" proved very satisfactory in underwater operation and there is no reason why this technique of manned towed body cannot be applied to a number of tasks. Special gear for operating it, and an improved communication system are two essentials.

Finally acknowledgement must be made of the part played by "Mara's" complement in the successful operation of the "Mobell".

C. C. Hemmings  
12th July, 1965.