



UNDERWATER TELEVISION

First Demonstrations show amazing sensitivity

The use of television under water has been the subject of much research and experiment during recent months. When, twelve months ago, the Admiralty requested the help of Marconi's Wireless Telegraph Company Ltd., in an attempt to find the lost submarine AFFRAY with a Marconi television camera chain, a new field of television applications was opened.

Since then the Marconi Company have been investigating this application and, during the past few months, had the fullest co-operation of Siebe, Gorman and Co. Ltd., in the design of pressure cases and lighting gantries.

Today's demonstration, at the Works of Siebe, Gorman's in Tolworth, shows the extreme sensitivity of this camera and illustrates the importance of this new development. It is of primary importance in any type of underwater work where it would be dangerous for a diver to descend, and for use at depths far greater than a diver's limit.

In major salvage operations one of the greatest drawbacks has so far been the "blindness" of the surface officers directing operations. With the Marconi-Siebe, Gorman Underwater Television equipment they will now be able to follow the operations, direct movement and technique, and

With the Compliments of
Marconi's Wireless Telegraph Company Limited.
Chelmsford, Essex.

Further information and photographs (if available) can be obtained from:

R. P. Raikes [PUBLICITY MANAGER]
Telephone: DAY - Chelmsford 3221
NIGHT - Good Easter 265

V. E. Hughes [PRESS OFFICER]
Telephone: DAY - Chelmsford 3221
NIGHT - TATe Gallery 8292.



- 2 -

brief relief divers *visually* before they go down to take over. This will lessen the reliance on a diver's verbal report and will be of inestimable help to those in charge on the surface and to the divers themselves.

A television camera can work for far longer periods under water than a diver could; the Image Orthicon pick-up tubes in the Marconi cameras are far more sensitive and accurate than the human eye, a point of particular importance under water where visibility is necessarily bad, and, in matters of interpretation, it allows scientists and experts to see what is below, thus eliminating the discrepancies which must creep into a diver's report - the diver often having no specialized knowledge of the flora, fauna, machinery and geological vista he is sent down to inspect. At great depths pressure has an adverse effect on a diver's judgement and discrepancies of size and distance become all too frequent.

Another very important advantage is that the television picture received on board a ship from a submerged camera can be filmed and a permanent record obtained.

So far standard Marconi cameras similar to those used by Broadcasting Authorities all over the world, and used extensively by the British Broadcasting Corporation for outside television broadcasts, have been used. The new camera is fitted with extra facilities designed to allow flexible control from a remote position in lieu of a cameraman.

With the Compliments of
Marconi's Wireless Telegraph Company Limited.
Chelmsford, Essex.

Further information and photographs (if available) can be obtained from:

R. P. Raikes [PUBLICITY MANAGER]
Telephone: DAY - Chelmsford 3221
NIGHT - Good Easter 266

V. E. Hughes [PRESS OFFICER]
Telephone: DAY - Chelmsford 3221
NIGHT - Chelmsford 4266

NIGHT - TATe Gallery 8292.



The full facilities which are required for underwater work with a television camera chain include:-

- a) *Remote focus control.* This allows the camera to be focussed, while submerged, by the operators on board ship and, as indication of setting is shown at the control point, it is possible to estimate the size and distance away of an object with reasonable accuracy.
- b) *Remote iris control.* Remote indication is again provided with this facility. The main advantage of remote iris control is that the lens aperture can be varied to obtain the best possible picture under conditions of considerable light variation. Such variations are present when an object is viewed at 20 feet distance and then the camera is moved in for a close-up view at 4 feet, without varying the light intensity.
- c) *Lighting system.* This must be very flexible to allow for use in waters of various densities and content, and at various depths. The unit provides eight lamps which can be controlled, in pairs, from the surface.
- d) *Mounting facilities.* This must also be a flexible system so that camera and lights can be set up for viewing at various angles, as well as at varying distances.
- e) *Inclinometer.* This gives indications, at the control point, of the units angle when submerged.
- f) *Water indicator.* Moisture within the pressure casing which houses the camera is extremely detrimental to all the equipment and this facility detects, and warns the operators of any

With the Compliments of

Marconi's Wireless Telegraph Company Limited.
Chelmsford, Essex.

Further information and photographs (if available) can be obtained from:

R. P. Raikes [PUBLICITY MANAGER]
Telephone: DAY - Chelmsford 3221
NIGHT - Good Easter 265

V. E. Hughes [PRESS OFFICER]
Telephone: DAY - Chelmsford 3221
NIGHT - TATe Gallery 8292.



moisture entering the casing.

- g) *Orientation.* A remote bearing compass to indicate the correct orientation of the camera.

Apart from the experimental side of underwater television the Marconi equipment has already proved highly successful in the finding of the AFFRAY at a depth of 280 feet.

Knowledge gained on that occasion is now being put to use and a pressure casing for containing the camera is being designed and produced. These casings will have viewing windows through which the lens of the cameras will "shoot" the underwater scenes. A new type of gland has been devised for the camera cable. The cable is of special construction and is capable of being operated at depths of over 1,000 feet.

The Marconi cameras have been used at varying depths and it has been found that in certain conditions good pictures are obtained as deep as eighty feet without the aid of artificial light.

Tests made under practical conditions at sea show that artificial illumination of the object is of doubtful value when the water is clear, but many more results will have to be compiled and obtained before firm conclusions can be justified. Another interesting point shown by these sea tests is that tungsten lighting appears to give better results than either sodium or mercury vapour light.

Under test conditions some applications have already been thoroughly tried out - study of wrecks, finding of objects, and the investigation

With the Compliments of
Marconi's Wireless Telegraph Company Limited.
Chelmsford, Essex.

Further information and photographs (if available) can be obtained from:

R. P. Raikes [PUBLICITY MANAGER]
Telephone: DAY - Chelmsford 3221
NIGHT - Good Easter 265

V. E. Hughes [PRESS OFFICER]
Telephone: DAY - Chelmsford 3221
NIGHT - TATe Gallery 8292.



News

-5-

of the sea bed - and others which present themselves are the study of fish in their natural surroundings, the investigation of trawl nets under operational conditions, identification and control of oyster and scallop beds, inspection of dock gates and ships below the water line without employing divers or using dry docks, and the possibility of undertaking really deep-sea research to depths exceeding 1,000 feet.

17th April, 1952.

With the Compliments of
Marconi's Wireless Telegraph Company Limited.
Chelmsford, Essex.

Further information and photographs (if available) can be obtained from :

R. P. Raikes [PUBLICITY MANAGER]
Telephone: DAY - Chelmsford 3221
NIGHT - Good Easter 265

V. E. Hughes [PRESS OFFICER]
Telephone: DAY - Chelmsford 3221
~~NIGHT - Chelmsford 4285~~

NIGHT - TATe Gallery 8292.