MARCH 1965

For this meeting, the 101st of the Group, the 'News' takes on a new image. An IMAGE could well be defined as a REFLECTION, and indeed the 'News' has no right of existance except to reflect the happenings and the activities of the Group.

Members have a right to learn of the activities of others AND conversely are obligated to tell others of their activities. With this object in view, members are requested to forward notes on their activities or suitable articles for publication.

Editor.

here inserted a photograph 11 X 8 cm (b&w)

photographer unidentified

caption below

"A pair of common Tunicates growing on a rock ledge at Glaisher Pt. This Tunicate, Pyura spinifera, is closely related to the intertidal Cunjevoi and grows to about the size of a large potato. The colour varies from a bright purple in well lighted conditions to dull grey in deeper spots, while in caves they are usually a yellowish colour. They are usually found in clusters and live by filtering food from the water they circulate through their bodies.

Technical: Taken with a Finetta camera in a housing at f.5.6 at 1/50th with available light, on Kodak plus X film A.S.A.160"

OPERATION 'SEA-SLAB'

Due for construction shortly will be a platform for the study of marine growth. This will consist of a concrete slab on which will be fixed a number of different types of material such as timber, plastic, steel,concrete, lead, etc. A photographic record will be kept of the growth on these surfaces over an extended period. It is envisaged that the Group will be able to build up a comprehensive and informative set of slides on the subject. The 'sea-slab' will be placed in approx. 15' of water at Glaisher Pt., Port Hacking and should provide a point of interest for U.R.G. divers in the area.

B. Jentsch

GROUP CAMERA

The results of the first roll of film to be put through the Group 'Nikonos' underwater camera were most encouraging. The film used was super Ektachrome with an A>S>A> rating of 160. Using the small F class flash bulbs at a speed of 1/60th of a second, f. stops varying between 4 and 6.3 and distances in the 3' to 6' range, the slides were all overexposed to varying degrees. Available light shots were taken at 1/30th of a second at f.4, these were also overexposed. The photographs were taken in two groups, one group at Glaisher Pt., in average water conditions (visibility about 20') and the other at Bare Island in slightly deeper water (appr. 35') and poorer visibility.

Another film will be exposed using faster exposure (i.e. f.8 to f.11) which will naturaly give greater depth of field and should result in some presentable slides. Larger FP class flash bulbs will also be tested on longer distance (excess of 6') shots. On results it seems that available light shots should be kept to a minimum and only in the best of conditions.

C. Lawler - F. Davis

THE 'WHITE - EAR' - Parma microlepis

Probably one of the most common fish inhabiting our rocky reefs, this belligerent little fellow will at some time have been noticed by most SCUBA divers. He is a member of the family Pomacentridae or Demoiselles, a group containing many species of small, brightly coloured fish generally inhabiting coral reefs. The white-ear is a southern representative of this family being found in S.A., Victorian and N.S.W. water. Other closely related species occur in Tasmania, Qld., and Lord Howe Island.

The usual colouration of the adult fish is dark purplish-grey with a white spot ('ear') on the gill cover, although some individuals have instead of this white spot a vertical white band on the middle of the body. This is only a variation, not a species difference, and is not generally common; some localities, notably Bare Is., having more examples than others. With age the colour turns a dirty white.

The young of this species presents a surprisingly different colour pattern in fact many divers might not even recognise them as the same species. In contrast to the drab grey of the adults, juveniles are bright orange with brilliant blue stripes along the top of the fish from the eyes back to the first dorsal fin where there is a blue-black ocellus (eye-like spot) and the rear part of the body is spotted with black. As the fish ages the orange colour dulls, the stripes break up and the dorsal spot grows smaller while the dark spots coalexce and the white 'ear' spot begins to show.

Their living habits are quite interesting, divers would find it quite rewarding to settle down and spend some time watching this fish; they make a home in some niche or hole in the rocks to which I believe they become a permanant resident. A pair of small white-ears occupied our U.R.G. fish shelter at Bare Is., during the whole span of its existance, about 4 months. The fish 'stakes out' a territory of a couple of square yards around his home and defends it vigorously, chasing and nipping fish such as red morwong, rock cale and small groper which are many times its size. He even shows little fear of great big lumbering divers merely retreating into his home, peering and popping out occasionally to see if the big fool has gone. I have had white-ear nip at an exploratory stick introduced into his home. On another occasion I saw a 6" bundle of fury chase a 2lb rock cale (cocky) that had had the audacity to begin feeding on his front lawn, about 40' then return and chase another off an equal distance in the other direction. I have seen them bound out and nip fish that were just passing as if to say 'keep going big boy'. On no occasion have I seen any of these larger fish attempt to fight back. One would think a 2lb red morwong could make minced meat of a 4oz whith-ear, perhaps belligerency and an attack first attitude pays off. Next time you see a white-ear give him more than a passing glance.

C.J.Lawler

MARINE BIOLOGY - Part 1

The creatures of the sea are divided into various groups according to their habitat or mode of life. Certain animals do not always belong to one group for their total life span,for example fish and lobsters spend their early life as drifting members of the plankton then on maturing become swimming (PELAGIC) or bottom dwelling (BENTHIC) respectively. Some animals may seem difficult to classify but groupings are made on the animal's inherent capabilities. Flounders, Port jackson Sharks, Flatheads, etc., being essentially swimming animals are classified 'PELAGIC" in spite of their spending a great deal of time on the sea bed and lobsters, octopus and swimming crabs are 'BENTHIC' although capable of swimming to a limited degree.

THE MAIN DIVISIONS OF OCEAL LIFE ARE THESE

I have altered the layout in the original bulletin

PLANKTONIC The wind and current drifting wanderers of the ocean surface comprising

PHYTOPLANKTON Minute and microscopic members of the plant family, algaes, etc.,

and

ZOOPLANKTON Minute and microscopic members of the animal kingdom, which in turn consist of creatures spending their whole life cycle drifting with the plankton animals such as copepods (a minute shrimplike creature) many jellyfish such as bluebottles (Physalia), a nudibranch (Glaucos) and the beautiful purple shell (Janthina).

and

HOLOPLANKTON Organisims usually eggs and larvae of larger creatures such as fish, lobsters, starfish, cunjevoi, that spend only part of their life drifting. At some time in their life cycle they cease their planktonic existence and join free swimming pelagic or bottom dwelling benthic communities MEROPLANKTON

PELAGIC The free swimming creatures of the ocean proper comprising fish, sharks, whales, squid etc. (NEKTONIC) which are divided into two groups depending on the depths at which they live.

NERITIC Between the Surface and 100 fathoms (which is the continental shelf areas) and

OCEANIC Below 100 fathons

__BENTHIC__ The dwellers of the sea bed comprising all the creeping crawling, boring animals living on and under the rocks, sand and coral of the ocean floor which are also divided into depth areas;

__LITTORAL__ The animals of the Shallower Areas of the Continental Shelf (0 - 100 fathoms) which is subdivided into

__EULITTORAL__ Intertidal to 25 fathoms

__SUBLITTORAL__ 25 fathoms to 100 fathoms

__DEEP SEA__ The animals of the Deeper Beds of the Ocean Basins

__ABBYSSAL-BENTHIC__ Those living at depths below 500 fathoms

For further reading see 'Animals Without Backbones', R. Buchsbaum, 'Australian Seashores', W. Dakin, Australian Museum pamphlet 'These Are Invertibrates'

__PLANKTONIC__
- Phytoplankton
- Zooplankton
  - Holoplankton
  - Meroplankton

__PELAGIC (NEKTONIC)__
- Neritic
- Oceanic

__BENTHIC__
- Littoral
  - Eulittoral
  - Sublittoral
- Deep Sea
  - Abyssal-Benthic

C.J. LAWLER

SELF CONTAINED DIVING

History and Importance

Origins

1. In 1680 Giovanni Borelli, an Italian astronomer and mathematician, designed probably man's first self contained recirculating diving apparatus. This equipment, crude by modern standards, nevertheless demonstrated man's desire to be able to dive free of encumbrances and independant of a surface supply of air. The appatratus consisted of a large air bag which fitted over the diver's head. It had a single glass port for vision. Air circulated through a tube running outside the air bag, through a smaller bag intended to trap moisture, and back into the air bag. Borelli believed that water cooling would remove impurities from the exhaled air making it suitable for rebreathing. In order to help the diver regulate his displacement in water, the apparatus also had a complicated cylinder and piston arrangement. Although it did not work, this equipment foreshadowed later closed-circuit SCUBA.

2. In 1825 W.H.James, and Englishman, designed a self-contained diving suit incorporating a supply of compressed air contained in an iron reservoir worn about the waist. This equipment aroused little interest and was not considered important at the time. This was the first unit to use a supply of compressed air:

3. In 1886 Benoise Rouquayrol of France patented the first satisfactory demand regulator for open circuit SCUBA. This design constituted a milestone in man's efforts to achieve freedom and mobility beneath the sea. The only drawback to the equipment was the lack of a suitable supply of high pressure air such as used to-day. As a result the equipment was developed into a surface-supplied demand apparatus.

4. In 1878 H.A. Fleuss of Siebe Gorman and Co., England designed a workable closed circuit oxygen re-breathing SCUBA. The unit utilised a solution of caustic potash to remove carbon dioxide from the exhaled gas. In 1902 Fleuss improved the unit in collaboration with Sir Robert H. Davis. This apparatus was the prototype of modern submarine escape appliances and became the forerunner of present day closed-circuit SCUBA.

5. World war 2 provided the incentive necessary for rapid strides in the development of closed circuit SCUBA. In September 1941, Italian navy SCUBA divers very dramatically demonstrated the importance and potential military value of SCUBA when they carried out a successful attack against a British tanker in Gibraltar. This attack and others that followed did much to give the United States and British navies an interest in developing SCUBA and training SCUBA divers.

Open Circuit SCUBA Development

6. In 1925 Commander Le Priein, a French naval officer, developed a self-contained unit with cylinders of compressed air rather than oxygen. The apparatus was basically open circuit SCUBA. However, the unit was not completely satisfactory since the flow of air was manually regulated by the diver. This feature resulted in excessive use of the limited air supply.

7. In 1943 Commander Cousteau, another French naval officer, introduced the Cousteau - Gagnan Aqua-Lung. This device also used cylinders of compressed air but was equipped with a demand regulatorwhich adjusted the air pressure automatically and supplied air to the diver as needed. Basically this equipment was identical to Rouquayrol's except that it had a much larger air supply. The cylinders held high pressure air (2000 p.s.i.) rather than low pressure air (400 p.s.i.) available in Rouquayrol's day. The greater air supply gave the diver a much larger time beneath the surface.

8. Since 1943 several individuals and Companies have developed demand regulators based on Rouquayrol's principles. With minor variations, this type of open-circuit equipment is in wide use today.

9. Above all the brilliant inventions listed before is the one which truly freed man from a lumbering, clumsy misfit to the manfish of to-day, that of the Italian physiologist and physicist Giovanni Borelli - the 'Swim Fin'.

W.J. Tyler

DEEP DIVING PSYCHOLOGY TESTS

A series of tests designed to investigate the psychological problems associated with deep diving will be carried out in the near future. It is proposed to study the behaviour of divers while working at a depth of 130 feet. With this in view, the tests have been designed to cover three basic categories:

1. Power of observation and correct reporting of such.

2. Degree of mental concentration.

3. Manual dexterity.

while it is impossible to absolutely separate these three behaviour patterns, the tests should give an indication as to the individual divers performance in each category. The tests will be conducted later at 30 feet so comparisons can be drawn. From the results, it is hoped that a standard test can be devised to enable divers to be made aware of any particular psychological weakness that meay effect them while working at depth. Divers taking part will be in constant verbal communication with the surface. All conversations and test results will be recorded on tape for analysis. A limited number of volunteers are still needed and interested parties should contact the writer for details.

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