

This Attractive Young Lady, Miss Betty Anne Herrold, is Learning All About Oysters at the College of Fisheries of the University of Washington, Where She is Studying to Become an "Oyster Farmer."



Right: Oyster Beds Showing How the Bivalves, When Babies, Attach Themselves to Submerged Rocks. It Takes an Oyster from Three to Five Years to Reach Maturity.

which Rosanne Amberson sets forth in *The Forecast*.

"Oyster-farming is a new-old industry," says this writer. "Old, because from the beginning of time man has accepted the bounty of the sea and added shell fish to his diet. New, since the oyster industry has joined hands with science in an effort to create a gigantic, highly organized food industry with a pure, high quality product."

"Oyster farming is exactly what its name implies—the cultivation of underwater lands in which seed is planted, a crop cultivated, and finally marketed. Only within recent years have we understood the life cycle and history of the oyster. Previous to that time, any oysterman with a boat could gather his crop where he would, until he had completely exhausted his supply. But now we realize that oysters like any other crop must be planted year by year if we are to have a continuous harvest. And so important has the oyster become as a food that such a harvest is vital.

"Oystermen have seen what science can contribute, and they realize that with proper development the next five years may well produce a bumper

crop, an oyster harvest almost beyond the realization of the industry itself. "But what is being done to produce this bumper crop?" you may ask. And the answer is—an amazing number of new things—methods and devices—which have been worked out carefully by scientists.

"A single female oyster spawns about fifty million eggs. From this, the old-time oysterman secured perhaps two full-grown oysters. Such a comparison of figures is almost too tremendous to grasp. Today this waste of eggs does not occur. In the first place, the spawning season of the oyster is very carefully watched. Certain selected oyster beds along the Connecticut coast and in the upper Delaware Bay adjacent to New Jersey are looked upon primarily as seed beds.

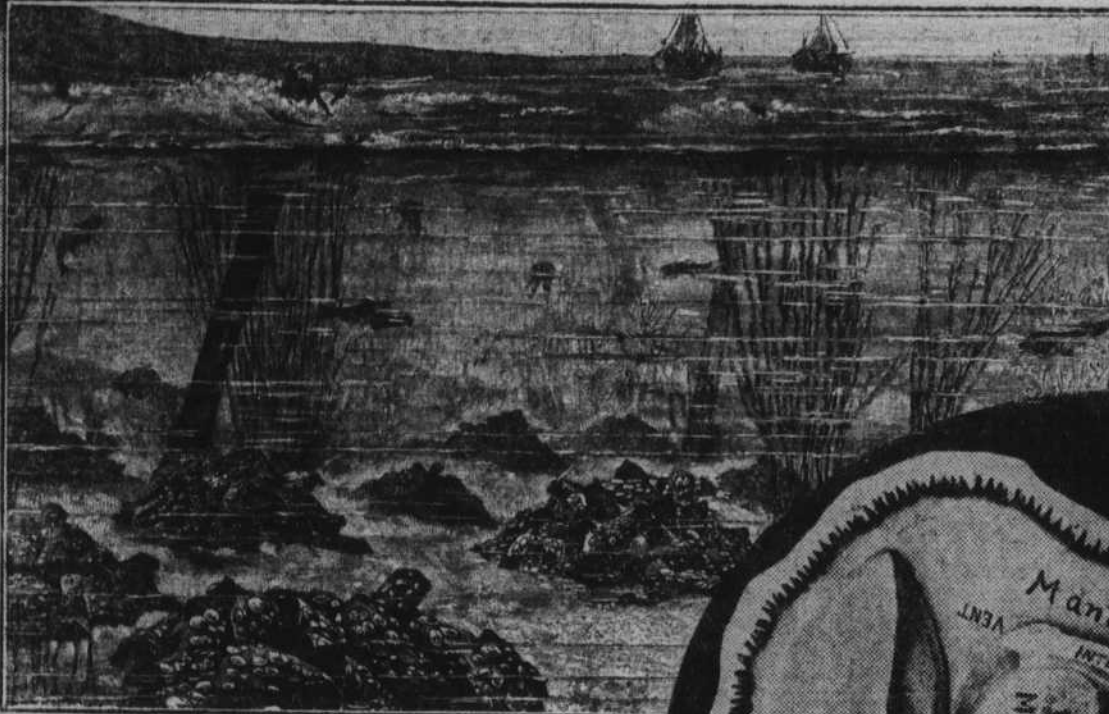
"Baby oysters are provided by science with a home—that is—they are given an artificial surface to which they may attach themselves. Under the newest methods of cultivation, that artificial surface is a cement-treated egg box filler.

"The simple inner cardboard container of the egg box which is familiar to every housewife, is dipped in a cement sand and lime solution and so made rough and acceptable for the young oysters to sit on. These boxes have many surfaces rather than the single surface of the natural shell, and to these many surfaces the young oysters are attracted not by dozens but by the hundreds.

"I recently saw such an egg box carrying perhaps three thousand young oysters with an approximate value—

How Science Is Lending a Helping Hand to the Oyster

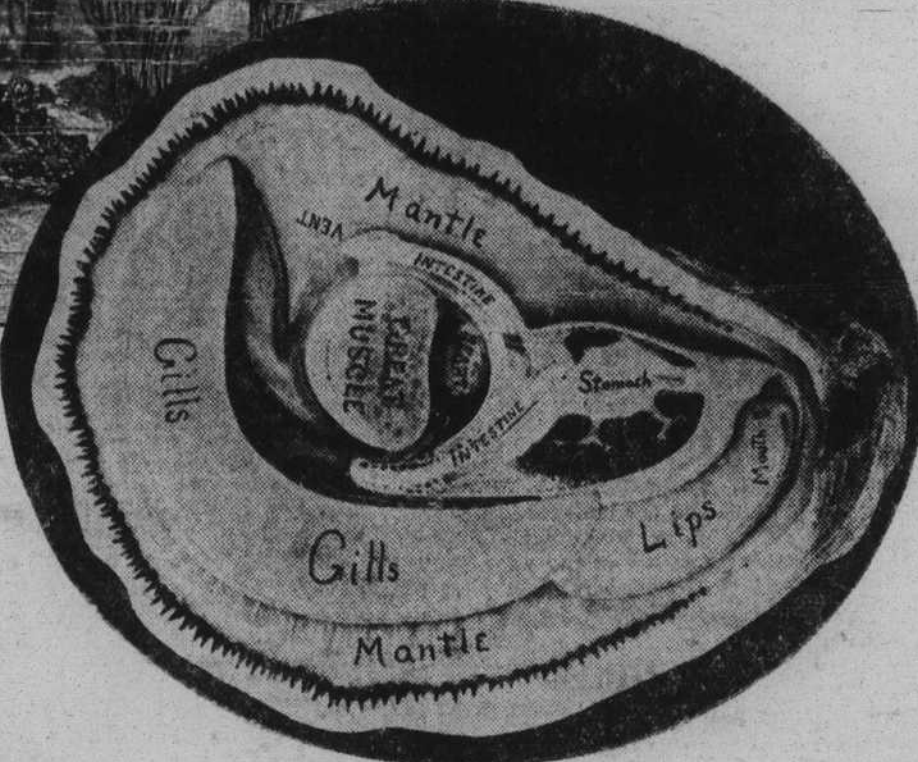
The Amazing Discovery That the Fate of This Shellfish Often Hangs on Winds Which May Bring It Feast or Famine.



ulous dredges have replaced the old-fashioned tonger's rake to haul these shellfish out of their bed. And comfortable broad-decked boats are used instead of the dories of years gone by. But many of the other pieces of equipment and many of the methods remain the same. From the boats the oysters are dumped into a chute which carries them down into the sorting sheds. Here in a long row stand the sorters, tapping each oyster in turn to determine whether it has been broken in dredging and the shell liquor lost. If the oyster has been injured, it is tossed into a separate barrel, returned to the sea and there given another chance at life. If it is in perfect condition, it is placed, according to size, in one of four containers. Small, medium, half-shell and large oysters are separated in this fashion. After leaving the hands of the sorters, the oysters are piled into tanks of running chlorinated water and thence into barrels for shipment.

"For the shucked product, a slightly different method is followed. From the sorting room, the oyster progresses to the shucking room where men with 'oyster knives' force the shells apart and scoop out the oyster. The shell

A Cross-Section Drawing of an Oyster Showing Its Complex Structure Which Enables It to See, Hear, Smell, Feel and Taste.



when grown to maturity—of perhaps a cent apiece. In other words, a mere egg box potentially worth \$30!

"It takes an oyster from three to five years to grow to maturity. Science has not yet discovered whether just one sex change or perhaps two or three take place within that five-year period. In fact, experiments are being carried on along this line at the moment.

"Some old methods are still in use for the harvesting and packing of oysters. In most of our food industries, machinery has been developed to replace the old-time hand methods. Such is not true with oysters, for they, after all, are living animals and must be handled carefully. It is true that spa-

liquor of these oysters is completely drained away, so the term of 'oyster liquor' in relation to shucked oysters is erroneous.

"From the shucking room, the oyster enters the washing room. Huge tanks filled with water, shot through with air so that they bubble and foam, receive these shucked shellfish. Dirt, gravel, bits of shell, being heavy, drop to the bottom of these tanks and so are separated out. After being washed for many minutes, the oysters are drained out into a sieve-like tank which removes most of the water and from there are put into gallon or five-gallon cans, as the case may be, for shipping."

The Greatest Invention

WHAT invention do you think has had the greatest effect on modern civilization?

Abraham Lincoln, who was an inventor before he was President, answered this question in a "lost speech," the original manuscript of which, according to Popular Mechanics, is now in the possession of Oliver R. Barrett, of Chicago.

The records of the United States Patent Office show that on May 22, 1849, Abraham Lincoln was granted a patent, No. 6,469, on a device for "buoying vessels over shoals." The model of Mr. Lincoln's self-lifting steamboat is preserved in the National Museum.

The great invention of the world is writing, the art of communicating thoughts to the mind through the eye. Mr. Lincoln declared in a lecture on "Inventions and Discoveries," in which he said:

"When we remember that words are merely sounds, we shall conclude that the idea of representing these sounds by marks, so that whoever should at any time after see the marks would understand what sounds they meant, was a bold and ingenious conception."

"The thought of dividing sounds into parts, and making a mark, not to represent a whole sound, but only a part of one, and then combining those marks so as to represent thousands of words, was somehow conceived and pushed into practice. This was the invention of phonetic writing, as distinguished from clumsy picture writing. Take this invention from us and the Bible, all history, all science, all government, all commerce and nearly all social intercourse go with it.

"Speech alone, valuable as it ever has been and is, has not advanced the condition of the world much. This is abundantly evident when we look at the degraded condition of all those tribes of human creatures who have no considerable additional means of communicating thoughts.

"When man was possessed of speech alone the chances of invention, discovery and improvement was very limited. When writing was invented, any important observation likely to lead to a discovery had at least a chance of being written down, and consequently a little chance of never being forgotten. By this means the observation of a single individual might lead to an important invention years, and even centuries, after he was dead. In one word, by means of writing, the seeds of invention were more permanently preserved and more widely sown. And yet for three thousand years, during which printing remained undiscovered after writing was in use, it was only a small portion of the people who could write or read writing, and consequently the field of invention, though much extended, still continued very limited.

"At length printing came, and consequently thousands of minds were brought into the field where there was but one before. Discoveries, inventions and improvements followed rapidly, and have been increasing their rapidity ever since."

A n old maxim says that "it is an ill wind that blows nobody good," but a wind can blow ill to an oyster. As to wind, what can it possibly have to do with the oyster? Certainly these amazing bivalves buried well below the surface of the water are not affected by the breezes that blow. Actually they are, however, as scientists have shown in giving the oyster a helping hand.

Storms and wind seem to drive the food to or from the oyster. Microscopic organic matter which floats in the sea water is the oyster's food. As the winds drive inshore from the ocean, they carry in additional bits of such matter which help to fatten the crop. How the winds may bring feast or famine to the oyster is just one of the amazing facts about this shellfish

Locating Lost Airplanes With Captive Balloons

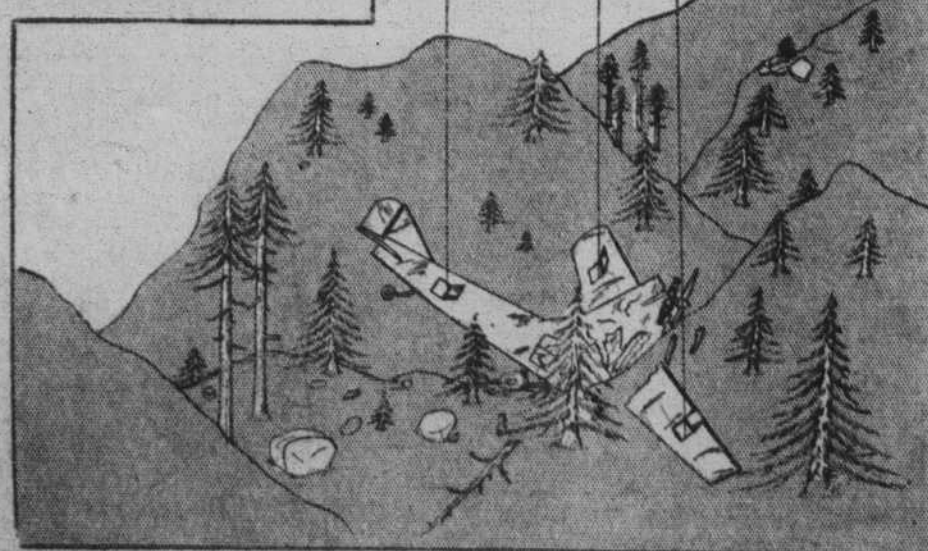
NOW then it happens that an airplane crashes in a remote locality, and in such circumstances it may be very important to fetch help by means of signals.

A contrivance for this purpose, newly patented by George W. Paulson, of Portland, Oregon, consists of detachable balloons which may be sent up high in the air to attract attention.

The balloons, connected to a tank of hydrogen on board the plane, are held in small, latched chambers, deflated. To each of them is attached a tag line.

In an event such as that above suggested and pictured in the accompanying illustration, reproduced from the patent drawings of the inventor, the pilot frees the latched doors of the chambers and touches a switch, which allows the hydrogen to inflate the balloons; whereupon they soar aloft in the air. The inventor suggests that, for use at night, a radio service that emits a bright light may be connected to the bottom end of each balloon.

As the Airplane Crashes to Earth the Pilot Touches a Switch Which Causes the Balloons Attached to the Craft by a Long Cord, to Be Inflated and Soar Aloft to Mark the Resting Place of the Ill-fated Plane.



Learning Music Made a Game

A NEW method of teaching music has been devised by Mr. Herman Darewski. A keyboard chart is fitted over the piano keys in such a way that there are pictures of toys and animals resting on the various keys. Instead of searching for the note C or D, the child looks for the animals associated with those notes.

For instance, the note B is represented by a picture of a baby bear, E by an eagle, D by a dog, C by a crocodile, and so on. The pussy cat is the sign of the treble clef, all the notes of which are represented by such animals. For the bass clef an elephant is the sign, and these notes are represented by pictures of toys. An ark represents A, a boat stands for B, a domino for D, a gollywog for G, and so on.

In this way the top line of "The Bluebells of Scotland" is shown by figures of a baby chick, a bee, an antelope, a goose, an antelope, a bee, a baby chick, an eagle, another eagle, a fish, a donkey, and so on.

How Plants Are Changed by the X-Ray

X-RAYS have been experimentally used by Cornell University scientists to change an annual plant into the perennial. The plant used was "cuchlaena," the closest wild relative to corn. There are two species of cuchlaena, annual and a perennial.

The seeds of the annual were exposed to the X-ray for a few minutes, after which they were germinated. At first the growing plant started out true to form—as an annual. But as it grew larger it began to take on the appearance of the perennial. As this change took place the annual looking portion dried up and disappeared, leaving a true perennial.

How to Build a House of Snow



THERE seems to be a widely-accepted notion that the art of building a snow house is a racial gift of the Eskimo and that there is about it a mystery impossible for the white man to solve. Adventurers in the frozen north have seen plenty of such houses, but no white man has ever attempted to build one until recently, when Vilhjalmur Stefansson, the famous Arctic explorer, did the trick and found it easy. He proved that three or four men could build a snow house in less than an hour's time and declares that a dwelling of the kind is exceedingly comfortable.

Mr. Stefansson thinks it very odd that the construction of snow houses should heretofore have been considered a mystery. He suggests that boys could build them in any place where the weather is cold enough and the snow-drifts hard enough to furnish the requisite material.

The first thing to do, he says, is to find a snowbank of the right depth and firmness of consistency. Then out with long butcher-knives and cut the snow into domino-shaped blocks about

Eskimos Building Snow Houses (From a Model in the National Museum).

four inches thick, 15 to 20 inches wide and 20 to 35 inches long. These will weigh 50 to 100 pounds apiece.

For a ground plan of the house a circle may be drawn with a string and two pegs, one at each end. One peg is planted where the center is to be and the other is used to mark the circumference.

The first snow block having been set on an edge, a knife is used to undercut it slightly on the inner side at the bottom to make it lean somewhat inward. It is then a simple matter to prop other blocks in place by leaning one against another. When a block has been leaning on another block five or ten minutes in frosty weather it is cemented fast to the others and to the snow beneath.

When the first tier is completed, the second may be begun by selecting any point in the circle formed by the first tier, and, from the top edge of one of the blocks, making a diagonal cut downward to the bottom edge of the

far corner of the same block or the next one. In the nick thus formed is set the first block of the second tier, and so on, building spirally. The aim in view is to construct an approximately perfect dome, and hence the blocks of each tier must be inclined inward at a greater angle than those of the tier next below.

When the construction is finished a fire is lighted inside the house and kept going until the snow roof and walls begin to thaw. The thawing proceeds without dripping because dry snow is the best sort of blotter, soaking the water into itself. As soon as the inner layer of the roof has become properly wet, with thawing and the walls damp in less degree, the fire is put out and the house is allowed to freeze. Thereby a thin glaze of ice is formed on the inside, contributing much additional strength to the structure.

The house being completed, a tunnel is dug from outside through the snow to a point beneath it, where a vertical shaft is excavated upward through the floor. Thus a sort of trapdoor opening in the floor is provided.