The diving hood in service in 20 feet of water. This photograph was taken by a submarine camera

Diver with his diving helmet removed, showing the freedom of action which the device permits

A trying ordeal for the diving hood: the wearer has deliberately upset himself without disturbing the hood

A Simple but Very Flexible Diving Equipment

By Robert G. Skerrett

THE latest thing in diving outfits is something quite revolutionary when judged by what has heretofore been considered absolutely necessary. Indeed, the new apparatus well-nigh completely upsets previous standards for under-water labor. To begin with, the veriest novice can use the gear without hesitation, and likewise without risk, and within submergences of 40 feet or less can render as useful service as an expert diver. Only one attendant is required, and his duty is that of working a lever pump that has capacity enough to supply air for a submergence to 50 feet. Should the man at the pump lag or the pump fail the diver is not endangered. He is not encased in a suit that holds him a prisoner. Instead, he has over his head and shoulders a metallic hood, which can be quickly lifted off and thrown aside. The helmet is not strapped to the wearer, but is held in place by four leaden weights which are just heavy enough to cause the hood to sink with a few pounds of negative buoyancy when filled with air.

The air supply enters the hood near the top of the cylindrical section, and when submerged the exhaust passes down and outboard through perforations near the bottom or collar. This supply and exhaust are absolutely automatic. There are no valves to be considered by the diver. As long as air at the proper pressure reaches the hood the exhaust passes out by way of the holes and effectually prevents the admission of water to the helmet. The downward direction of this circulation naturally carries out of the hood the exhaled heavy carbonic acid gas, and the wearer therefore always has fresh air to breathe. The modest dead weight of the device, acting against the buoyancy of the body, suffices to hold the hood so firmly in place upon the diver that it is possible for him to lie on the seabed without fear of losing his under-water head-gear. A diver in a flexible suit could do this only by juggling his air and escape valves, and even then would run the very serious risk of having his suit inflated—something that would send him speedily to the surface, and might cause the bursting of his dress, if it did not imperil his life. In the front of the diving hood is a glazed port, through which the wearer looks when under water.

A complete outfit, consisting of the hood, a pump, and 50 feet of hose, is so compact that it can be stowed away in a chest 42 inches long and 15 inches

square in cross-section. Hundreds of these outfits are now in service, and yachts, motor boats, and many kinds of commercial craft are being equipped with the apparatus. It is said that work can be done as easily at a depth of 30 feet as at the surface, and this by one not used to diving.

The simple performance involved in donning the diving hood

Of late, engineers engaged in subaqueous constructions have found the diving hood just the thing to enable them to go under water and to inspect the work themselves, instead of having to rely upon the reports of regular divers—men seldom fully qualified to pass judgment upon technical phases of such undertakings.

A submersible which is designed after the description given in Jules Verne's "Twenty Thousand Leagues Under the Sea."

It will carry 30 to 40 men, and is equipped with a torpedo tube. Through hatches in its bottom, members of the crew can crawl out on the bottom of the ocean.

The scientist, too, has called it to his aid in order that he might study aquatic life in Nature's setting. Wearing only the hood and a bathing suit, the man under water enjoys great freedom of movement.

A Motion Picture Drama from the Ocean Bottom

By Loring Brent

WHEN Jules Verne wrote his novel "Twenty Thousand Leagues Under the Sea," a half-century ago, popular opinion of the time decreed that the idea was highly ingenious, but certainly not to be taken seriously. At a time when a large portion of Verne's predictions is coming true, it is interesting also to realize that his romantic story of the under sea is being recorded by the most modern of narrative forms—the moving picture.

Edwin and George Williamson, who made such startling revelations a few years ago with their under-sea moving picture apparatus, have been working at Nassau, Jamaica, upon a new submarine picture. It has been their purpose to record upon motion picture film as many of the events of "Twenty Thousand Leagues Under the Sea" as their apparatus makes possible.

To those of the readers of the SCIENTIFIC AMERICAN who do not recall the description of the Williamson apparatus which was published in this journal when the Williamsons began their activities, an explanation of its operation will be interesting.

A heavy iron water-tight tube is suspended from the bottom of a sea barge. At the lower extremity of the tube is a large iron globe fitted on one side with a port hole, before which the motion picture camera is placed. While the apparatus can be effectively used at great depths, the film version of the present undersea story was made at about thirty-five feet under water. A greater depth was not advisable because of the fact that natural lighting was relied upon; also for the reason that the "movie" actors, who as deep sea divers were relatively inexperienced, would have had difficulties with the high pressure.

In the previous Williamson pictures of undersea life a cluster of electric lights was lowered in the water to provide sufficient illumination. Because of the crystal clearness of the sea in the neighborhood of Nassau, however, no necessity was found for artificial lighting.

It will be recalled that Verne's novel contains numerous encounters with sea monsters, as well as a generous use of a craft of the submersible type. When one of the leading American film producers had decided to transform the story into