

**F**ull 180 degree fisheye is perhaps one of the most exciting, and most challenging, lens formats for underwater photography. It is also one of the least utilized. The reason fisheye photography is such a rarity in the underwater world is the lack of a suitable flash to effectively illuminate a 180 degree field-of-view. As with other types of underwater photography, underwater flash is essential for colorful and pleasing pictures. The only underwater strobe which even comes close to illuminating a fisheye view is the Subsea 150, which lights approximately 150 degrees of the photo field.

But wait — there is new hope for fish-eye photo buffs. A custom underwater strobe maker by the name of Jack Drafaahl has recently developed a fisheye flash unit known as the Light Handle. This new unit effectively covers the full 180 degree field-of-view and also works well with extreme wide-angle lenses, close-up kits, and even macro extension tubes. Finally, the dive world has a fisheye flash.

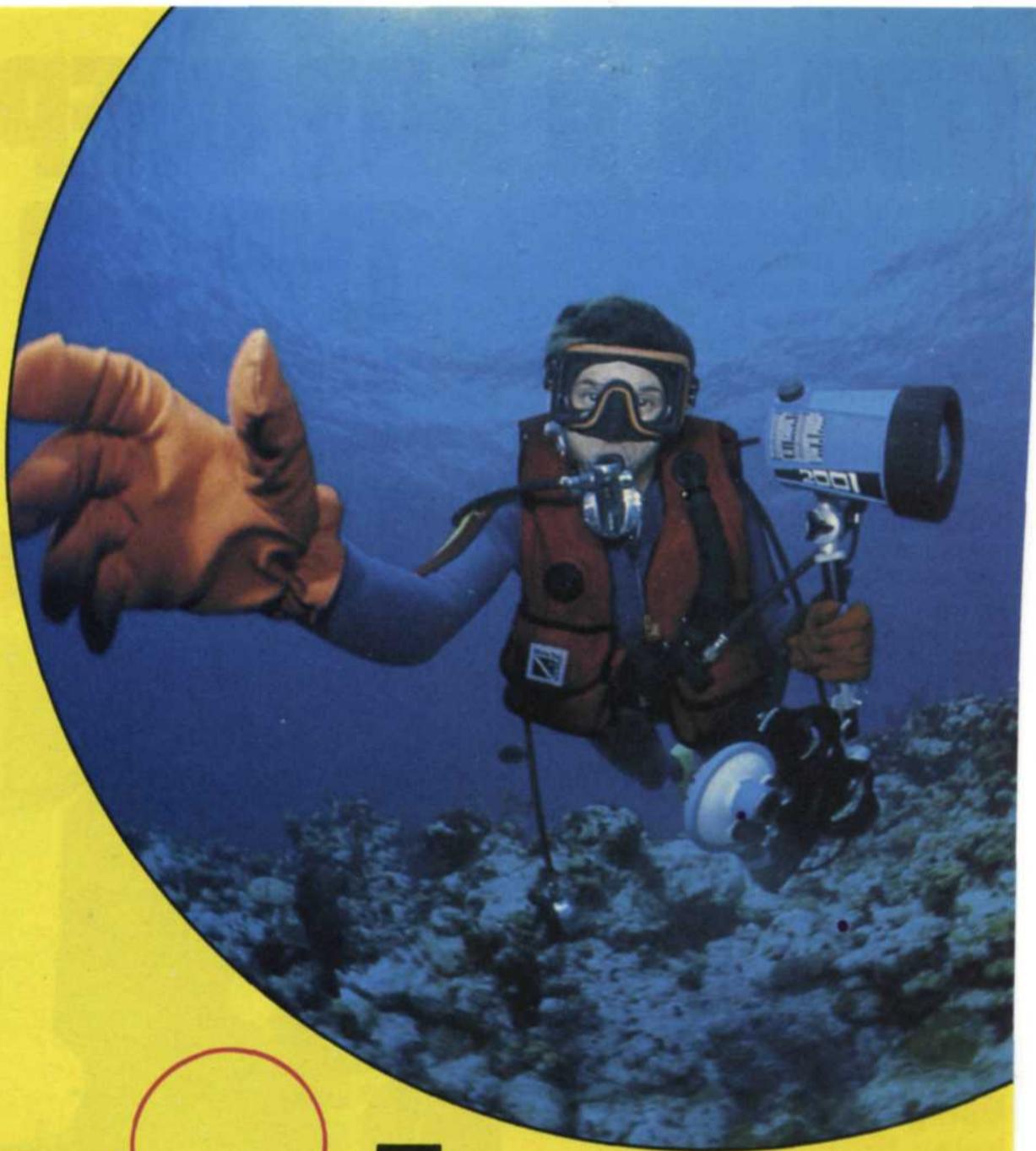
#### BACKGROUND

Jack Drafaahl is a professional photographer who has devoted his entire life and energy to the world of cameras, lenses and lighting. A graduate of Brooks Institute of Photography in Santa Barbara, Jack makes his primary living from teaching college photography courses formerly in California and now in Oregon. In addition, Jack and his wife, Sue, operate a small business called Kritter Labs which is engaged in audiovisual show production, special effects color slide production, freelance photography, and stock photo sales. Jack is also a compulsive inventor who spends most weekends and evenings in his private laboratory, tinkering with new photographic equipment designs and electronic flash circuitry. He is sort of a modern day Thomas Edison in the world of underwater flash design.

#### BASIC DESIGN

The Light Handle is Drafaahl's most recent development, and one for which he has just received a U.S. design patent. The unit is primarily a double electronic flash in the configuration of a solid bracket which can be fitted to the Nikonos camera. Two separate flash units have been fitted into cylindrical tubes and fitted to a camera baseplate. The flash reflectors can be rotated to three different positions, thus providing a choice of flash angle coverage ranging from 90 to 110 to 180 degrees. For added versatility, the left-hand flash cylinder is detachable from the Light Handle baseplate. Two small stainless steel latches can be quickly unsnapped, and the tube removed for use as a remote slave flash unit.

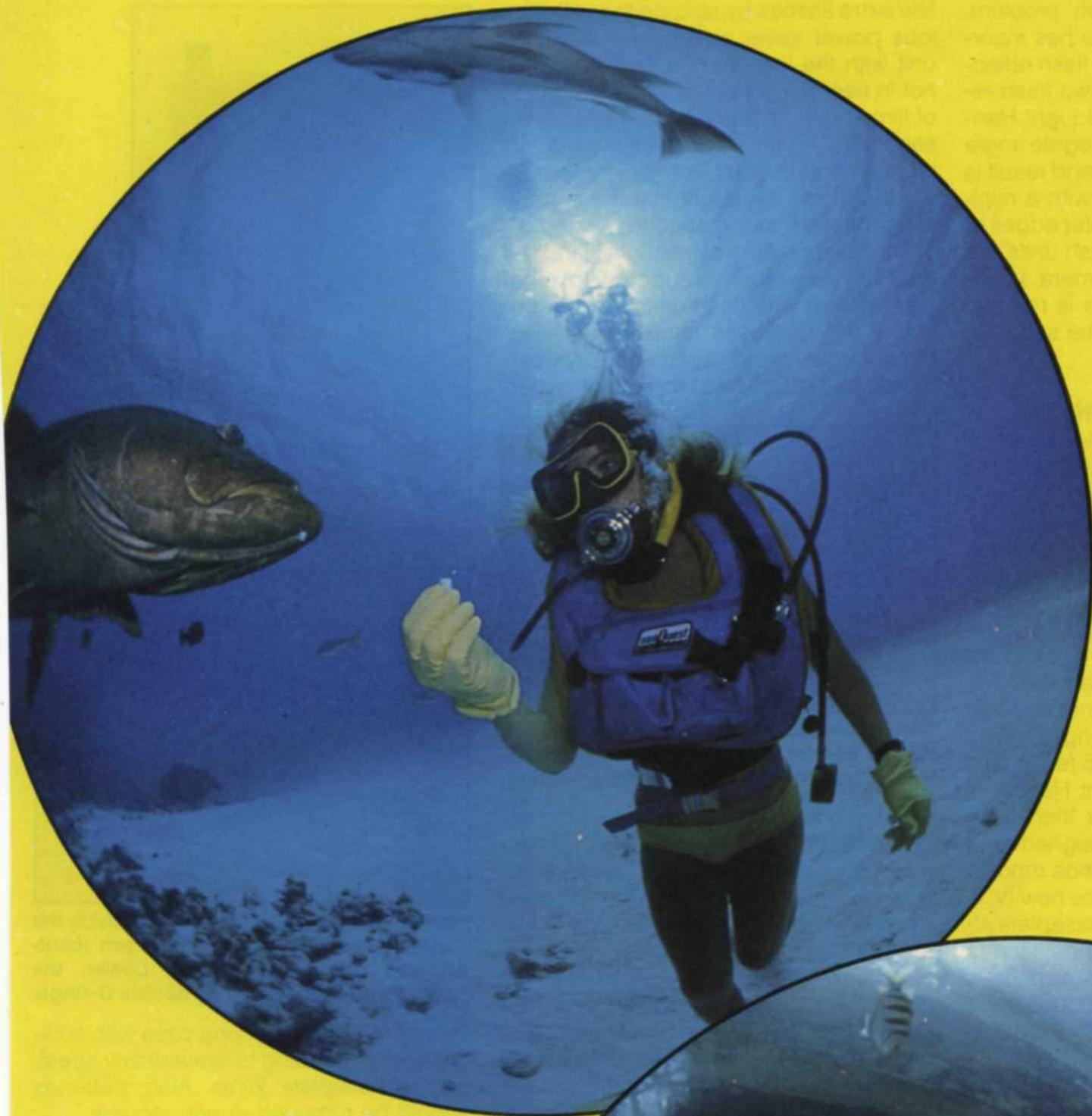
It is rather interesting to learn how Dra-



# Fisheye Flash

Custom Flashmaker Solves  
The Fisheye Lighting Dilemma

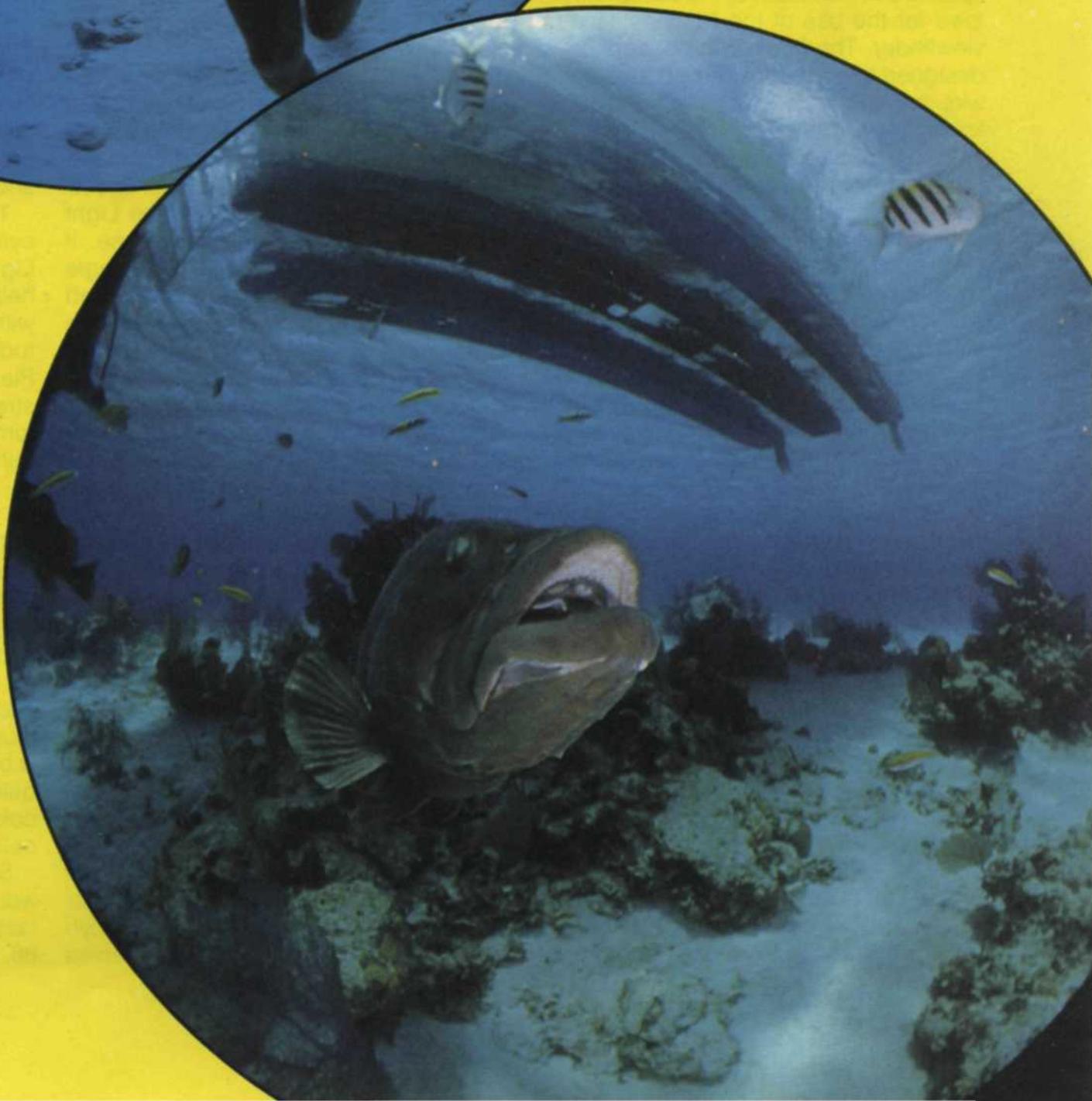
Text and Photography by Geri Murphy



Opposite page, the Light Handle electronic flash provides a new dimension to fisheye photos (brilliant colors, as shown by this glove).

Left, the Light Handle projects even illumination for the entire 180° field-of-view, for equidistant subjects.

Below, illumination from the Light Handle balances well with ambient light, thus providing excellent flash fill photos.



The Light Handle is a custom built electronic flash unit utilizing a unique patented design. The flash reflectors can be rotated to cover three different angles (left-hand flash is detachable).

fahl solved the fisheye flash problem. Using straight flashtubes, he has incorporated extreme wide-angle flash reflectors of his own design. The two flash reflectors are positioned in the Light Handle to point outward on a 45 degree angle from the axis of the lens. The end result is a full 180 degree coverage with a minimal half stop fall-off on the outer edges of the picture. Since the two flash units are solidly mounted on the camera baseplate, the angle of coverage is remarkably accurate and even — the secret of Drafaahl's success.

### CONSTRUCTION

Drafaahl is not a large scale manufacturer but rather a hand craftsman. His "factory" is a home workshop. The Light Handles are custom made by hand — one at a time. Drafaahl takes a great deal of personal pride in the building and testing of each unit.

The two electronic flash packages are encased in one-quarter inch thick plexiglass tubing two inches in diameter. The end caps for these are made of one-half inch thick plexiglass sheeting. Drafaahl has tested these units to 165 feet.

The baseplate of the Light Handle is constructed of three-quarter inch thick plexiglass. It has been designed and drilled to fit a variety of Nikonos models including the II, III and even the new IV. A special slot in the rear of the baseplate allows for the use of the Nikonos 15 mm viewfinder. The front of the baseplate is designed to accept extension tubes and wire framers, as well as the special Nikonos Close-Up Kit.

The strobes contained in the Light Handle unit are miniaturized electronic flash packages that have been specially designed and built by Drafaahl himself. Using stock parts, Drafaahl constructed tiny but powerful 50 watt-second strobes which operate on four AA alkaline batteries. The entire strobe package can be easily removed from the plexiglass tube in case of flooding or leakage. A quick freshwater rinse and blow dry with a hair dryer is all that is needed for emergency first aid.

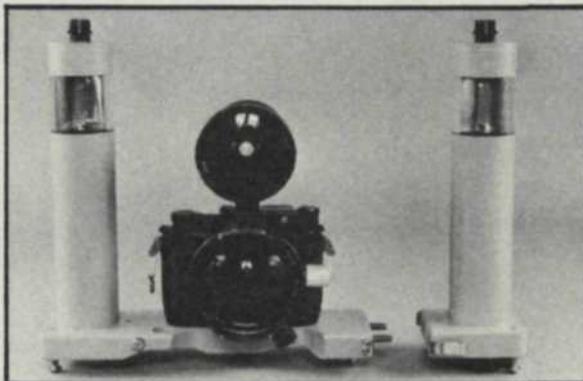
Each electronic flash unit is equipped with a manual on/off switch which can be operated by an external control. In addition to the manual switch, these units incorporate a clever energy saver mercury switch that automatically shuts off the power when the unit is on its back with the lens pointing straight up. The unit comes with a flash connector for the Nikonos of your choice. The Light Handle is available in a variety of different colors.

### PERFORMANCE

The Light Handle puts out an average of 140 flashes per set of fresh batteries. You may be able to squeak out even a

few extra flashes by utilizing those ingenious power saver switches — hold the unit with the lens pointing up when it is not in use. Recycle time with the first roll of film and fresh batteries is a brisk three seconds — the recycle time gradually lengthens as battery energy is used. By the fourth roll, the Light Handle is recycling in seven to ten seconds.

The power output of the Light Handle is relatively low when compared to other giant wide-angle flash units. This is because the unit uses miniaturized electronic circuitry and replaceable AA batteries. At a distance of three feet under-



The left-hand flash tower of the Light Handle can be hand held or used as a remote slave strobe for accessory lighting.

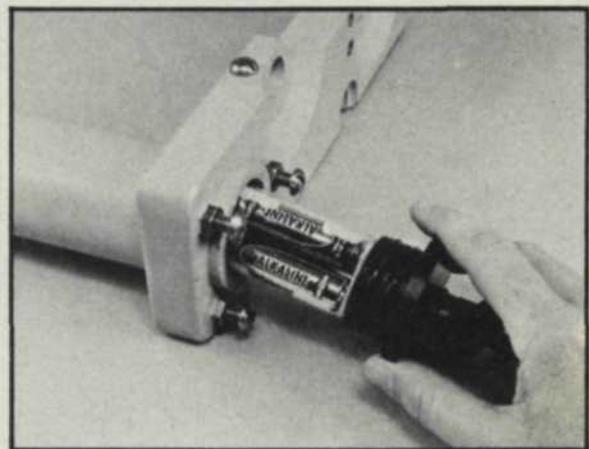
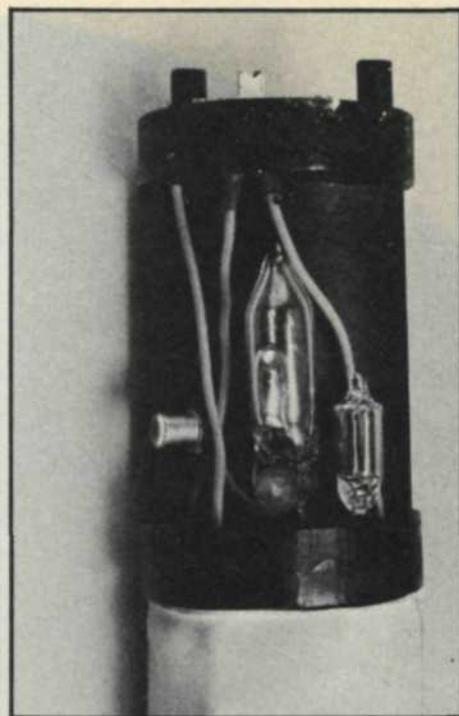
water, the flash output is somewhere between f2.8 and f4 when the flash reflectors are positioned at 180 degree coverage. However, most fisheye work is done extremely close, ranging from one to two feet. At these close distances, the Light Handle will put out enough power for an f5.6 to an f8 aperture setting using ASA 64 film. Fortunately, the low power output of the Light Handle makes it ideally compatible with ambient light conditions and the end result is a lovely flash fill effect.

SKIN DIVER also found that the Light Handle is not limited to fisheye use. It works remarkably well with wide-angle lenses such as the Nikonos 15mm and the Seacor 21mm, or the Sea & Sea 20 mm lens. The flash reflectors are rotated inward one notch for straight ahead alignment, producing a 110 degree angle of coverage. The overlapping effect of the twin strobes also produces a higher flash output for optimum wide-angle aperture settings.

The Light Handle can also be used for macro work by simply rotating the two reflectors one more notch so they point inward, thus directing their full concentration of light on the framer area. The average aperture setting for macro photography is f16.

### OPERATIONAL HINTS

While the Light Handle is a rugged and fairly durable device it does require a certain degree of care and maintenance to avoid any potential problems with leakage. Because of its rigid construction (between baseplate and upright cylinders) the flash unit certainly deserves



Upper, components of the flash include the slave sensor (left), mercury switch (center) and ready light (right). Lower, the battery tubes are sealed by double O-rings.

its own separate carrying case with sufficient foam padding to prevent any stress on the baseplate joints. Also, batteries should be removed during storage.

The two bottom caps on the plexiglass cylinders should be removed from the Light Handle when traveling. This will help avoid any internal pressure build-up within the plexiglass tubes owing to altitude changes (i.e.: Denver to Nassau). Plexiglass tends to crack from internal stress situations. The double O-ring bottom caps should be heavily greased on a fairly frequent basis.

### CONCLUSION

The Light Handle is indeed an ingenious device for fisheye illumination underwater. It covers the full fisheye field better than any other device available, and it can be used easily. It sells for \$495 — a fair price considering the fact that each one is handmade. The Light Handle must be ordered in advance as each one is built to the photographer's personal requirements (i.e.: Nikonos connectors, color, etc.) allow four to six weeks delivery.

Should you desire more information or would like to order a Light Handle, contact Jack Drafaahl: Kritter Labs, P.O. Box 88, Hillsboro, Oregon 97123. >