

## June 1966

With more than a little pride, the Bulletin reprints an article originally written for Hawaiiin Shell News by Neville Coleman.

This excellently written piece refers to one of Neville's earlier dives and from his comments at a recent meeting you are well aware that he has gained much in experience and knowledge since.

Nev spoke briefly of a murex tagging programme he has underway - a project of great merit, for in this same issue of Hawaiiin Shell News a reader in a 'letter to the editor' criticises a prior writer who reported collecting three dozen Murex insularum at one spot on one trip. The reader proposes that, as bird watching has replaced egg collecting, so study and observation of habits and ecology should, in the interests of conservation, replace shell collecting.

It is difficult to envisage a diver resisting the temptation to collect and treasure a thing of beauty as shells indeed are - but three DOZEN smells suspiciously like a commercial venture, the pursuit of which could well lead to the extinction of a species.

'LOOK, BUT DON'T TOUCH' is proposed as a motto - it is worth thinking about.

Editor

### FINDING PRIMOVULA IN SYDNEY HARBOUR

N. Coleman

Scuba diving around the coast of Sydney, as elsewhere, can only be accomplished at the generosity of the elements. although we have few problems with strong currents, we do have to contend with a rather heavy swell. As the greater part of our diving is done from shore, it is only in times of smooth seas that dives can be made with satisfactory safety measures. When the water is turbulent the Harbour comes into its own.

No matter how rough we can always find a spot to get in, and more important, to get out in one piece. Visibility is nothing to boast about and at times it is only 2 to 3 feet.

I was first introduced to the splendour of our southern gorgonian coral two years ago on one of the rare occasions when we were able to obtain a boat from which to dive. The anchor was dropped just inside Sydney Harbour at a place called 'Old Man's Hat'. The sheer cliffs of North Head towered above us to a height in excess of 200 ft. Below was a world of mystery with its host of interesting inhabitants.

As we glide down through the depths the light diminishes a little and at 50 ft. dim grey shapes begin to form as the harbour bed seemingly rises up to meet us. Visibility is about 15 feet and a little eerie due to the silence and the huge misshapen rocks that have fallen from the cliffs above. The harbour bed itself is covered with a fine silt and when a rock is turned over it clouds the water. Patience is needed before an investigation of the rock's underside can be made. To my inexperienced eyes molluscan life at this stage was conspicuous by its absence, although I had managed to find some brachiopods.

While hesitantly rounding a large rock, there, growing down from beneath an overhang, was a growth resembling a sea fan. I gazed with blinking eyes because it seemed fuzzy and out of focus, yet as I touched it the shape defined itself as the polyps withdrew. Taking into consideration the fact that this was only my third dive outside a training pool and my first one below 40 ft., it would be an understatement to say that I was a little unsure of myself. I had one purpose in mind, to collect everything I saw of interest and to put them into my bag. This little colony of colour was no exception. Within 15 minutes I had 7 pieces. Then all too soon the restriction of my breathing apparatus announced the unwelcome fact that for to-day at least my glimpse into inner

space was over. Switching on my reserve I signalled to my companion and we slowly made our way 'upstairs'.

Back on board the boat, with wet suits stripped off and a cup of hot coffee spreading a glow inside us, we examine the catch. Out came the Gorgonia. Tenderly, piece by piece, it is laid on the deck. I find I have four different colours - red, pink, yellow and orange. To think that these colours come from the relatively cold environment at the bottom of the harbour seemed incredible to me. Before this I had always connected colour with warm tropical waters. But here within my reach, almost at my front door, was the living, intricately grown beauty of another world. As I placed the coral back in the bag I saw a small object hanging by a thread of sticky substance that slowly stretched to the deck. I placed my hand beneath it and discovered my first little 'gem-of-the-sea', a gorgonian shell. Feverishly I searched through my bag and found nine of these beautiful little shells representing three species.

The five months of snorkel and scuba training each weekend with the B.S.A.C. of Sydney, the knowledge gained, tests passed, the new-found friends who had given their time to make a diver out of me....here was my reward. As a scuba shell collector I'd found my first real prize. Since that day my life has slowly but surely centered around the sea and all its marine inhabitants. Although I have found many strange and wonderful specimens, none means more to me than those little Primovula which started me on the way to the happiest two years of my life.

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U.R.G. DIVE AT SHIPROCK - 22.5.66

K. Bicknell

Club Divers: C. Lawler, F. Davis, L. Graham, K. Bicknell

Visitors: Max Meliska, Peter Johnson, Bill Irving, Dave Powers.

A hardy group of divers gathered at Shiprock at 9.00 a.m. and braving the wind and rain entered the water at 9.30. The water was reasonably clear with about 15 feet visibility and no evidence of the previous day's rain. Water temp was 64° F.

The 'Telesto smithi' was again in its expanded position giving the area the appearance of a beautiful flower garden. Several growths of sea pens *Cavernularia obesa* were located on the sand just off the reef and these were also in the expanded position.

Fish were plentiful and seem to be coming more tame or more used to the ungainly divers. Frank Davis collected a Butterfly cod *Pterois volitans*, which was later transferred to his aquarium.

A cold but very satisfying dive was had by all and the visitors agreed that this was one of the most beautiful and exciting places to dive.

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## THE HAGFISH

Here is inserted a hand drawing of a hagfish  
titled 'Eptatretus stoutii'

by C. J. Lawler

The Hagfish or slime eel is not likely to be met by many divers inhabiting, as it does, the deeper parts of the ocean; its extreme range being between 60 and 1,800 feet, but nevertheless, it is an extremely interesting fish. It represents the very lowest form of true fishes, belonging to the class 'Cyclostomas' (which includes the bloodsucking Lamprey) comprised of animals with jawless mouths and cartilaginous backbones. In addition to these characteristics the Hagfish has four hearts, one nostril and no true eyes or stomach.

The Hagfish is an ocean bottom dweller feeding on dead or dying fish into which it burrows, devouring flesh and viscera, leaving only a bag of skin and bones. Its habitat is restricted to water that is both cold and salty, thus precluding it from entering shallower water or estuaries. It is a sluggish fish spending most of its time lying or burrowing into the muddy sea bottom, needing to feed only infrequently, often going for months between meals. It is almost completely blind, possessing only rudimentary eye spots on the head and the tail which can distinguish light from dark. Barbels situated around the mouth and single nostril give it some sense of touch.

Having no jaws, therefore no true teeth, it uses rows of horny rasp-like projections on each side of its tongue to drill entry into its prey. To give extra purchase for a 'bite' it can throw its body into a knot, run the knot down its body and help the strength of its pull by pressing the knot against the side of its victim.

When handled, a slimey fluid is extruded from pores situated down the sides of the body making it extremely slippery to hold. This defence mechanism although very effective as an aid to escaping predators, would eventually kill the Hagfish by blocking the gill openings. It is here that the Hags ability to knot itself again comes to the fore, knotting the body and running the knot from head to tail rids its body of the slimey fluid, clearing the blocked gills and the Hagfish can breathe freely again.

The blood circulatory system of the Hagfish is very curious and complex. It has a main heart centrally situated in the body which pumps blood through the gills and by way of arteries to the rest of the body. In some areas of the body there is no interchange area (called a capillary bed) to return the blood via the veins; the blood in these spots drains into open space or sinus resulting in a very low blood pressure in the venous system (this type of circulation is rare in vertebrates but is common among invertebrates). Consequently three auxiliary hearts are needed to pump the blood back to the main (branchial) heart. These hearts are located near the head, the tail and near the main heart.

The Hagfish heart is very tenacious, it can be surgically removed from its owner, planted beneath the skin of another Hagfish where it has been known to beat strongly for over 3 weeks. In fact the whole heart or even pieces of the heart will beat for several days immersed in sea water. One of the reasons for this is that the Hagfish heart has no pace setting nervous connections, it works simply by reflex muscular contractions in response to blood flow.

Little is known of the Hagfish breeding habits, even details of their method of reproduction remain a mystery. In 1864 the Copenhagen Academy of Science offered a prize for a solution to the question of Hagfish reproduction, the prize is still unclaimed. We do know that the Hagfish lays very few (about 29) but very large (about 1" long) eggs which must have a very large survival rate to account for the enormous numbers of these fish found in the ocean depths.

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DIVE AT CAMP COVE - SUNDAY 29TH MAY - 9.30 A.M.

C. J. Lawler

Weather: Cool and sunny with light N.W. winds, slight seas, water temperature 64.5°F, air temperature at start of diver 52°F, visibility about 15 feet with tide ebbing to low.

10 Divers Present: Davis, Bicknell, Mullard, Lawler, Inder, Inns, Baker & Graham of U.R.G. plus visitors Coleman & Irving.

Except for Neville Coleman, this was our first dive on this northern side of Camp Cove, following Coleman's instructions we swam under a wharf at the northern extremity of the beach and made our way to a rocky point a further 100 yards north. Commencing our dive here at the edge of a dense Ecklonia kelp bed, we began to work our way to the north in about 20 feet of water. Very many white 'Pseudobotitea' Sea Urchins were seen and also extensive growths of a brown jelly-like mass first seen at the southern end of Camp Cove a few weeks previously. This was later identified as a species of compound ascidian of the genus 'Clavellina'. This ascidian is of a very fragile nature resembling the jelly consistency of some egg masses. The small orange colonial anenome 'Corynactis' was growing very extensively on sub-tidal rock faces.

The topography of the area was very interesting, with many small grottoes and caves in the reef face and several huge pinnacles of rock standing on the sand and reaching almost to low tide level.

Davis and Inder were successful in collecting several small fish for their aquaria. Included were a 'blue streak' Cleaner fish, a suspected sub species of 'Lion fish' and a, as yet, unidentified fish coloured black with large white spots on nose, dorsal fin near gill, on head, at rear end of dorsal and ventral fins and with a white tail. This fish only measured 35mm (1 3/8") and is possibly a juvenile Wrasse. Other specimens collected were a Sea Horse 'whitei' and a Sea star 'Luidia a?straliae'

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DIVE AT SHIPROCK - SUNDAY 5TH JUNE - 9.30AM

Weather: Cool and sunny with light S.W. winds, air temp at start of dive 47°F, water temperature 64° surface, 63° on bottom at 60', visibility about 30' with tide at full high.

15 Divers Present: Bicknell, Mullard, Davis, Lawler, Morrison, Inder, Inns, Baker of U.R.G. plus visitors Irving, Johnson R, Johnson P, Powers, Coleman, Deas & Doyle.

Photographs were taken by W. Deas with Rolleimarin and C. Lawler with U.R.G.'s Nikonos. Presence of several clusters of cephalopod eggs, and a large increase in the number of sea pens 'Cavernularia' was noted. Several small Knight fish were seen and one netted by F. Davis. Several shells were collected by N. Coleman including a cowry 'C. Nashei'.

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