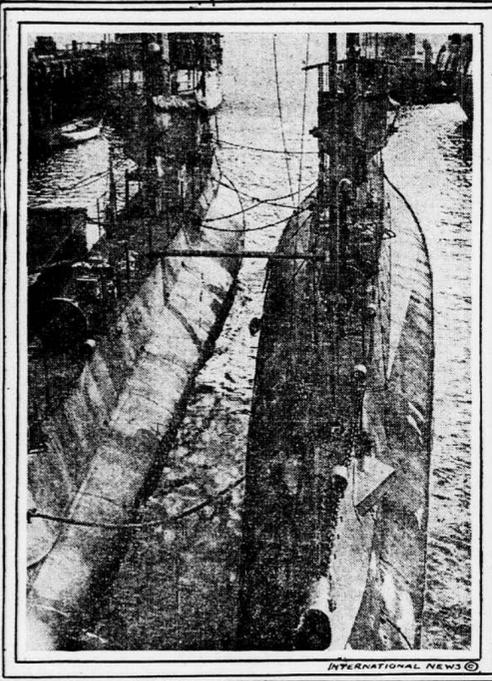


U. S. Navy Leads in Development of the Submarine

But Perfection Has Yet to Be Obtained in the Under-Water Craft—This Country Leads in All Except Numbers—Submergence Forms a Defense Not to Be Overcome by Any Known Means of Attack—Appropriations Made by Congress for Submarines—The Two Classes—Problems of the Naval Constructors—Importance of Speed—European War Forces Respect for Tiny Fighters—Boats Being Constructed by the Allies and Germany. Under-Water Endurance—Most Famous of Present-Day Craft.



K-5 AND K-6 AT DOCK IN BOSTON NAVY YARD.

THE perfection of the submarine has not been attained, and the progress of its development is so rapid that what took place last month passes into history and is not the standard for next month's construction. But, with it all, the United States is, except in numbers, the leader of the world's navies in the development of this type of craft.

The submergence to invisibility of the submarine is a defense not to be overcome by any known means of attack. Only when it comes sufficiently near the surface to deliver its torpedo is it vulnerable to the assault of hostile gun or gunfire. Many of the brightest and most scientific minds in the world are engaged upon the problem of how to resist and how to attack submarines, and so far no conclusive answer has been found. Enough is known of what submarines have accomplished in the way of attacking and driving from its positions the greatest naval armament the world has ever known and in the manner done in English commerce in the forbidden zone, to show the present value of this new engine of naval war, and until a defense is found no one can tell the limit of the dreadful powers of this sort of boat as they increase in size and speed.

A sufficient number of these vessels on the Atlantic coast would be such a menace that it would not be feasible for any European nation to send troops and transports to this side of the Atlantic until the silent, mysterious boats have been disposed of, and there is no way known to dispose of them. They cannot be attacked by enemy submarines, for under water they are in an invulnerable position, and it is long to dispose of a large number of submarines, if we had them, that the time gained would be of inestimable value for the conversion of our national resources into war assets.

The last session of Congress appropriated \$550,000 for each of sixteen submarines for harbor and coast defense, and \$1,500,000 for each of two submarines to be sea-going, fleet submarines with a surface speed of as near as possible to twenty-five knots. Those of the first class are to be merely improvements upon the commissioned coast defense boats and do not

Paris, in Midst of War, Prepares Autumn Fashions for American Women

Special Correspondence of The Star.

PARIS, June 15, 1915.

CREAMING styles are in the air. This is not a fashion article, but, rather, sociological, esthetic, sporting and industrial, with a dash of natural history and judicious inquiry into they do it.

What are all these queer shapes? Silhouettes to set off fur trimmings. Dainty girls are liable to go down town in shoulder capes with falling tabs as big as aprons, striped with—wait, I'll tell you.

Straggling wives will stroll to moving pictures in coat-capes, humped, flounced and puffed, bordered with wide bands of—patience!

And, I tell you school girls, shop coats of brocade, flaring, swelling, ermine cuffs on flowing sleeves, vast square-cut ermine collars, and—

Vladimir Grunwaldt told me, Michailovich Grunwaldt, his father, confirmed it.

"It is not our fault," said Vladimir. "It is the love of the beautiful."

He referred especially to little dogs, cats, rats and rabbits.

"It is almost paradoxical. "Rich American women set the pace," he said, "by loving only beautiful things."

This is the Rue de la Paix, remember. He showed me bunches of silvered sable, the most precious in the world, worth \$1,000 per skin. They were all most a dull amaranthine black "with little white hairs" as the American women call it.

"Or these," said Vladimir, "with darker lines down the back, which I prefer. A mantle or long coat requires 100 to 115 skins. You can have beautiful, natural dark skins from \$200 apiece (good, not extra), to \$300 and \$500 (for extra), and down to \$50 and \$100 for cheap. A child can calculate the time. Vanderbilt has bought two hundred years ago, for \$20,000. Today it would cost double."

You see, it is a sum!

Loving the beauty of "only the best," even our rich women hesitate at a sable coat that costs \$50,000 or \$50,000. This hesitation is the first step toward the trimming craze.

"These beautiful sables are only exceptionally used for garments," said the son of the Grunwaldts, "but rather for stoles, muffs and parures." So, it is true of the "beautiful" furs in general: black fox, silver fox, chinchilla, Kamohaka, beaver and ermine. Vanderbilt has bought a black fox for \$10,000. The cheapest, at \$1,500, "no American woman would look at it."

"A Demidoff might order a black fox pelt," said M. de Lamarre, coming up. He is one of the great fur exporters of the world. "I have made mantles lined with black fox for \$20,000, but not recently for men. Even astrakhan has gone away up in the past two years. A long coat may cost from \$50 to \$1,000."

Which makes the second step toward the fur-trimming craze.

Scarcity—and the dye brush.

He brought out two lovely, lustrous black fox stoles. I chose the most beautiful. It proved to be a "lustre"—red Canadian fox, tinted black with the dye brush—worth \$50.

The other, exactly like it, but seeming, to me, slightly less beautiful, was a real, a natural black fox, worth \$5,000.

"Ten dyed black foxes are sold for one natural one," said M. de Lamarre; "even to rich women. The difference of price is so great, and the dyed product so beautiful. The red fox of Canada is used to be considered trash. Today it is a handsome fur of itself. To make it



COAT CAPES, HUMPED, BOX PLEATED AND FLOUNCED, BORDERED WITH WIDE BANDS.

ly, to run away from it. A speed of twenty-five knots puts all but the submarines at its mercy. At a very few of them can make that speed. And while the submarine does not dare on the surface, it is within the range of the guns of a warship, that speed will enable it to maneuver about the dreadnaughts and superdreadnaughts. The cutter are not fast enough to withdraw from the sight of a twenty-five-knot submarine, which could keep up the chase until opportunity came for using the torpedo. The increased power and steaming radius will enable it to reach an attacked point with certainty and in a reasonable time. Such a submarine would have little difficulty in sailing from Kiel to the Bordenelles, and would probably be able to "duck" all interfering warships.

When it is remembered that the speed of the crack destroyer Albatross, with a displacement of 1,175 tons, is only 25 knots, or 43 knots faster than the new boat, which must be designed to run under the surface, as well as upon it; must carry the weight of her storage batteries and electric motors, which occupy spaces that otherwise might be given up to engine room, and the extra weight of metal giving the strength to stand the pressure of water at a depth of 200 feet, it will be seen that the naval engineers have a rather difficult problem, which is further complicated by the fact that the Diesel engines usually placed in submarines are neither as well understood nor as powerful as the steam engine.

One bold way suggested to overcome the last difficulty is to substitute steam for the internal combustion engine. This can be done by installing them in a separate water-tight compartment, with telescopic smokestacks to be taken down and the openings covered with valves when about to submerge. The boilers would be heated with oil fuel, which, when the boat was about to submerge, could be cut off, putting out the furnace fires immediately. There are objections to this, among them the

greater visibility of the steam and the longer time required to prepare for submergence. Experiments in France with small steam-driven submarines have not been very successful.

These are questions not yet determined; indeed, the plans are far from ready. Many involved calculations must be worked out and many experiments made before the naval engineers can satisfy themselves that the plans which they have conceived will produce the results—twenty-five-knot submarines which Congress has authorized and directed.

The designer must give the utmost thought and study, based on certain principles and modified by the lessons to be learned from European waters, in order to produce a type which will lead all others and meet the purposes for which they are intended, namely, defense of the harbors and coasts of continental America and its insular possessions. It is possible that if called upon to enforce the Monroe doctrine they may be employed to defend the coast of some of the South American republics.

Submarines are of two classes. The coast defense boat is about 150 feet long and of 600 tons displacement, propelled on the surface at the rate of thirteen to fifteen knots by heavy oil-burning Diesel engines, and, when submerged, at the rate of ten to eleven knots by electric power from storage batteries. It has a surface-cruising radius of 2,000 miles, with a crew of twenty officers and men. The second class, called "fleet submarines," none of which has been launched in any country, is much larger, the only one under construction having a length of over 250 feet, a displacement of over 1,000 tons, an estimated speed of over twenty knots on the surface and ten to eleven knots when submerged, with a cruising radius of at least 2,000 miles. As far as known this country is the only one which has even contracted for these.

Up to the outbreak of the European war no one treated the submarine with much respect, except the few officers of lower rank who had commanded and known them, and the very progressive officers of higher rank, who are always looking for an innovation or an invention, the possession of which means a real advantage to the navy. To those men and Secretaries of the Navy the existence and development of the submarine is due, for they are all based upon the invention of the American, Holland, and our navy acquired and perfected the first practical submarine.

It is quite certain that the allies and the Germans are building many of these boats, but in spite of the various pictures which have been published of them, but little is really known of their number or their design, although they are thought to have confined the type in use before the outbreak of hostilities, which are about the same in size and design as our coast defense type. It is known that the English government cancelled an order given before the war for one large boat of high speed, and instead contracted for five of the old type.

It is known that some of them carry one or more quick-firing guns, which at time of submergence sink into openings in the deck, where they are covered and protected from the water. These are used against hostile airships and upon light warships and merchant ships.

AROUND THE CONNING TOWER.

There is quite a general error as to the time a submarine can run under water. It depends upon the degree of power used. But, generally speaking, its supply of electricity is exhausted in about six hours, and then it can go no farther until it comes to the surface and, with the power taken from its surface engines, recharges the storage batteries. With a view to saving this power, the Germans early in the war in the North sea resorted to the very clever ruse of having an innocent-looking trawler, disguised as a neutral, tow

their boats, while under water, to their destination.

But this time of running is not the limit of its underwater endurance, which may be three days or even longer. Indeed, it is not unusual for one to rest on the bottom for a day or more to wait for bad weather or some other trouble on the surface to pass away.

It is said that last fall an English submarine was lying in this position on the bottom of the Baltic when, for some apparently trivial reason, one of the officers told the captain he would like to go to the surface. His command, good-naturedly, said they would go up and look around. The first thing that came into their periscope was a small German submarine lying directly across their bow, within easy range of their torpedoes. One shot was enough. Of course, the submarine was in great danger, for if the gunboat had seen her first a shot from the quick-firers might have put the sea serpent out of commission.

It is supposed that the most famous of the submarines came to its end when her gallant commander took the daring chance of deliberately coming to the surface in the midst of an English squadron and opened torpedo fire upon them. Unfortunately for him, he missed his first shot, and, before he could submerge, an English dreadnaught cut him down.

It is said that as the great power went into the broadside of the submarine a little crunching sound was heard, and the ruse of having an innocent-looking trawler, disguised as a neutral, tow

hands of moleskin three deep on the yoked coat of the flower-faced shopgirl. How? Why? Moleskin is made out of little dogs. And rabbits. Ermine ruffs, square turn-over collars, ermine cuffs and edgings, even a hat with a little more than ten inches of ermine, are no longer necessary. It is the emblem of purity and honor without stain. Ermine, you say, is expensive. Since the middle ages, it has garbed royalty and the judges of men. Ermine is made from the white domesticated mink.

So, the proud woman, with her wealth, you conclude, must fall back on chinchilla. Chinchilla, and so far too, no other skin so resembles the plumage of downy-feathered birds as the skin of the little mink. It is more costly each year. Chinchilla trimming is the appanage of the rich.

It is hard to be exclusive these days. Girls who wish to hold your heads up, ask for Asiatic chinchilla. Real, no imitation. They are real chinchilla mice, except that they come from the Himalayas, Tibet, Mongolia, Siberia. To be precise, they are very tiny rats. The Russian, who has counted on the great making millions. The great, but, unfortunately or fortunately, they have to be "worked" to imitate their fur. Since the middle ages, it has been the most delicate of the modest purses of good women.

Striped and zebraed, banded, edged and spotted, tanned and bronzed, solid, floured, collared, ruffed and bordered, the good women will disport themselves in new shapes, humped and ayed, scalloped, or in lone lines vertically rim-striped. What do I know? They are silhouettes adapted to fur trimmings.

"Queer!" I said, quitting the great Parlophone of real fur, was, however, "Queer," replied Vladimir, "but beautiful. Our sympathies are with all women. I am glad that they shall have fur trimmings." STERLING HELLIG.

Even the great fashionable furriers honor the product, which is clipped or shaved rat. The inventor of the process has become a millionaire. You take a ratskin, and another, and a lot more. Sew them side by side, like a patchwork quilt. Give it a haircut—the machine cannot be bought, it must be rented on a royalty. The smoothing shave comes next. Then dye it, doll it, by unpatented secret processes. Muskrat, which the French call musquash, makes the most expensive article in the fur trade. The exclusive fashionable houses only work in musquash seal, but the big brown sewer rat gives a charming product, and the rusty duck rat, except that his skin is tender, not to mention river rats from South America, so plentiful that a man has invented a machine to skin them automatically.

Wonderful dye brush! The real, natural seal invariably must be dyed. Why not the rat seal? Is it beautiful? Yes, it is durable! Almost.

These questions satisfactorily answered, the advantage of price strikes the modern woman.

A large sum invested in a single garment is a risk.

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Such, indeed, is the practice of fashionable women, even with their imita-



SHOULDER CAPES, WITH FALLING TABS AS BIG AS APRONS, SKIRTS SIX DEEP IN FUR BANDS.

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A "JACK IN A BOX."

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ALL HANDS ON DECK.

crew or of the boat, which will be mentioned in all histories of submarines, the U.S. country the rate of construction of submarines has been slow. There are few yards which undertake to build them and they take a long time to complete them.

Under present conditions it will take about twenty months from the signing of the contracts before the submarines of the first class will be delivered, and about thirty months before those of the second class will be completed. In case of need this time could be shortened, but not so very much, and a paucity of boats has no defensive value in time of war.

This delay has been, in part, due to financial conditions and, in part, to the requirement of perfecting the designs. These boats have to stand every test, one of which is submergence to the depth of 200 feet, where the pressure is tremendous, before acceptance. In the twelve years since the Holland was launched not many have been built, and both naval constructors and builders have had to feel their way. The Diesel internal combustion engine, the creation of only a little more than ten years, is quite complicated and has by no means reached its perfect development. The early submarines used gaso-

The early boats, sent to the Philippines and to western waters with the idea that they were drawing to the end of their usefulness and would never be brought back, have behaved well, and, with the exception of the F-4, which was sunk at Hawaii, have been giving very little trouble, although constantly cruising and submerging in the competitions which are carried on. The newer and supposedly stronger and better boats were retained on the Atlantic coast, and for some reason these are the ones which have given most trouble.

Their showing after the recent review in New York harbor has drawn attention to the defects of these boats, and it has accordingly reorganized the flotilla, putting Capt. Grant in command, charged with the duty of ascertaining, and, if possible, removing, the causes of the trouble, for there is no good reason why the Atlantic flotilla should not make a showing even better than the older boats in the Pacific.

The sinking of the boats which go below the surface of the water as an

The affairs of nations, through commerce and exchange, are so intimately interwoven and modern means of communication have so far annihilated distance that complications may arise which the most temperate statesmanship cannot overcome. Then will come the strain upon the first line of the country's defense—the navy.

It has never failed in any task assigned to it. But the daring seaman-ship of John Paul Jones would avail him nothing in his old converted merchantman if he had to meet a modern gunboat. The Constitution and the Essex would be easily overtaken and sunk by a destroyer, and the greatest battleships of all time will go down before the elusive submarine. Not that battleships are no longer necessary, but if the fleet of the American navy were supplemented by a sufficient number of submarines, no nation would take the risk of sending to our shores an army in transports until the submarines were controlled, and so far there is no way known of controlling them or even of detecting their presence with certainty, and they are about to strike their fatal blow.

ALBINO LAKE TROUT.

AMONG the interesting exhibits at the New York aquarium is a collection of albino trout. These creatures, which are all of a clear cream white, including their fins, with no characteristic bright ruby-red eyes are most striking and curious in appearance.

In its natural coloring the lake trout shows on its upper body white or grayish spots on a brown background, on the larger albatross trout the spots can be discerned, appearing as very faint spots of the same color, but of a different shade. When the trout would never be noticed by one unfamiliar with the species and the markings. To the trained eye these fishes present bodies of solid unbroken white.

The lake trout is a handsome fish, and these albino trout are perfect specimens without a blemish. They appear not as freaks, but simply as graceful and beautiful white fishes. To display them to greater advantage by contrast the albino trout are shown in a tank of brook trout.

MONKEYS IN HERALRY.

THREE monkeys figure in the coat-of-arms of the Earl of Leicester. They stand with plain collar, chained. The motto is "Crom-a-boo," which means "To Victory." An interesting story pertains to this device, which was adopted in the year 1516 by John Fitzthomas Fitzerald.

When this Earl of Leicester was an infant he formed one of the residents of Woodstock, now the village of Woodstock. There was a fire in the castle one night, and in the confusion that prevailed the child was overlooked. When he was remembered those who dashed for the nursery found it in flames. The infant was clasped in the arms of a big ape, which soon found its way to the nursery. It is said that the child was rescued by the ape, and the monkey has since been adopted as the crest of the Leicester family.

SEVEN CHANCES.

THE good business man turns to everything—weather, war, crops—to practical use in his business.

The speaker was George W. Perkins, the millionaire of New York. He continued:

"It is the clever girl turns everything to practical use toward getting settled in life, you know.

"I said the other day to a girl: 'Well, have you learned to swim yet this summer?'"

"Yes," she answered, "seven times."

THE Two Classes.

THE late Charles Frohman used to divide Americans into two classes—those who dine in evening dress and those who dine in their shirt sleeves. "To put it better," Mr. Frohman would say, "the two great American classes are, first, those who dress for dinner, and second, those who dress for dinner."