Navy Tests Submarine Forces

By KAY MILLS

Underwater flying bodies—submarines, torpedoes and other systems which move under water as do airships above water—are being studied at the Garfield Thomas Water Tunnel next to the University golf course.

The testing, financed largely by the federal government, combines the needs of the U.S. Navy in learning more about the forces at work underwater with the requirements of advanced University work, Dr. George F. Wislicenus, director, said.

While the systems in reality "fly" in the manner of airships, conditions are simulated in the tunnel by having water flow past the submarine, he said.

"We investigate by making models of the bodies, placing them in the water tunnel, and subjecting them to the same type of flow which a regular body experiences when traveling under water," Wislicenus said.

Two water tunnels of different dimensions are used. The larger one has a test section, or working area, which is 48 inches in diameter. It is the largest of about 20 in the Western word, he said.

Because air and water flow are in many ways similar, it is often simpler in testing to use the wind tunnel located in the rear of the building which houses the water tunnel. Some problems, however, can only be studied under water.

The water tunnel, part of the Ordnance Research Laboratory, tests design of torpedo-propeller body systems in connection with three problems: cavitation, turbulence and hydro-elasticity.

Cavitation, a "violent phenomenon," results when a body "tears a hole in the water" through which it travels at high speed, Wislicenus said. Scientifically speaking, the water has been subjected to such low pressures that it is vaporized.

Cavitation is a problem because it is noisy, reduces the efficiency of the body and erodes it. For example, ship propellers of ocean liners must generally be exchanged every few years due to cavitation, he said.

"We would like to avoid cavitation completely, but if this is not possible, we want to learn to live with it," he added.

A second phase of study is turbulence, which also occurs at high speeds. Water becomes highly disturbed in the "boundary layer" around a submarine or torpedo and can create resistance to the body moving through it.

"Turbulence can be illustrated by turning on a water faucet, slowly at first. The water will appear smooth and glassy. As you turn the water faucet more, the stream becomes frosty. The frostiness is caused by turbulence within the stream," Wislicenus said, quoting an authority in the field.

"Turbulence is a natural phenomenon and is very difficult to avoid. It is important that we understand it to predict the motion and design systems to minimize its effect," he said.

The third major field is hydro-elasticity, closely related to aero-elasticity. Several disastrous accidents with Electra turbo-propeller planes recently may have been caused by an aero-elastic failure, he said. This means the air flow may have made the wing vibrate so violently as to cause breakage, he added.

Similar vibrations are studied in relations to hydro-elasticity, he said.

The researchers at the tunnel often work through the Navy with private companies on their programs. Some of the workers are participating in the investigations as thesis work for advanced degrees.

The tunnel, now over 10 years old, was named after Lt. (j.g.) W. Garfield Thomas, one of the first University alumni who died in World War II.

Foreign Training Opportunities Possible for Business Students

Students in business administration and economics may be given the opportunity to work abroad in the near future, Howard Needleman, president of the Business Administration Student Council, announced at a meeting of the council recently.

The exchange—job plan, to be sponsored by American corporations, is being considered by the council and advisors. It would guarantee American students from $50 to $80 per week in salary for an undetermined period of time, Needleman said.

A regional director of the Foreign Exchange Program in business administration and economics will visit the campus, tentatively on Oct. 20, to speak to business administration and economics majors, and all other interested students and faculty members. The talk will be held at 3:30 p.m. in Boucke.

Other business included the proposal of a Career Day, to be held at a future date. The council has tentatively planned to include a nationally prominent speaker and panel discussions for separate areas of business administration and economics.

Corps Aide Named

The Peace Corps has appointed Arlene Fratkin, junior in elementary education from Philadelphia, as the Corps representative on campus.

One representative for the Peace Corps has been appointed at almost every college and university in the country.

The representatives will serve as the Peace Corps public relations contact with students on their campuses.

Students interested in Peace Corps service may contact Miss Fratkin at UN 5-8935.

Informal Forum Planned For Family Art Show

The 1961 Family Art Show of the College of Business Administration will continue with an informal forum on "What is Art?"

The new exhibit in the faculty library in Boucke is under the direction of Mrs. Howard A. Cutler and consists of a series of displays, using as subject matter such materials as manuscript excerpts, graphs and drawings created by members of the faculty and students of the college.