

## College Research To Help Navy Sort Out Sounds Under Water

Eugene — Research being conducted by a visiting professor at the University of Oregon may one day help the Navy sort out the sounds it hears in the ocean's depths.

Recording and interpreting the underwater grunts, squeaks, purrs, and knocks of fish communicating with fish is the special interest of Dr. Howard E. Winn, visiting professor in the biology department during spring term.

Dr. Winn is a Guggenheim fellow on leave from his post as associate professor of zoology at the University of Maryland.

Fish Communications  
More than 50 per cent of fish make sounds and use them as a means of communication, Dr. Winn said, al-

though scientists were not aware of this fact until the development of sensitive underwater listening devices during World War II.

The Navy found that enemy submarines could go undetected in schools of snapping shrimp because the listening devices could not be distinguished between the sub's engine and the animal sounds.

Dr. Winn receives support for his project from the Office of Naval Research as part of the Navy's project to catalog all marine life sounds and determine the times and places when they may be heard.

### Studying Ears

In addition, Dr. Winn holds a grant from the U.S. Public Health service, which is interested in learning more about the mammalian ear and, ultimately, human hearing, by studying the ears of other kinds of vertebrates, including fish.

Dr. Winn is on the Oregon campus to collaborate with Dr. Melvin J. Cohen, associate professor of biology at the University, in a study of the neurophysiology of hearing, using the fresh-water catfish. In these experiments, Drs. Winn and Cohen will broadcast a series of sounds on an underwater loudspeaker and chart a hearing curve for the catfish from an oscilloscope connected to the fish's auditory nerve.

Later, during June and July, Dr. Winn hopes to be able to record the sounds made by the midshipman, a marine fish which produces sounds only during the spawning season. Spawning ground for these small fish is the intertidal zone along the Pacific coast.

Three Types of Sound  
Among the fish that Dr. Winn has studied during the past four years in Bermuda, Puerto Rico, Chesapeake bay, and along the fresh water streams of the east coast, three types of communication are predominant, the zoologist said.

These are a warning sound

when a predator is near, a defense sound to keep one fish out of the territory of another, and seasonal sounds associated with the spawning period.

The male fresh-water minnow of Atlantic coast streams, for instance, produces a slow series of knocks to warn away other males and a gentle purring sound in his courtship of the female, Dr. Winn said.

The male toad fish of Chesapeake bay, Dr. Winn pointed out, employs a grunt to warn other fish away from its nest and makes a sound like a boat whistle during the spawning season, apparently to allow the female to find him.

### May Set Off Mines

In addition, Dr. Winn has found that the toad fish sound is almost as intense as that of a jet engine and is sufficiently powerful to set off underwater acoustical mines.

Fish produce sound by contracting muscles against the swim bladder, which acts as a sort of drum or sounding board, the scientist said.

Fish have only an inner ear, located next to the brain. An outer and middle ear are unnecessary, Dr. Winn pointed out, because the density of the fish and the water are almost equal, and sound can pass directly through the tissues to the inner ear.

### Ruffled Favorites



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### Teachers Awarded Paid Fellowships

James L. Heath, Medford High school teacher, and Sister Mary Agatha Aicher, St. Mary's High school teacher, have been awarded all-expense fellowships to attend the summer fellowship program in economics at Claremont college, Claremont, Calif.

The program will be from June 18 to July 27 and presents a concentrated, non-mathematical study of the structure and functions of the American economic systems.

### Hatfield Discloses Industrial Expansions

Salem — (UPI) — Gov. Mark Hatfield said Thursday that in March, Oregon had industrial expansions of \$3,230,000, with 10 new or expanded plants announced, under construction or opened, involving a potential of 352 new jobs.

### COLLEGE INVESTMENTS

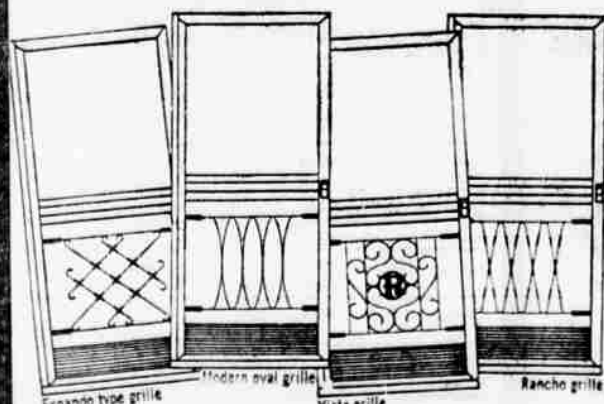
New York — (UPI) — Corporations across the nation invested \$10,413,731 in private higher education throughout 40 states and regional associations during 1961, the Independent College Funds of America, Inc., reports.

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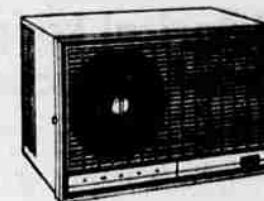


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