

NAVAL ARCHITECTURE and MARINE ENGINEERING

Although one of the smallest departments at Michigan, the Department of Naval Architecture and Marine Engineering is the largest of its kind in the world.

by DIANA ARMINTROUT, '61E

There are few industries which have done as much to change the history of the world as the ship building industry. For many centuries the supreme countries in the world have usually had the stronger navies, and it is only with the very recent developments of the airplane and automobile that some of the attention has been taken away from the shipping industry. However, although people might not be so "conscious" of ships in this present age, the industry has been steadily growing.

Naval architects and marine engineers are in more demand today than ever before. One of the reasons for this is that accelerating technology in the field has rapidly outmoded old ships. In previous years, a ship would not "go out of fashion" for many years, but that is no longer true. Ships do not become outmoded as rapidly as the new automobiles, of course, but many rapid advances are being made throughout the industry. For example, there are now new methods of power which are being directly applied to ships. Everyone has heard of the nuclear powered ships which have fairly recently been developed. There are also other new sources of power such as gas turbine and free piston gas turbine engines propelling ships through the seas.

Cargo Handling

Cargo handling is changing too. The

newest thing is "containerization" of cargo. In this process, a tractor-trailer truck pulls along beside the ship. Then its van is completely removed with the cargo still intact and placed in the ship. When the ship reaches its destination, the "containers" are placed upon other trailers and driven off without ever having touched the contents. Since a ship spends from one-half to two-thirds of its time in port, anything to speed up cargo handling is very valuable. Most surprising of all though are the tremendous advances which have been made in size. In 1948, the largest super tankers had a capacity of 30,000 tons. Today they are able to transport up to 85,000 tons—nearly three times as much. Not only are there ships of that size now, but plans have been drawn for ships of over 100,000 ton capacity. Many skilled engineers are needed to keep pace with this dynamic industry.

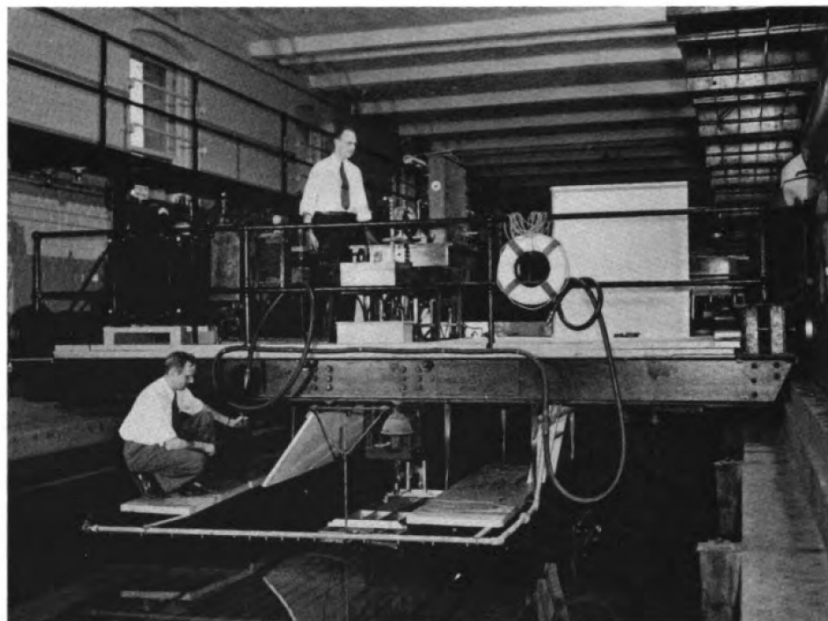
The industry today relies basically upon the naval architect and the marine engineer. The naval architect is primarily concerned with the design and construction of ship hulls, while the marine engineer's realm includes the design and construction of the propelling equipment, and the general problem of heat transference. However, these jobs are in practice rather interchangeable because the naval architect often holds a degree in marine engineering and conversely.

U of M Has Largest Program

The University of Michigan now has the largest undergraduate degree program in Naval Architecture and Marine Engineering in the United States. This year there are seventy-seven undergraduate students and seven graduate students in the department here at the University. This was a slight decrease over the enrollment of last year, but looking at it from an overall point of view, the department has been steadily growing since its inception. Although it may not be the largest department at the University of Michigan, it may well be the friendliest. Each of the four professors, all of whom hold N.A. and M.E. degrees, is personally acquainted with the students in the program and the normal formality between professors and students is nonexistent. This friendly atmosphere is one of the most highly valued assets of the department and serves to give the students the benefits of the closeness of a small school with the facilities of a large university.

While taking drawing courses, each student is assigned his own desk in the large well lighted drawing room. This is the "heart" of the department, and he will spend many hours there at his desk. A unique feature is that the doors of West Engineering Building are never closed to the students in the Naval Architecture and Marine Engineering De-

In a kneeling position and watching the action of the ship model, Professor H. B. Benford listens as Professor C. W. Spooner Jr. reports the readings taken from the instrument panel.



partment. Those who have work to do can obtain a pass key and go up to the drawing room at any time. In fact many students virtually "live" in the drawing room. They may be found there during the noon hour or in the evening or sometime late into the night. Anytime that they want to do some drawing, they are free to go up to the drawing room.

The department has always had a lot of foreign students. At the present time about one-third of the department is composed of students from outside of the United States. It may be interesting to note that about one-half of these were sent here for study by the Turkish Navy.

Started As Option

From 1881 until 1889, Marine Engineering was just an option branch of the Mechanical Engineering Department. At that time the College of Engineering established a full curriculum in Marine Engineering, and the course of Mechanical Engineering was changed to Mechanical Engineering and Iron Shipbuilding. Mortimer Cooley, later Dean of the Engineering School, taught the first

courses in Marine Engineering. In 1900 Herbert C. Sadler from the University of Glasgow, Scotland, joined the University staff. In 1904, the tank and all of its equipment, entirely designed by Prof. Sadler, was installed. This officially inaugurated the Department of Naval Architecture and Marine Engineering.

The Naval Tank

The naval tank, the largest college facility of its kind in the world, is housed in the West Engineering Building. It was originally built 300 feet long, 22 feet wide, and 10 feet deep. Its sides

and bottom are completely concrete, with the bottom arched and reinforced with expanded metal. A concrete bracket runs along each side to carry the rails for the towing car. Since the time that it was built, 60 more feet have been added, so the tank is now 360 feet long. Early models which were used in the tank were made of wax, but due to warping, this was discontinued. Now the models are wooden. However, the wax process has been so improved that it may soon be used again.

As was said before, Michigan has the largest undergraduate degree program in the United States. There are only two other schools which offer such a program, M.I.T. and Webb Institute of Naval Architecture in Glen Cove, L.I. Michigan's enrollment approximately equals that of the other two schools combined. There are more schools, however which have graduate programs. Among them are the University of California at Berkeley and Stevens Institute of Technology in Hoboken, N.J.

There are two societies which a student in N.A. or M.E. may join. The local society is called the Quarterdeck Society and has been on campus for many years. This is a student run professional society, and the person who desires to join must submit an original paper to be approved by a committee. If his paper is approved, he is accepted into the society. About one-third of the department belongs to Quarterdeck. The other two-thirds for various reasons do not

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Diana Armintrout, a graduate of Allegan (Mich.) High School, is now a sophomore aiming for a degree in Chemical Engineering. While in high school, Diana's many activities included student council, newspaper, yearbook, Pep Club, Latin Club, and Tri-Hi-Y. Although Diana says she has no specific hobbies, her interests include horseback riding, painting, cooking, and music.

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join. The national society which one may join is the Society of Naval Architects and Marine Engineers (S.N.A.M.E.)

Each year the S.N.A.M.E. offers one undergraduate scholarship worth \$1,000 per year for four years to a student at the University of Michigan. It also offers three graduate scholarships worth \$1,600 plus tuition for one year of graduate study at any school in the United States or abroad. Another source of scholarships is the National Association of Engine and Boat Manufacturers which normally gives two, 2 year scholarships worth \$750 each to students at the University of Michigan.

Co-Op Programs

Quite a few of the students are working on the co-operative plan with various shipyards. Boston Naval Shipyard

and New York Naval Shipyard both have a five year co-operative program. The students in this program work at the shipyard during the summer after graduation from high school. He then goes to school full time during his freshman year, then alternates work and study periods during the rest of his college years until his senior year when he attends school full time. During the freshman and senior years, transportation, tuition, books and equipment are paid for. Not only are there students on the co-op plan here, but there are several students who have been sent here by the companies which they work for. One of the biggest shipyards in the United States now has eight students taking courses here.

Opportunities in Naval Architecture and Marine Engineering are excellent.

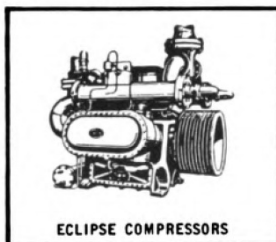
For example, there were sixteen people graduated in June of 1956. Due to various reasons only seven were available for employment, and there were an astounding 140 offers of employment for one or all of them! That hasn't quite been duplicated in the subsequent two years, but the demand is still very high. The recession in the oil business has cut down the demand slightly, but there are still many jobs which lack people to fill them.

Shipbuilding, one of the oldest trades in the world, is still going strong today. In fact it is growing, and demanding the talents of more skilled specialists every year. The University of Michigan has one of the largest and finest departments in the world, but even it cannot meet the demand for naval architects and marine engineers.

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