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TEKTITE II - HUMAN AND FISH BEHAVIOUR ON A CORAL REEF.

by F.H. Talbot

Last year I was involved in a man-in-the-sea project run by a number of U.S. Government agencies, and this was one of the most exciting experiences in biological work that I have had.

The programme was extremely ambitious and involved an expenditure of some seven million, with two underwater habitats. The one was for 5 men at 50 ft., and the other for 2 men at a hundred feet (inevitably called the minitat!). There were also some 10 support vessels. The project lasted seven months.

Its goals were numerous, but the two main government agencies were NASA and the Department of the Interior, NASA (planning for its Skylab programme) wished to study the problems involving scientists undertaking meaningful work in stressful situations. They were particularly interested in the structure of habitat insofar as it impinged on its inhabitants, and in the psychological problems. The Department of the Interior was interested in seeing whether ordinary diving scientists could work better if working in a saturate situation on the sea-floor - without the problem of decompression. In addition a medical programme on blood, feeding, on skin, nose and ear bacteria, and also other effects of saturation were also going on. All of these were called "non-interference" programmes, and designed to leave us to do our work with the least time involvement in other programmes.

Choice of Scientists. Scientists were not chosen for compatibility, but the Smithsonian Institution chose them on the basis of research projects put forward - for work which could be better done by living underwater on a coral reef than by "bounce" dives (that is normal aqualung dives involving necessarily short times on the bottom because of decompression problems). The scientists chosen were from many American research institutions - museums, universities, and government research laboratories. They were all Americans bar 4, - two Frenchmen, an Italian and myself.

The Habitat. The habitat consisted of two boiler-like columns 18 ft. high and 12 ft. wide, each divided into two rooms sitting on open, waterfilled base with ballast, and connected between the upper pair of rooms by a crawl way. One of the columns was

closed/

closed below, and the other open, with the water kept out by the pressure in the habitat. One merely swam into the base and climbed a ladder up the "well", entering the wet lab through a hole in the floor. Gear was stored in this room, which also served as a laundry, with a tumble-dryer, and had a shower cubicle - hot showers are the height of luxury after you have been out of the habitat for a few hours. The next room up, the engine room, contrived the air conditioning machinery, the deep freeze and toilet compartments and was connected by the crawl way to the bridge - which had all the communication systems to the surface, with 3 closed circuit T.V. screens, atmosphere testing sensors, microscopes, balances, writing desks and also served as recreation area and dry laboratory. The last room was the crew's quarters, with four deep bunks (the engineer slept in a pull-out berth in the bridge) centre table and chairs, electrical 3 plate stove with oven and griller, and ordinary domestic refrigerator. All rooms except the wet lab were fully carpeted and the temperature was even and comfortable - one usually wore only a pair of shorts.

The habitat was placed in a fairly sheltered bay on the islands of St. John in the U.S. Virgin Islands at the outer edge of the Caribbean, and was in a clear sand patch at 50 ft. surrounded by coral reef. This is a strikingly beautiful coral reef area, rich in gorgonian soft corals, some stoney corals and with a very rich fish fauna. We found over 100 species of fish on two small reefs, one just in front of the habitat doorway, and another a few hundred yards away in deeper water. Our colleagues below, Dr. Jim Taylor from the Philadelphia Academy of Natural Sciences (the man who found Captain Cook's cannon which were jettisoned after the Endeavour was damaged on the Great Barrier Reef) and Dr. Lavette Smith of the American Museum of Natural History, studied a small clump of coral only 6 ft. across for two weeks and identified 50 permanent and transient fishes.

Programme of Work. Dr. Bruce Collette and I were interested in fish behaviour, particularly the difference in the patterns of behaviour during day and night.

We had been working for some time on One Tree Island reef, at the southern end of the Great Barrier Reef, on the species diversity of fishes, and their distribution across a coral reef, and although we were learning a great deal about their day time distribution we knew little about their nocturnal distribution - we did some night dives and some collecting of fishes with explosive charges at night, but we did not know what risks we were taking at night and were a little hesitant to work underwater at night. The Virgin Islands were not reputedly as dangerous for sharks - and in fact we never saw one, although we worked from 3.45 am to 7.30 am (watching the night day change over of fish behaviour) and from 4.30 to 8.30 pm watching the reverse in the evening. As I am an ecologist, this fish behaviour study was a little outside my normal work, but it was simple in approach, and added information to our own day-time sampling. Although of all the 110 species we saw only two that were common to the Great Barrier Reef and the Virgin Islands, the majority of the genera are the same, and we would expect to find the same patterns of behaviour.

A normal day's work for Dr. Colette and myself would include a snack before swimming out in the dark of the early morning, a breakfast on our return at 8.30 when we would see our colleagues briefly as they took over our General Electric electronic rebreathers and left for their work, and a day spent writing up

notes and getting a couple of hours sleep to catch up on the early morning start. Lunch would merely be a sandwich when one was hungry. Then we went out at 4.30 for a long dive, and after this (about 8.30) we got together as a group for the first time in the day, and had a cheerful "happy Hour", and a two course meal, usually cooked by our engineer Geoff Marsten, a young marine technician who had worked in a restaurant's kitchen to help pay his way as a student, and loved cooking. Drinking was officially not allowed, but we usually managed a Barbados rum, coke and delicious little West Indies limes each evening - even though watched by "big brother". Big Brother was the 4 wide angle T.V. cameras, one surveying each room with monitors in the Command Van on the hill overlooking the Bay. From these we were observed by a Watch Director (our communications man on the surface and the controller of our movements and of the safety support boats) an Engineer (keeping all our underwater systems functioning) and 2 psychologists recording our every action.

The Problems of Living Underwater. The problems of living underwater were of different kinds. Social tensions, if they were going to show, built up in the first few days of isolation. Some groups had clear problems, and one group sent one of their team to coventry - a little rough when there are only 5 of you in a very confined space. We ourselves had some minor disagreements - ones reactions under such living conditions were different, and I learnt new things about myself underwater, and also about my companions. With humour, leg-pulling, a social evening period in which we encouraged open communication (and with a drink) we resolved these, enjoyed our work and each other, and did not want to go back to the surface when our time was up. One missed sunshine and sharp shadows, wind through ones hair, fresh earth smells, walking and talking with men and women. But I loved living for the first time with fish, able to watch them going about their business, swim out and see them feeding and to swim with huge silver tarpon and snappers around the habitat at night. I learnt in 2½ weeks more than I would in half a lifetime of scuba diving.

We had minor ailments; occasionally diarrhoea, low headaches and some of us had difficulty sleeping deeply. But we fed with gusto, played practical jokes on each other and on our long suffering Watch Director on the surface, and, in U.S. terminology "had a ball".

Our research work went well. Normally when you plan a piece of work it turns out to take twice as long as you imagine it will, but our work on Tektite went better than we thought it would. We had not realised the complete difference between working with aqualungs, and living under water on the job. A paper on our work is now complete and is to be published shortly.

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AN UNCOMMON NATAL TURBO.

by R.N. Kilburn

The name Turbo splendidulus was given in 1887 by Sowerby to a particularly striking turbinid from an unknown locality. Nothing further was heard of the species until 1903, when E.A. Smith recorded specimens from Durban and Umzinto. Since then a fair number of examples have come to light, the best coming from fishes' stomachs, while beach shells are rarely in good condition. Subsequently the species has a recorded range from as far north as

Dar-es-Salaam/

Dar-es-Salaam (Spry). The East London Museum has two East African Shells (one with operculum), and the Natal Museum has a poor one from Tanzania.

Recently however, a living example was collected between tides by Mrs. Peta Madin of Durban, and forwarded to the writer for identification by Mrs. Anne Wilson of Pretoria. This specimen was found at Leisure Bay, just north of Port Edward, representing an extension of the known range of the species. The animal was bright orange in colour. A fresh dead shell was also found at Palm Beach by Mr. Wilson.

The operculum is unusual in that it is smooth and glossy, save for a marginal ledge, resembling that of the Australian Turbo (Euninella) gruneri Philippi. The latter (the type of Euninella) in fact rather resembles a dwarf splendidulus, and the two must be regarded as consubgeneric.

After the above had been drafted, the writer, in a moment of idleness, happened to glance through Sherborn's Index Animalium for the years 1801-1850, and was horrified to discover that the name Turbo splendidulus had been given as early as 1829 by O.G. Costa to a completely different species. This means that Sowerby's name is a junior homonym and cannot be used. On delving into the question of an alternative name it was discovered that an apparently identical species to Sowerby's splendidulus had already been described by Philippi in 1848, namely Turbo laetus. This was originally described from East Africa, but does not appear to have been subsequently rediscovered. Unfortunately, at present I only have access to the rather crude copy of Philippi's figure and the paraphrase of his description given in Sowerby's Thesaurus, so there can as yet be no definite decision taken, but there appears to be little doubt that they are conspecific. While Sowerby's figure does not show any sign of a shoulder to the whorls (a prominent feature of splendidulus), this is indicated in the description; moreover the Tanzanian shell mentioned above does show an unusually weak shoulder angle, thus approaching this figure.

Readers will be advised when the position is finalized.

GOODBYE AULACOMYA MAGELLANICA

by R.N. Kilburn.

With regard to Mr. Appleton's note in Circular No. 131 regarding this species, I must point out the following:

The name magellanica Chemnitz, 1785, cannot be used for two reasons. Firstly, Chemnitz's names have all been ruled invalid by the International Commission for Zoological Nomenclature (the sole exception is Conus gloriamaris!), and the first binomial use of magellanica dates from Lamarck, 1819. Secondly, there is an even earlier, and perfectly valid name, Mytilus ater Molina, 1782, erected for South American specimens. The accepted name for this species is now Aulacomya ater (Molina).

The species consists of four isolated populations, one occurring in South America (Falkland Islands to Brazil), another in South Africa (records from St. Helena are based on specimens which drifted across on floating kelp), a third on the island of Kerguelen, and a fourth in New Zealand. Workers from the last named country have recently attempted to distinguish these populations as sub-species or even species, on the basis of slight

differences/

differences in average rib number (our "subspecies" is listed as Aulacomya ater crenata (Lamarck, 1819). However these differences are barely discernible when large numbers are examined, and these taxa have little or no claim to validity.

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Our Library Books Reviewed.

Sea Shells by D.F. Low (No. 137). The full title is - How and Wonder Book of Sea Shells. The book consists of 48 pages and is edited under the supervision of Dr. Paul E. Blackwood of the Department of Health, Education and Welfare, Washington. This is just the book for the beginner shell collector, and is a book which both children and parents can enjoy.

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Universal Shells by Maxwell Smith (No. 19). This is an interesting book of 250 pages first published in 1961 with fine drawing reproductions in black and white and including five colour plates. The book deals mostly with marine shells but also illustrated a few fresh water and land species. Classes, families and genera are well described.

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Note:- Members are entitled to borrow two books at a time from the library. Simply chose those you would like to borrow from the list in your possession and forward at least four choices to the Librarian at P.O. Box 98, Howard Place, Cape. Books loaned to members outside Cape Town must be returned within six weeks by either registered book post or by insured parcel post.

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Notes from the Groups

Durban and Natal Coast. There was a small but enthusiastic attendance of members at a night "shelling" at Reunion Rocks on 24th November. A number of specimens were found and colonies of the commoner cypraeidae seen. The party was fascinated by the discovery of two large brilliantly-coloured fish of the Parrot Fish family "sleeping" in residual pools on the rock shelf far above and out of reach of the low tide.

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Natal Midlands. The attendance at our December meeting was 17 - 10 members and 7 visitors. Two of the visitors were globe-trotting sailing visitors from the U.S.A., Mr. & Mrs. S. Samu, who interested us with experiences in foreign shelling areas.

Mr. Kilburn had the rapt attention of everybody when he gave a practical demonstration on the extracting and mounting of the radulae of two molluscs, carnivore and herbivore. This was so simplified that we amaterus could understand the malacologist in his own field. The group of 16 people watched with real interest and tea was had while the test tubes boiled. The group dispersed with obvious reluctance at 5.30 p.m.

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Border. Mrs. Gillmer welcomed all present at our November meeting.

Mrs. Armstrong displayed yet another of her "finds". This time a Strombus mutabilis at Yellow Sands. Ideas for the improvement of the shells on display at the Museum were discussed. Mrs.

Trow told us of her work at the Umtata High School. She had a collection of her shells for the pupils and changes this display every three months. She had also seen the Transvaal Exhibition and described it to us.

Ideas for projects for the coming year were discussed, among these were:- another competition, a display in the Smith Exhibition Hall at the Museum, and a stall at our hobbies exhibition.

The meeting closed with a lovely exchange of Christmas presents of shells among all present.

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Minutes of the Meeting of the Society held on 25-1-1972

Our Chairman, Professor Mallory, welcomed all present with a special word of welcome to Mr. & Mrs. Fox, visitors from America. Apologies for absence were recorded from Mr. Graham Ivy, and Mr. & Mrs. Watt.

The minutes of the previous meeting, having been published in Circular No. 136, were taken as read and adopted.

Arising from a question asked at the November meeting Mr. Carlsson tried to explain the *Haliotis sanguinea* Hanley 1841 change of name to *Haliotis spadicea* Donovan 1808. Lengthy discussion took place and it was decided that there was nothing definite. Mr. Carlsson undertook to write to Dr. R. Tucker Abbott and The British Museum of Natural History.

Brief discussion was held on the Cypraeidae on display before handing over to Mr. Jock Dichmont, our guest speaker for the evening.

Mr. Dichmont then proceeded to relate some of his experiences whilst diving for treasure from wrecks of sailing ships. He showed slides of diving conditions, some of the booty and of scenes taken whilst engaged in the film "Blue Water, White Death". This entertainment was thoroughly enjoyed by all.

The meeting ended with general discussion over tea and biscuits.

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New Members.

- Miss F. Leers, P.O. Box 3531, Cape Town.
- Miss J.M. Brown, 170 Fordyce Road, Walmer, Port Elizabeth.
- Mr. F. Greave, c/o Hart Wool (Pty) Ltd., P.O. Box 2054, Port Elizabeth.
- Miss M. Cox, Y.W.O.A., 128 De Korte St., Braamfontein, Johannesburg.
- Mr. K. Fourie, 4 Huntly House, Cor. Mayer & Spilsbery Sts., Germiston.

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Changes of Address.

- Mrs. L. Kerr, 62 Windemere Rd., Marine Estate, Muizenberg, Cap
- Mr. & Mrs. R.O. Carlsson, P.O. Box 98, Howard Place, Pine
- Mrs. J. Pearce, P.O. Box 56, Hibberdene, Natal.

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Exchange Wanted.

Mr. G. Brandsma, Borgesiusstraat 18, Steenwyk, Holland. Wanting to exchange fossils, stones and shells.

Mr. M.J. Coward, 147 Salisbury Avenue, Warden Hill, Cheltenham, Gloucester, England. Is a newcomer to the collecting world and would like to exchange in order to obtain South African specimens.

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Membership Lists.

The list of members as at January 1972 has already been sent to you. Whilst every effort has been made to make this list as accurate as possible mistakes do have a habit of creeping in. Please check your entry and advise us if it is incorrect.

The following name was omitted from the list of members and it would be appreciated if you could add it under the heading of Western Cape.

Mr. J. Dichmont, Vergelegen, St. Pauls Crescent, Rondebosch, Cape

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Meetings:

Cape Town. The next meeting of the SOCIETY will be held on Tuesday, 29th February, 1972 in the lecture hall of the South African Museum, Queen Victoria Street at 8.15 p.m. The shells for discussion and display will be the family Marginellidae.

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Pietermaritzburg. The next meeting of the Natal Midlands Group will be held on Saturday, 4th March, 1972 in the Board Room of the Natal Museum. The subject for discussion will be the Habits and Mode of Life of Molluscs part 3 :- Reproduction.

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Durban. Regular Group meetings are held at these centres but at the time of going to print the dates and subjects had not been advised.
East London.
Port Elizabeth. For further information you are requested to contact your local Secretaries or Group Chairman.
Johannesburg.

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YOUR ATTENTION is drawn to the new address to be used in all correspondence with the Society. The Secretary's address is now:- P.O. Box 98, Howard Place, Pinelands, Cape.

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SECRETARY/LIBRARIAN.

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