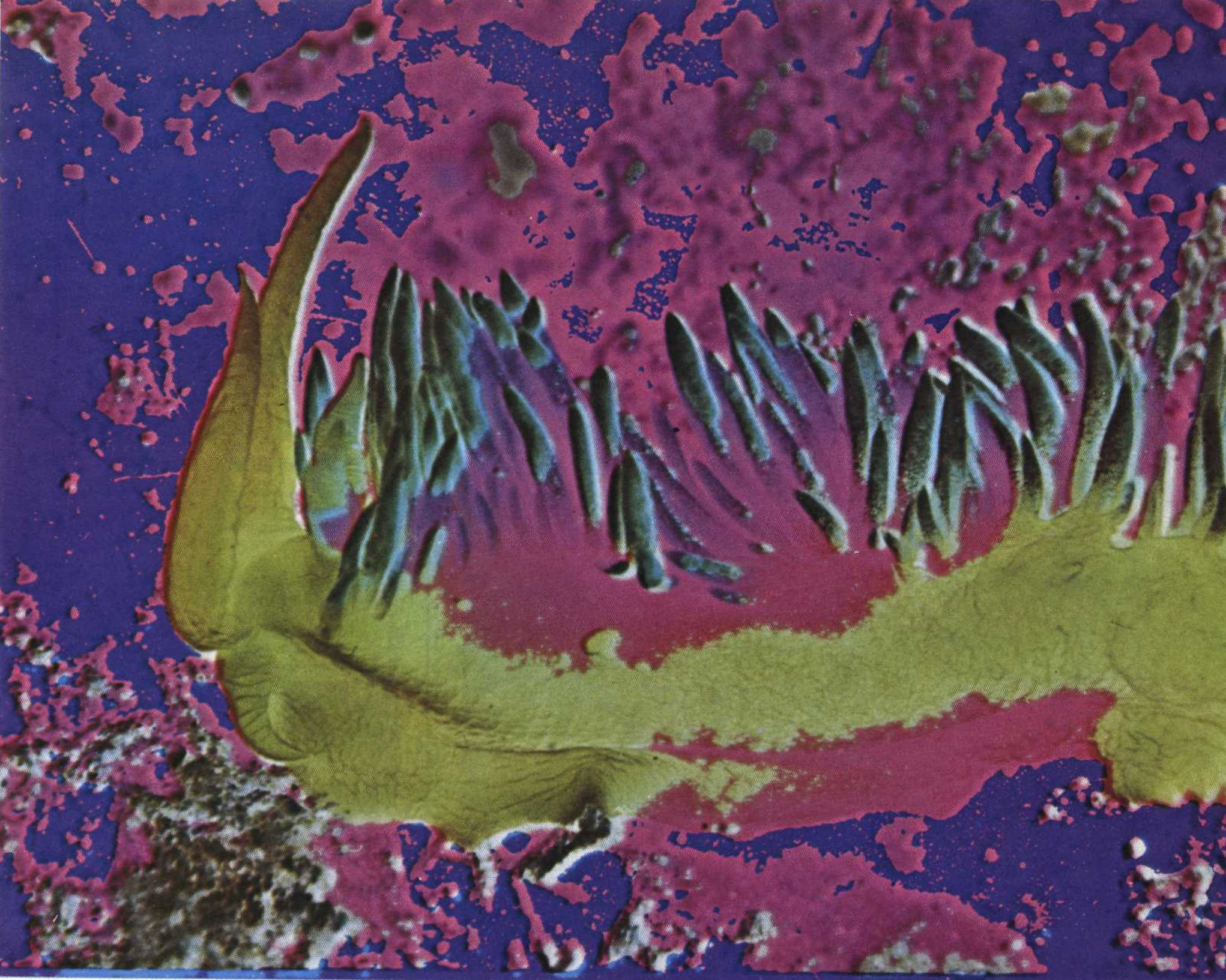






The technique used in processing the 35mm shots of the nudibranch (left) and the jellyfish (right) brings excitement, unbelievable color combinations, and unequaled singularity to underwater photography.

OFFBEAT PHOTOGRAPHY

"PSYCHEDELIC SEA SERPENTS"

Story and Photographs by
Jack Drafahl, Jr.
Brooks Institute of Photography

Turn your underwater slide show into a gallery of psychedelic creatures who look as though they came from outer space instead of under the sea.

To psychedelize your collection, first pick a transparency with a good contrasting quality and copy it onto Kodak Color Printing Film. The result is a high contrast negative image of the original slide. Black would be white, red to cyan, and yellow to blue.

Next, mask this new slide with a special monochromatic film called Color Key made by the 3M company. Color key material is sold in sheets and can be found in all the colors of the rainbow. Choose a masking shade that gives an eerie effect to the transparency when it is placed underneath it. Cut a square the size of the slide from the color key sheet and place the two squares underneath a

plate of glass with the negative transparency on top of the color key.

Expose under an intense light for about one minute. This masking process fills in all the unexposed areas on the negative slide.

Place the exposed color key material in a tray of rubbing alcohol and let it set for 30 seconds. Then gently rub it with a cotton ball, all the while keeping the color key square in the alcohol.

Soon the unexposed areas of the square will come off and when both the negative slide and the developed color key are placed together and mounted, you have it . . . your "tame nudibranch" is now a "psychedelic sea serpent" that will give life to your gallery and delight your friends.



(top) Underwater, a newly hatched dragon fly (bottom) Another dragon fly that has surfaced and is on land.



Ready for a change of scene — underwater? Try Freshwater diving in the nearest lake or river — take along your camera and enjoy capturing on film some unique underwater life which is rarely photographed and which will result in some exciting and different underwater pictures.

After discovering some fantastic underwater insect life in the Santa Ynez River in California, I decided these little creatures would make great subjects and settled down for some serious underwater photography. I have found that the best time of year for freshwater diving is in early summer when the water has slowed and the silt has settled. When first submerging, one finds that the river bottom, in comparison to the ocean's abundant marine life, seems barren. But look a little closer! Peer into the aquatic plant life near shore — look into the reeds, the watergrass, the small submerged trees. Here you will find a whole ecology of underwater insects, turtles, crayfish, and small fish hiding.

Freshwater diving offers a change from the sea and provides the underwater photographer a chance to shoot with available light everything but close-up shots. For such things as aquatic insects which necessarily require close-ups, a flash system is needed. If you're lucky you can photograph different stages of the insects' life cycle; shooting the larval stage below water and the adult state as it clings to a reed above water — all in the same small area.

One can also test his film in freshwater before an ocean dive due to the fact that freshwater provides a better background for exposure settings, and testing thus you can enter and exit the water with ease plus

INSECTS OF THE MARINE WORLD

*Photos and story by Jack Drafahl,
Brooks Institute of Photography*

the fact that most of these areas can be found fairly close to home and easily accessible.

For some easy and unique photographing, pack a picnic basket with fried chicken, grab your mask and snorkel, and head for new adventure.

Underwater giant water beetle with eggs ready for hatching.



DIVE MAGAZINE'S 2ND ANNUAL UNDERWATER PHOTOGRAPHY CONTEST WINNERS

COLOR SLIDES

- First Prize: Fred Fischer, Del Mar, Calif. ... Subsea Products Complete Strobe Outfit, Value \$1050.00
- Second Prize: Doug Wallin, San Francisco, Calif. ... Seamless Rubber Co. Nemrod Safety Vest, Value \$120.00
- Third Prize: Charles J. Adams, San Francisco, Calif. ... Week at Pennecamp Coral Reef State Park from Key Largo Diving, Value \$148.00
- Fourth Prize: Jack Drafahl, Santa Barbara, Calif. ... Healthways 2-Piece Texskin Scubasuit, Value \$100.00
- Fifth Prize: Mike Burdette, Columbus, Ohio ... Five Year Subscription to DIVE Magazine, Value \$25.00

COLOR PRINTS

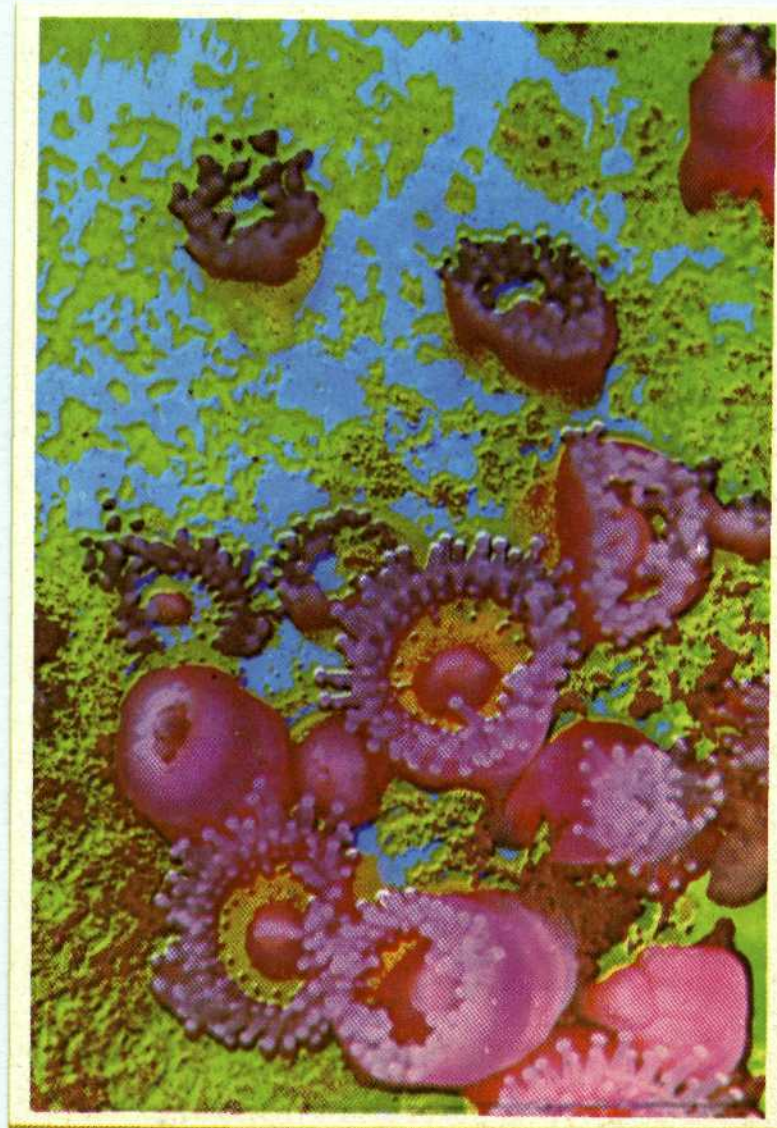
- First Prize: Gary Felton, Santa Barbara, Calif. ... Farallon ML350 Movie Light and Arm, Value \$575.00
- Second Prize: Robert J. Gladden, Tampa, Fla. ... Sportsways ATM 750 Regulator, Value \$120.00
- Third Prize: S. Harold Reuter, Houston, Tex. ... Ricoh Underwater Camera from Global Mfg., Value \$110.00
- Fourth Prize: Charles L. Short, Van Nuys, Calif. ... Microlens II Closeup Lens from Ken Sprouls, Value \$50.00
- Fifth Prize: E.S. Alexander, Galveston, Tex. ... Five-Year Subscription to DIVE Magazine, Value \$25.00

BLACK AND WHITE PRINTS

- First Prize: Robert J. Gladden, Tampa, Fla. ... Imperial Products King Turtle Wet Suit, Hood, Gloves, Booties, Value \$175.00
- Second Prize: Chuck Highsmith, Chicago, Ill. ... Ikelite SLR Underwater Camera Case, Value \$150.00
- Third Prize: Robert J. Gladden, Tampa, Fla. ... Calypso Regulator by U.S. Divers, Value \$106.50
- Fourth Prize: Peter Veng, Denmark ... AMF Voit MR12 Regulator, Value \$90.00
- Fifth Prize: Doug Wallin, San Francisco, Calif. ... Five-Year Subscription to DIVE Magazine, Value \$25.00

4th

Fourth Prize Winner — Color Slides, Jack Drafahl





Clearly defined and colorful grains of sand testify to the tiny size of this ghostly Hawaiian crab, posing for a close-up shot.

Freedom to a California diver is not wearing a chicken vest. Freedom to a diver in Hawaii is not wearing a wet suit, booties, gloves or weight belt.

And nowhere is this freedom more beautifully experienced than on the Kona Coast of the Big Island, Hawaii. To feel the 75 degree surge brush against your skin, to

sink 120 feet beneath the surface and still watch the boat hull drifting, backlit from the browning sun — That's freedom to a Kona diver.

I discovered Kona and paradise diving after flying to Honolulu for a sea symposium and finding the city walled in by high-rise hotels.

KONA

*by Jeri McKeon—Photography by Jack Drafahl
Brooks Institute of Photography*

(opposite page) Clear water, prerequisite for easy, quick underwater photography, finds Terri Cummings enjoying a comfortable underwater photo safari



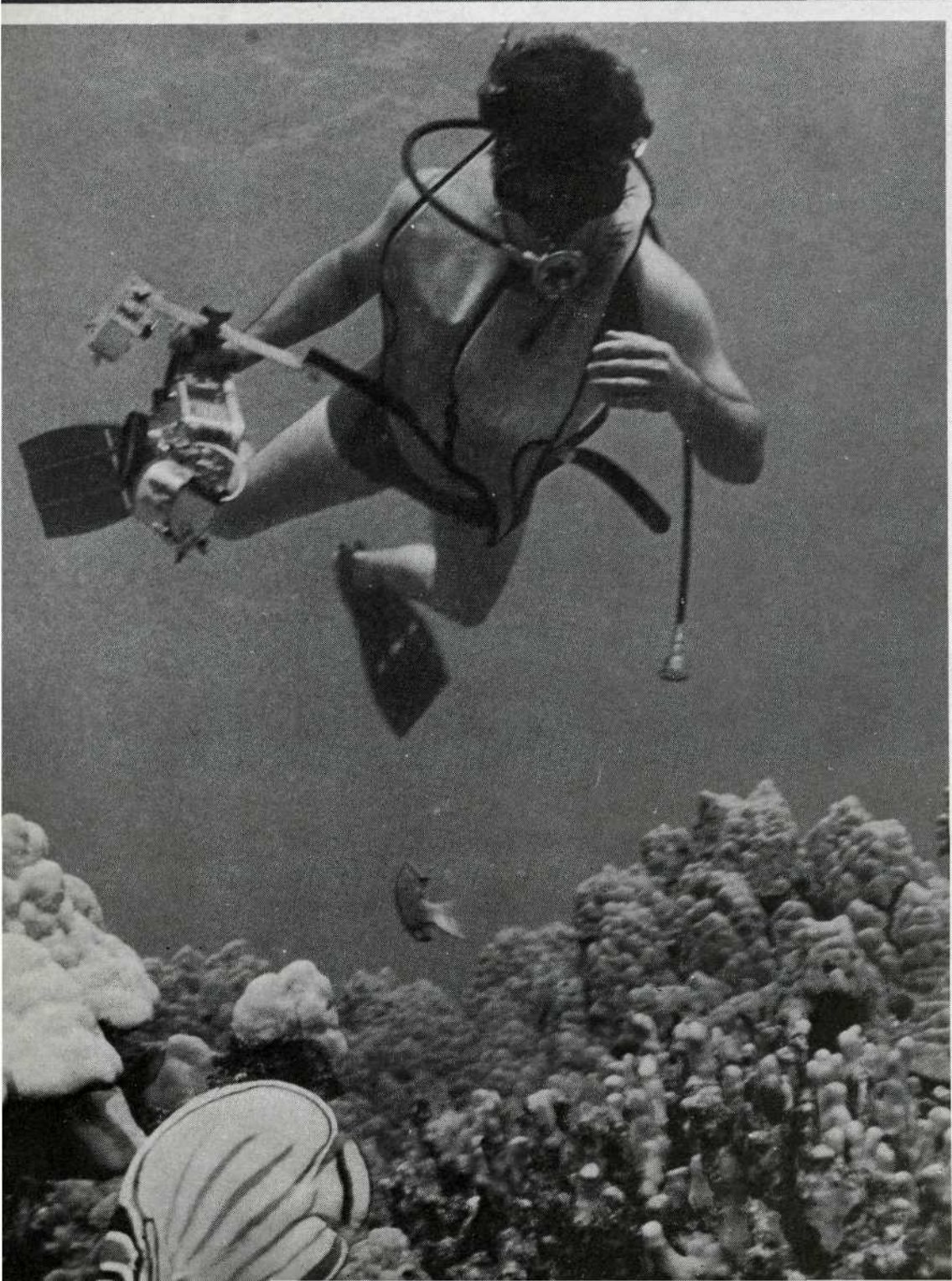


foreign to a California diver used to wading through kelp, collecting profuse animal life, and straining to see your buddie from 10 feet.

The ocean floor is solid coral with different shades of green. Here and there brick red pencil sea urchins with broad rounded spines dot the area and tube worms in colors of red, yellow, blue and green set off the scene. Unlike the California Channel Islands where a

(opposite page) Scouting the beautiful Kona coast. Top side scenery and tranquility is but a teaser before donning tanks and entering the clear, warm Kona waters.

Terri Cummings, gliding quietly among colorful fish and coral, discovers that the reverence and serenity above Kona waters gives way to a matching attitude below the surface.



Terri Cummings (above) is snapped by Jack Drafahl as she glides over the bottom at Kona. Left: John Clark's camera catches Jack Drafahl as he maneuvers into position for a choice shot of a butterfly fish. Opposite page: A Native Hawaiian looks out over his sea, from whence comes his origin, migration, and nourishment.

variety of animal life seems to crowd each species into oblivion, the sea creatures of Kona bask in spotlight serenity with every feature on display.

Though there is less animal life, the tropical fish abound with exaggerated color and shape and California fish seem a little dull in comparison.

On another dive at the right side of the bay, the visibility was over 120 feet. The bottom was flat at first;



this time the coral forming green, rose, brown, white, and blue patches peppered with striking red and yellow sponges.

Gliding down a 45 degree slope, I found myself face mask to gill slits with a green and gold polka dotted Moray eel, another typically Hawaiian experience.

While busy watching my model, Terri Cummings, who was attracting yellow tangs with her yellow bikini, I crashed backwards into a coral head and scratched my back and arms. I hadn't noticed the urchin spines

which had pierced my skin until I climbed aboard the boat. Despite warnings of infection, I didn't experience any swelling until I got back to the mainland and even then experienced only mild discomfort.

For a California diver coming back to California from Hawaii, thoughts invariably turn to 40 degree water temperatures, 20 pound weight belts and oh, those winter nights aboard the diving boat. Kona diving may spoil you but it will also free you for one or two mad weeks to enjoy diving au naturel (almost).



Three days later, in a panic, I grabbed an invitation from Skin Diving Hawaii, the oldest and largest scuba diving shop on the island, to come to the Kona Coast.

Without a backward glance, I hopped on an inter-island airline and for nine dollars found myself in another world split by mountainous lava flows and lush tropical sea coasts.

The town of Kailua-Kona is on the west side of the Big Island and has been kept small and charming by developers realizing the attractive contrast with Honolulu. Even the McDonald's and Kentucky Fried Chicken franchises are built with an Hawaiian inspired design.

Skin Diving Hawaii Kona is a friendly shop where

Tim Joyce and Bob Iles provide expert guidance as well as instruction. No diving experience is necessary to be able to go on charter. They have classes every afternoon. Within two hours you will be able to dive with your instructor in the open ocean. The dive master and buddy are included.

The first day of diving found me in their 16 foot Boston Whaler on a shallow reef at the left end of the bay. Though the visibility was only 40 to 50 feet in such close waters, I was able, with a little help from my friends, to discover a brilliant sea scape, completely



A GUIDE FOR UNDERSEA ASTRONOMERS

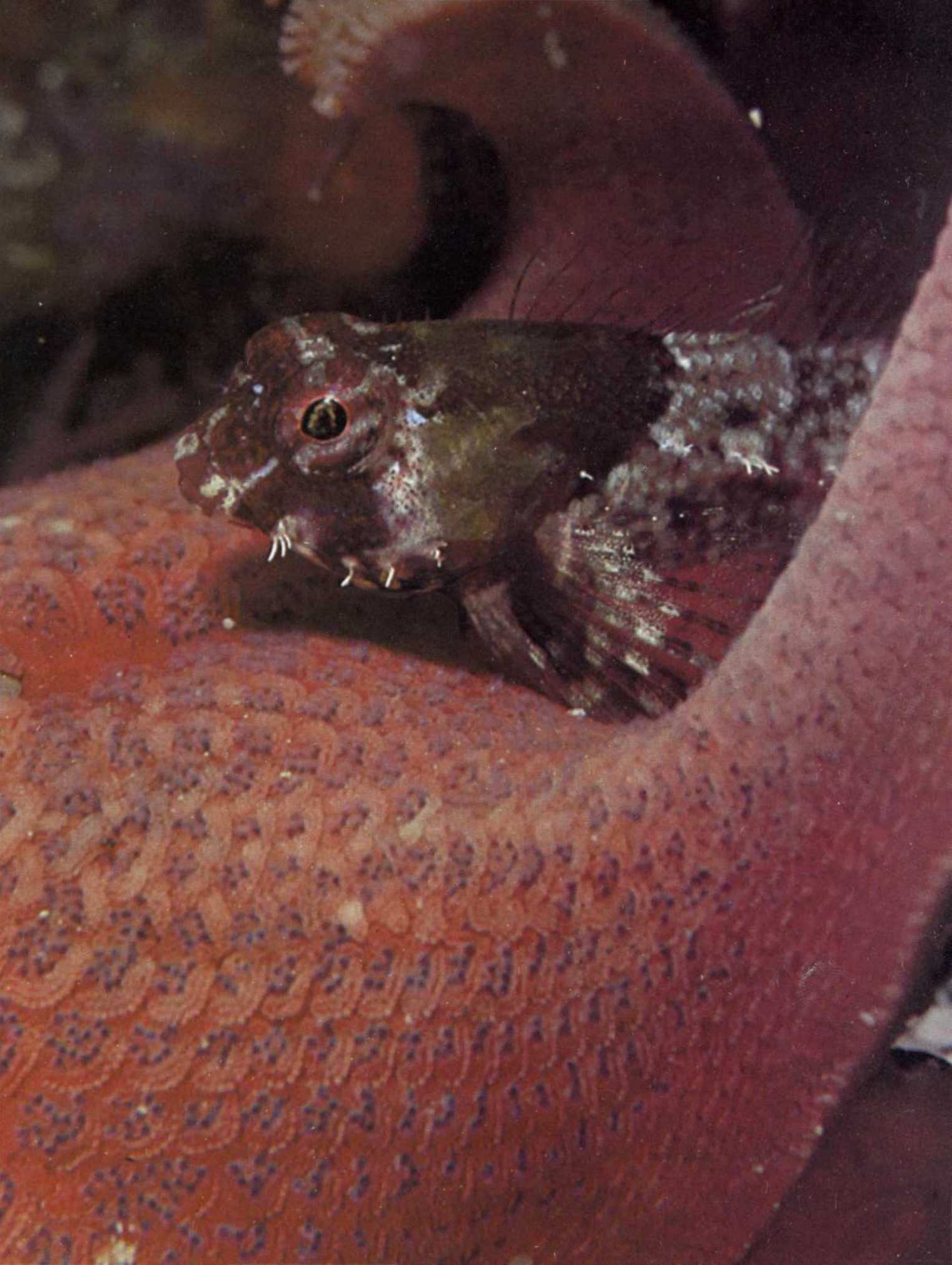
BY HENRY C. GENTHE, JR.
PHOTOS BY JACK DRAFAHL
BROOKS INSTITUTE
OF PHOTOGRAPHY

Who hasn't gone stargazing on a crystal clear night in early summer? We've all speculated on the vast diversity of forms which must be there, millions of light years distant. But wait — Lower your gaze and let it feast upon the ubiquitous stars of the sea, here, now, and, literally, in your own backyard. Beachcombers have, for too many years, recognized the starfish as a doubloon exposed by the spring tides of early winter, waiting to be picked from the rocks. A treasure from the sea. And so they return to their homes many miles from the nearest salt water — buckets laden with stars which ultimately encounter their destiny flattened and stuck to a weather-beaten shingle on the garage roof. We feel that these interesting marine invertebrates are worthy of much more than such a fate. Indeed, as the photographs on these pages illustrate, they *are* a treasure, but only in life or captured on the celluloid of the observant and sensitive intertidal or underwater photographer.

So, who wants to take a picture of a starfish? Why not a nudibranch, or sea anemone, or anything more colorful, more interesting than those gross echinoderms which cruise the mussel beds of overgrown wharf pilings? Five legs. Drab. Sitting lifelessly on a rock. Look a little bit closer, begin to see. Well organized and complex bumps, ridges and spines, the trademark of the echinoderms or spiny skins. These projections from which the group gets its name are, in reality, parts of the many interlocking calcareous plates which form the skeleton of the sea stars. All are familiar with

(Top) As though attempting to outdo each other in their decorative abilities, creatures of the sea often combine to enhance underwater beauty. Here a starfish affixes itself to coral, producing various shades of purple.

At home amongst the undersea stars, this small rockfish adds to the colorful scene as he snuggles against a starfish for protection.





HUNTING EGGS OF THE SEA

How Life Begins For Some Species

Aplysia eggs

By Nelson W. Baker
Photos By Jack Drafahl
Brooks Institute of Photography

How about an egg hunt beneath the sea, in a forest of brightly hued algae and strange animals? Eggs laid by marine animals are far more varied in form and just as colorful as those you discovered in your early Easter-egg hunts and it is just as big a thrill to discover your first "clutch" of the eggs of some marine forms.

Among the most delicate and beautiful of the marine animal eggs are those of the nudibranchs. A nudibranch, or sea-slug, is a snail which has lost its shell after hatching and is left to crawl around on its gills or breathing structures are tific name, nudibranch, means that its gills or breathing structures are nude, or exposed — nudibranch — naked gills. We are not sure just how many species there are in the United States marine coastal waters, since new species are still being discovered, but well over a hundred have already been named. They belong to a large group of snails known as Opisthobranchs (rear-gilled), some of which have shells, and others, like the nudi-



A Dorid and its egg-ribbon



branches, are shell-less as mature animals. There are two basic forms of the latter, the Dorids, which are stoutly constructed with flower or lacelike gills on the rear of the body, and the Aeolids, which are elongate and have fingerlike structures along the back and sides; these are presumably involved in absorbing oxygen from the water. Nudibranchs vary in size from about a quarter of an inch to eight inches. Therefore their eggs are not easy to find — unless you know where to look — on rocks, seaweed, hydroids or around the bases of sea anemones are some suggestions.

Nudibranchs, like most mollusks, are hermaphroditic — that is, they contain both male and female reproductive organs and must practice cross-copulation in order to raise a family. The large (to over a foot and two pounds) opisthobranch Aplysia, or Sea Hare,

Flabellenopsis iodinea, the "swimming" nudibranch, extrudes its egg-string.

carries on its mating in chains in which each participant acts as a male to the preceding one and as a female to its follower. The first member of the chain functions only as a female and the last as a male. Sometimes the chain is closed into a circle; then everybody is happy. During the breeding season, copulation may last for several hours and occurs many times. When egg-laying time arrives, *Aplysia* grasps its egg-strings in a fold of the upper lip and by moving the head back and forth piles them like yarn over rocks or seaweed. A pile such as this may be seen in one of the color photos. Spawning usually takes place at night, and a single spawning may contain millions of tiny eggs, arranged almost mathematically within the strings. *Aplysia*'s egg-strings are one of the most common seen in the intertidal waters.

The diver must study his surroundings carefully so as not to miss nudibranch eggs, since they may be mistaken for plants or even other small invertebrates. Most nudibranchs lay their eggs in ribbons of gelatinous material which is extruded slowly from the animal's gonopore, or genital opening. These ribbons are usually found to be curled in counterclockwise fashion. This is accomplished by the animal slowly turning as the egg-ribbon issues from its body. Eggs of one species called *Melibe* look like a tiny lacy basket and are of a delicate almost unnamable shade. Egg-strings of *Rostanga pulchra*, which feed on red sponge are only a shade lighter than the parent and the sponge. Since nudibranchs feed on hydroids and other coelenterates, sponges, algae, and possibly other unknown items, the diver should accustom his eyes to search everywhere. One species, the large *Navanax* (8 inches), feeds on other nudibranchs. Nudibranchs and their eggs are usually found together or near one another and almost always on or near their food preferences.

Some other marine forms that lay eggs are mollusks, squid, octopuses, and fish. Nudibranchs, though small, are probably one of the most photogenic creatures in the sea. They are so varied in form and their colors and patterns are almost unbelievable. Some swim, flapping sideways with a winglike motion, some crawl, and some barely move; but a good shot of a "nudi" with its eggs just might be a prize winner!



Chromodoris porterae laying eggs.



ICD
08265

00 OCTOBER 1972

DIVE

The Prestige Magazine of Sport Diving and Oceanology

- RED GOLD
- MOUNTAIN DIVING
- GEOLOGICAL DIVING
- BEAUTY AND THE BEAST
- AQUARIUM PHOTOGRAPHY



A camera clutching diver searches the ocean floor for an unusual subject; perhaps an exotic nudibranch or a circus striped sea anemone. Suddenly a brilliant pink anemone is sighted and as the anxious diver tries to focus his camera, the bottom surge drags him along a sea urchin infested slope for several feet. The diver, recovering from the spiny punctures, tries again to focus on the elusive sea anemone. By this time the sediment from the bottom has placed a dense haze between camera and subject. The aggravated photographer refuses to give up the shot and finally gets the subject focused and depresses the shutter, only to be further frustrated by the flash failing to fire. Another try — still no flash. A few adjustments and the flash succeeds on a test shot. Now he's ready to shoot and again depresses the shutter. As if in some exasperating gremlin joke the shutter does not function. Then a quick look at the film counter shows the harrassed diver he is out of film.

Many times a few such unhappy

Story and Photos by

Jack Drafa, Jr.

Brooks Institute of Photography

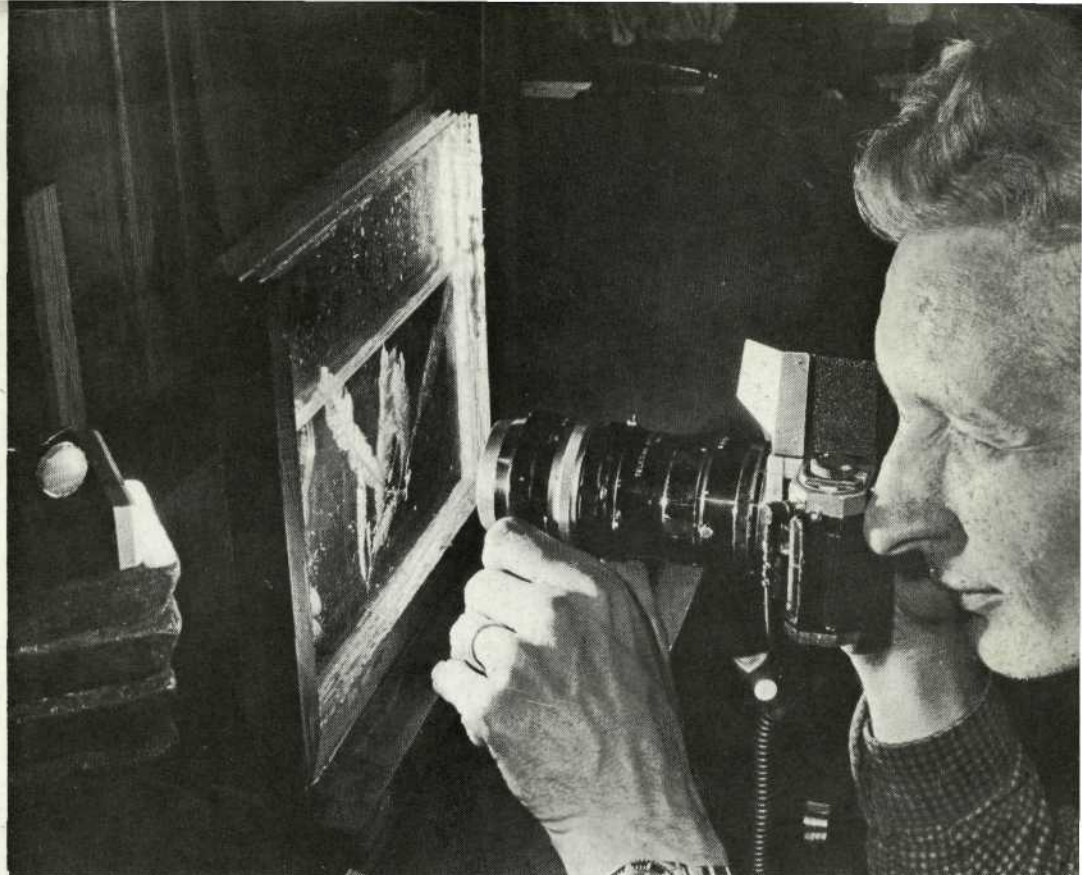
AQUARIUM DIVING

episodes can take all the fun out of underwater photography and I imagine many a salty diver has joyfully traded his camera for a new spear gun and a couple cans of beer to soothe the nerves after such a misadventure.

Nerves, the fate of underwater photography fun, and a great shot can often be saved by a simple approach. The solution can be to capture the sea anemone and return with it to the boat for photography under better conditions. Just before gently picking up his find the diver scans the terrain to get an idea of the background to be used in photographing his subject.

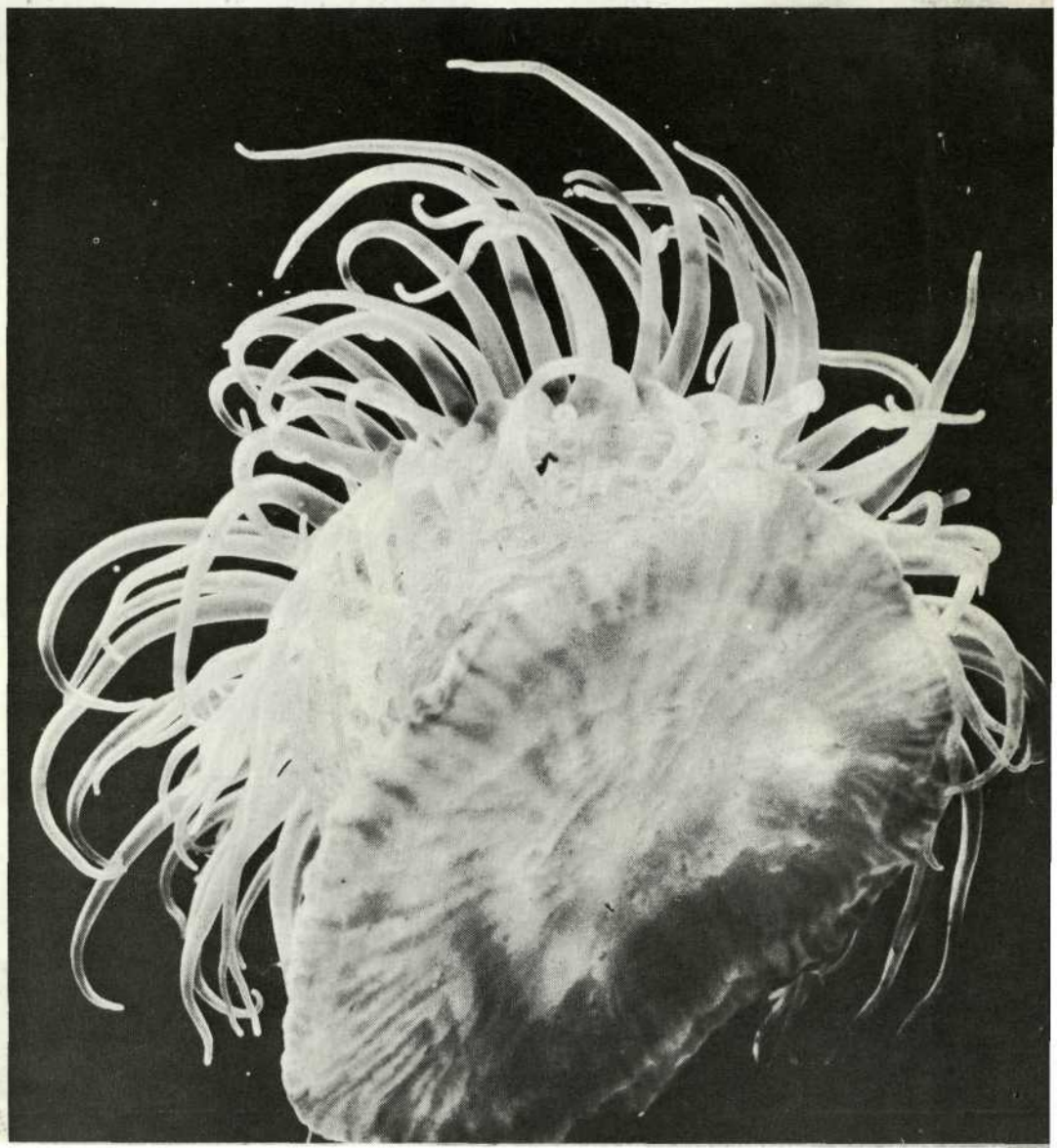
Back on deck it may be that as the diver transfers his find to an aquarium he notices that the sun is down too far to light his subject properly. He quickly disconnects the flash from his camera and sets it in the aquarium. The camera is then taken out of the housing and reloaded with a fresh roll of film. A flash not enclosed in a housing is attached to the camera and aimed off to the side of the aquarium; this flash will act as a trigger for the slave operated flash inside the aquarium. A few exposures are then made

empting a sponge in an aquarium to



Larry Stoltz shoots extreme closeup in a special aquarium.

Back lighting with slave produces this sharp photo of a sea anemone in the aquarium.





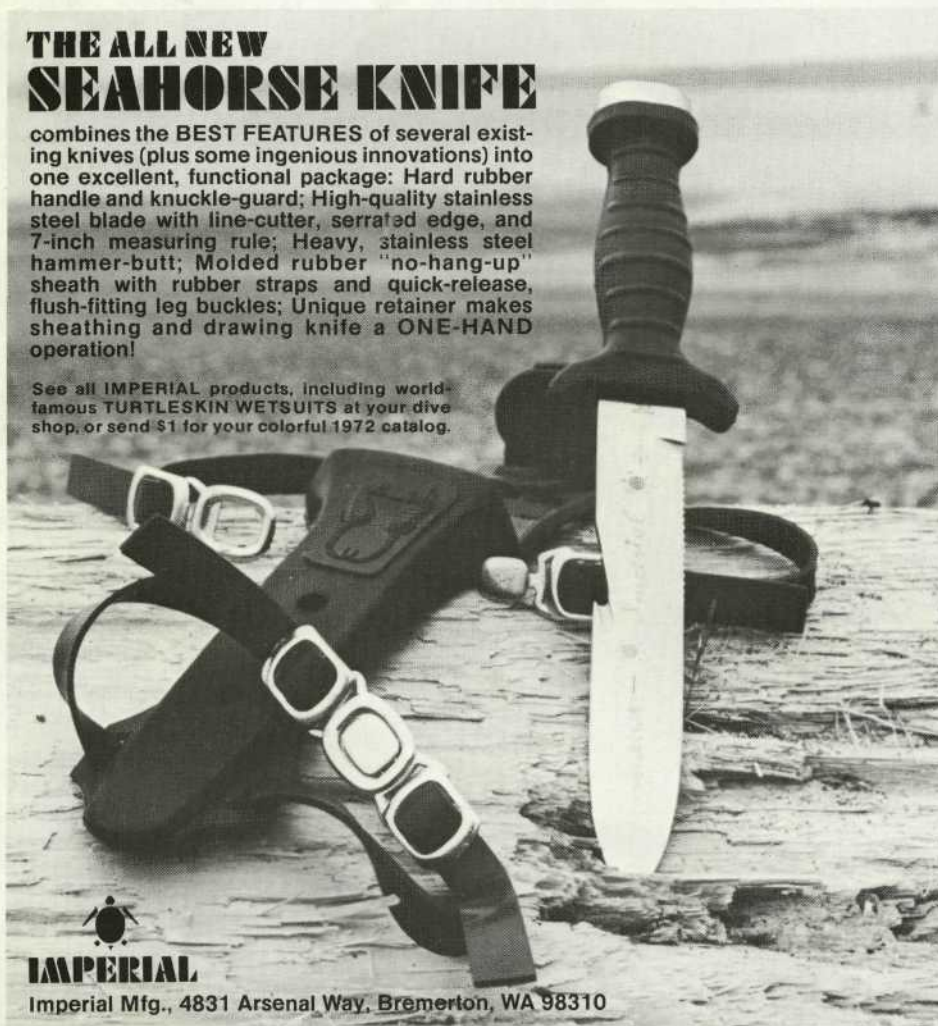
Position of the slave inside the aquarium while shooting the anemone on previous page.

(Right hand page) Purple fan nudibranch sits quietly for its portrait inside the aquarium "studio."

THE ALL NEW SEAHORSE KNIFE

combines the BEST FEATURES of several existing knives (plus some ingenious innovations) into one excellent, functional package: Hard rubber handle and knuckle-guard; High-quality stainless steel blade with line-cutter, serrated edge, and 7-inch measuring rule; Heavy, stainless steel hammer-butt; Molded rubber "no-hang-up" sheath with rubber straps and quick-release, flush-fitting leg buckles; Unique retainer makes sheathing and drawing knife a ONE-HAND operation!

See all IMPERIAL products, including world-famous TURTLESKIN WETSUITS at your dive shop, or send \$1 for your colorful 1972 catalog.



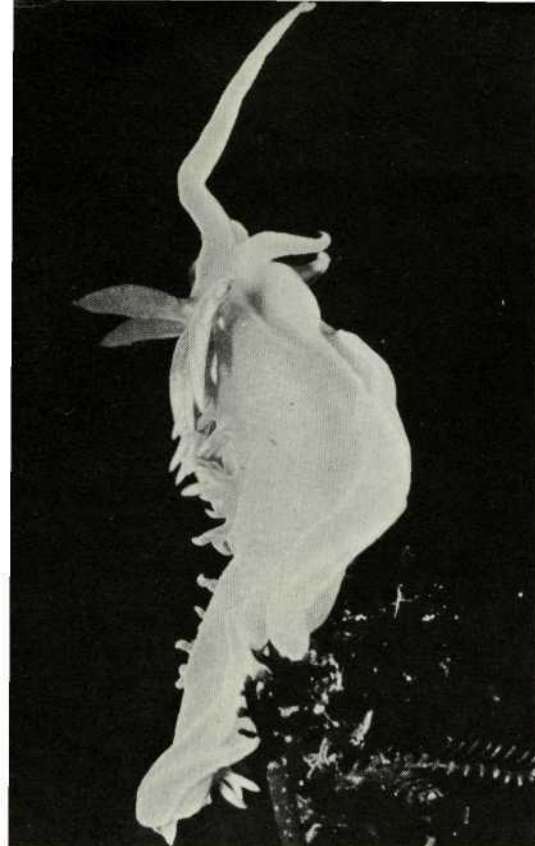
IMPERIAL

Imperial Mfg., 4831 Arsenal Way, Bremerton, WA 98310

and the photo that once was almost lost has become a recorded image.

In this story the diver was lucky that he had the knowledge and equipment to save his special photograph. For those diver photographers who would like to possess this knowledge follow these rules.

Preservation of animal life is very important. Return all specimens to the ocean promptly and carefully. If your aquarium cannot maintain the proper temperature, photograph the specimen immediately and return it to the water. Some specimens are attached to the bottom; if you cannot detach them properly leave them on the bottom and find another method of photographing them at their location. Very often you won't have an aquarium aboard ship or on shore, so you'll have to transport them in small containers to your home or laboratory. This transfer must be made quickly and without harm to the animals. After you have your



specimen in the aquarium, decide how you will photograph him. It is a good idea to have black backgrounds to simulate the ocean. If you have strobes in small housings with slave units attached, exposure becomes an easy task as it will be similar to your exposures at sea. When using strobes in the aquarium it is best to side light to eliminate the back of the aquarium. When focusing on a subject remember to keep the lens perpendicular with the front glass as a few degrees off to the side will distort the picture badly. For the photographer who cannot put strobes into the aquarium because of size or non-use of slave units a second method can be used. Lighting the subject from outside the aquarium becomes much more of a problem. A flash cannot have an angle less than 45 degrees with the camera. All white lettering on the inside of the front lens must be covered with black tape to avoid reflections off the front glass. Exposures are never guaranteed to be the same as each slight variation of angle between the strobe and glass changes exposure. Most of the light is reflected off at an angle and as little as four f/stops of light less than normal will pass through the glass. After you have mastered the art of aquarium diving you may find that a whole new field of photography will open up to you. This is very true in the case of extreme close-up photography (10 to 1 and up) that can be accomplished in a practical manner only in an aquarium. Another important point to remember after the shot is taken is not to be afraid to admit that you took your special photograph in an aquarium. After all, you got the shot and that is the purpose of photography.

Binocular Closeout

only \$9.95 per pair!



Built to professional standards for those who demand uncompromising precision craftsmanship and optical superiority. You'll feel the difference as the sculptured curve of the body balances effortlessly in your hands. You'll see the difference in the brilliant true color images sharply defined throughout the field of view . . . distant objects and action seem so close you'll swear they are only inches away! Yet these famous make Sport Glasses are offered below factory list price in Europe! Order today — limit two pairs to each buyer. When present supplies are exhausted prices will be much higher. No CODs, please. Money back in ten days if not fully satisfied.

Check these Custom Features:

- ★ Electronically computed optical systems of unexcelled true-color brilliance, balanced and aligned to super critical standards to prevent eye strain.
- ★ All air-to-glass optical surfaces amber hard coated to prevent internal light loss.
- ★ "Squint-Pruf" front lenses block reflected glare from water, snow, sand and haze.
- ★ Shock-resistant construction — extra strength hinge and bridge guard against misalignment; high index prisms are permanently locked in.

MAIL ORDER MART DEPT. 12

2701 Sterlington Rd., Suite 237 Monroe, Louisiana 71201

Please send me the quantity of Sport Glasses checked below (limit two). If not fully satisfied I will return the merchandise within ten days for a full refund.

- ☐ Send ONE only. I enclose \$9.95.
- ☐ Send TWO at the bargain price of \$14.95

Name _____

Address _____

City, State, Zip _____

JACK DRAFAHL

Periodically, DIVE Magazine runs across an outstanding new underwater photographer and it becomes DIVE's pleasure to showcase his work. DIVE feels that Jack Drafaahl is one of these talented newcomers.

As he stands on the diving boat, trying to stabilize his precarious balance, Jack Drafaahl surveys the rocky shore of Santa Cruz Island off the Santa Barbara coast. After suiting up Jack turns and retrieves a clear plexiglass camera housing. A moment later he slips over the side and enters his favorite photograph hunting ground, the sea.

The path from Montezuma, Iowa to Santa Barbara, California and Brooks Institute of Photography was a long and often arduous one.

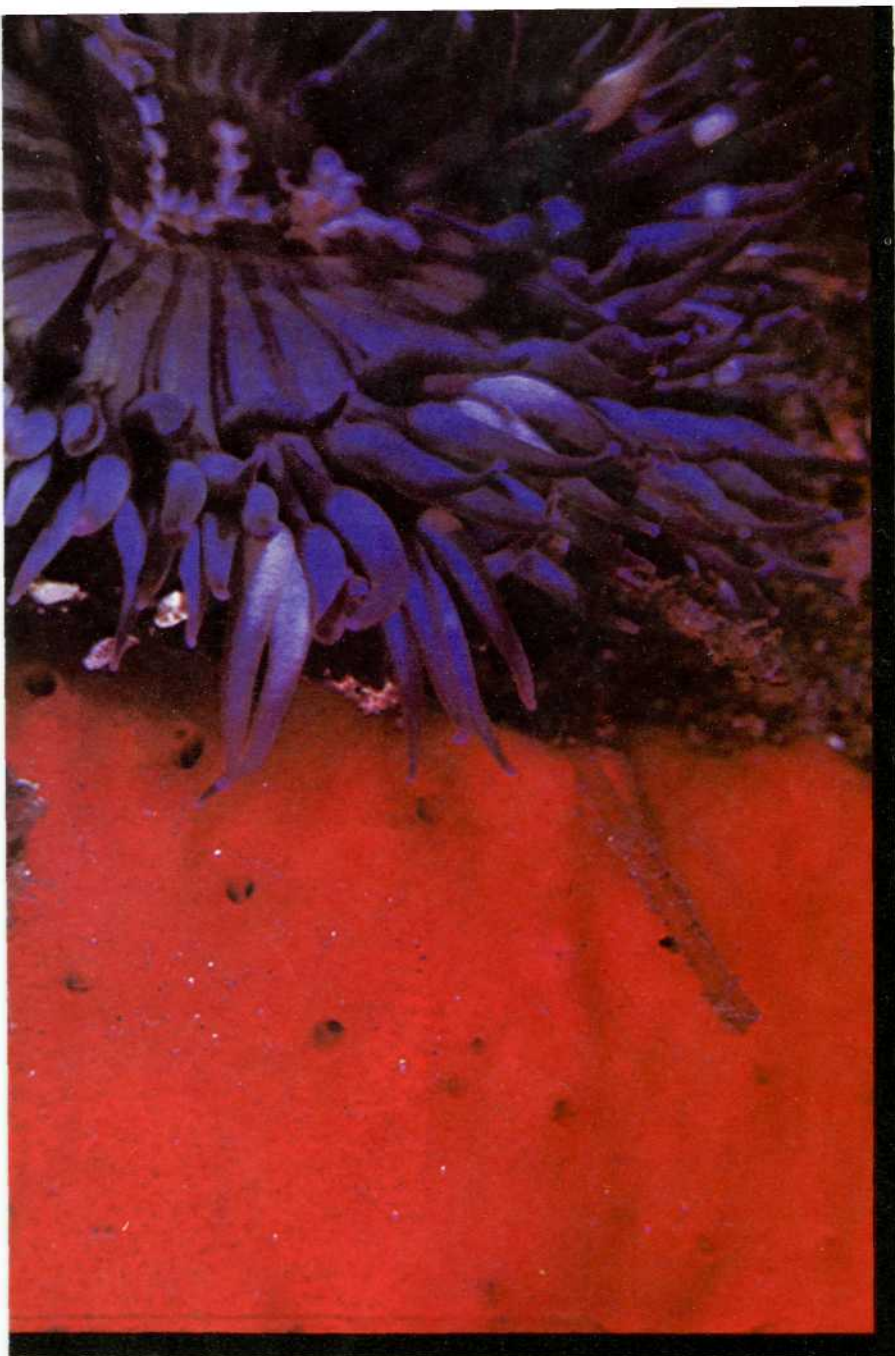
Jack became interested in photography while he was stationed in Germany during his 4 year hitch in the Air Force. He bought some camera equipment and by the time he came home, the former box boy decided that Brooks Institute was the best place for learning the ropes in the competitive field of photography.

He soon learned that his main interest was close-up wildlife photography. When he took the Brooks underwater course, he was actively seeking the striking color and design effects that only oceanographic subjects can give.

As these pictures show, Jack Drafaahl has mastered this exacting technique.

Jeri McKeon





A green sea anemone settles himself at the popular "Red Sponge Inn" and awaits the main entertainment.

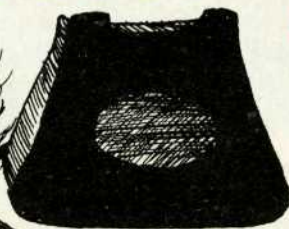
Sponges being what they are — an aggregation of cells, just one step above the unicellular protozoans, of "first" animals — have no nervous systems. This is really a good thing because the continual traffic of marine animals crossing and boring and living in their bumpy, porous "skins" would undoubtedly soon make them giggling psychoneurotics. Add to this the disgrace of being listed among the plants until about 1857! Who knows what dangers a diver might have to face.

Of course, sponges are filter-feeders, getting nourishment from the microscopic planktonic animals, suspended material and detritus drawn in with the water that circulates through their bodies. Continual circulation is activated by flagellated cells lining the inner body walls that fan water in through pores, or ostia, and out through the larger ostium by the whipping motion of their flagella, which supplies them abundantly with oxygen. The simplest sponges have a sac-like body with few ostia and an ostium; the next step up the ladder is the thickened body wall with many more incurrent ostia and the final development is the larger rounder form with greatly thickened walls, inner chambers and a most complicated canal system. Being soft-bodied, sponges must have some support, which may consist of anything from touch organic fibers to needle-sharp calcareous and siliceous spicules that present a formidable problem to the stomachs of predators. Besides this, most sponges secrete noxious substances and some are even fatally toxic to other marine animals.

One might think that no creature with good sense would venture near a sponge; except for most fish, this is unfortunately not the case. In nature, many predatory animals are repelled by a warning red color. Not so in the case of the red sponge, which, in the course of our investigations, proved to be something like a "club" for a heterogeneous clientele of marine animals. If our ears were attuned to their "language," we might well hear, "Meet me at the Red Sponge," or "Let's eat at the Red Sponge."

Few animals actually eat sponges; but one of the "habitues" of the red sponge, a nudibranch or sea slug called *Rostanga pulchra*, dines regularly on this sponge and has taken on its brilliant red color, so that it is very hard to see when on its host. *Rostanga* overcomes the problem of the sharp spicules by coating the part of the sponge it has selected for a meal with mucus. Besides, the intestine is lined with hairs, called cilia, that form the spicules into pellets which pass through *Rostanga's* digestion tract without harming the tissues. Crawlers over the red sponge, possibly nibbling a few bites now and then, are the nasty tempered nudibranch *Phidiana pugnax* and a fat dorid nudibranch. As a matter of fact, quite a few other species of nudibranch may be seen on the red sponge, but

Meet Me At The Red Sponge



by Nelson W. Baker
Curator of Invertebrates
Santa Barbara Museum of Natural History
Photos by Jack Drafahl
Brooks Institution of Photography



we are not sure that they feed on the sponge tissue.

Because sponges are sessile, or stationary, and porous, other animals make use of them for protection and a base of attachment. Sea anemones, from the giant green to the small colonial red corynactus, make themselves at home on the red sponge; possibly they take advantage of the plankton and suspended material drawn toward the sponge by the ostia, getting an extra portion of food this way. Tube and sand worms form their various retreats here. One small crab cuts chunks out of the sponge and places them on its back as a camouflage. Since sponges will continue to grow from any small particles, the pieces on the back of this crab may regenerate and completely cover the crab's carapace. With the other organisms picked up along the way the little crab soon resembles an ambulatory flower garden. Certain other crustaceans are known to feed on sponge tissue and one small black and white amphipod is seen frequently busily coursing across the uneven surface.

Urchins, sea cucumbers, starfish, large and small

crabs make their scratchy or slimy way over the red sponge. Tiny shrimp, copepods and worms find free food by entering the ostia. Barnacles and mollusks can be found embedded in the sponge tissues. Kelp holdfasts sometimes lock their snake-like fibers into a large sponge, and hydroids, bryozoans and algae mask its surface until, we might say, the poor sponge has lost its identity under a forest of stationary and moving plants and animals that appear to threaten its very existence.

But don't sell the red sponge short! Besides being toxic, unpleasant tasting, and as dangerous as ground glass to all but a very few highly specialized sponge-eaters, the sponge is a subtle killer of many sessile marine organisms. It grows and grows, spreads and spreads over the substrate and everything attached to it, soon smothering out all but the most tenacious and specialized life beneath it, for lack of oxygen. Fortunately, parts of the sponge die off behind the fresh growing section, or who knows, red sponge prey on our divers and even follow them back on land?

An amphipod boldly investigates the ostium, or excurrent canal of a red sponge.

