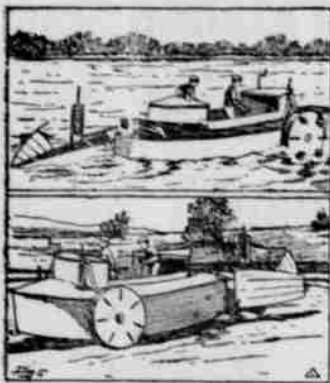


AN AMPHIBIOUS AUTO.

Machines That Travel With Facility on Water and Land.

An amphibious automobile, designed by Rear Admiral J. A. Howell, U. S. N., retired, has been given a number of tests recently. The vehicle has been devised as a pleasure machine, and it is the idea of its originator to use it at beaches along the coast where a combination of motorcar and motorboat would be found very convenient. Admiral Howell has built several of the cars during the past two years, to which he has given the general name of "pleasure surfboats."

The latest model of the machine, which is called Amphib II, has just been finished. It is so constructed that



AMPHIBIOUS AUTOMOBILE, AFLOAT AND ASHORE.

It can be used in a heavy surf without danger or discomfort to its passengers, of which it can carry six. It is twenty feet long, six feet beam and has a tailpiece ten feet long. The road wheels are four feet in diameter and eight inches wide. The wheels, of which there are three, are cased with iron and have recesses for paddles. There is one screw propeller having three 18 by 22 inch blades on the port side. The engine used is a single cylinder, ten horsepower, two cycle gasoline motor, which gives the car a speed of twelve miles per hour on land and four miles per hour in water. There is planetary transmission between the engine and propelling mechanism on land and water. There are two water tight bulkheads, one forward and one aft. The after compartment holds the water and gasoline tanks, each of which has a capacity of twenty gallons. The tailpiece is pivoted to the hull, and an iron tiller, operated by wheel and chain in the cockpit, steers both on sea and land.—Popular Mechanics.

CRACKED WATER JACKET.

Method of Repair That Is Durable and Easily Applied.

Through neglect and carelessness many a gas engine water jacket is burst by being left with water in it on a very cold night. A crack of this sort gives a great deal of trouble and many times results in a loss of time in replacing with a new jacket or sending it to some factory to have it brazed.

If the crack is in such a place that no strain comes on it except the water, it may be repaired in the following manner and will hold water as well as a new jacket would:

Mix litharge with glycerin to a stiff paste and force it into the crack with a putty knife or some similar instrument. After filling the crack let it stand overnight. If possible, and on starting in the morning run the engine until it gets well warmed up before turning the water into the jacket. If this mixture is properly applied the job will be likely to last as long as the engine. One advantage it has over brazing is that it will give way again before breaking the cylinder if the carelessness is repeated, and in this case the mixture can be applied again in a short time and no serious delay will result. It is also valuable where the crank case has been patched and leaks oil. This paste can be used in putting together the case in place of the regular packing. When the case is taken apart the paste will cling to the metal and can be replaced as the regular packing.

A Spider That Lassoes Flies.

As we know, spiders have a number of ingenious ways of luring and catching their prey. A writer in Popular Science describes an American spider which hunts evergreen trees and snares its dinner by means of a kind of lasso.

The web of this spider is triangular in form. Two corners of the triangle are attached to twigs, but the other corner, which ends in a single thread, is held by the spider, perched on a neighboring twig. When a fly strikes the web the spider loosens his hold and the elastic threads instantly entangle the victim.

Weight of Paint on Street Cars.

A recent number of the Electric Railway Journal records some surprising figures on the weight of paint and varnish used on street cars. On a twelve bench open car it was found that the paint and varnish amounted to 180 pounds and on a fourteen bench car 221 pounds were used, while in the case of a double truck, closed car of the prepayment type the paint and varnish weighed nearly 400 pounds. This is an item which does not often enter into the calculation of weights when designing a car.

To Polish Ivory.

Smooth it with sandpaper, rub down defective spots, then rub off with soft fannel and washed chalk. The chalk can be moistened with water or oil. Finally complete the polish with a piece of soft linen on which a little oil has been dropped.

THE ACCELEROMETER.

An Instrument That Measures Power and Road Resistance.

In a paper on the use of an accelerometer in the measurement of road resistance and horsepower, read at a recent meeting of the engineering section of the British association, H. E. Wimperis described the form of accelerometer recently invented by him.

The instrument consisted of a brass box about four inches across, containing a copper disk mounted on a vertical pivot and "damped" in its motions by a permanent magnet. The center of gyration of the disk was purposely removed from the axis, so that when the box moved forward one side of the disk tended to lag behind, thus partially winding up a coiled spring and actuating a pointer, which moved over a scale. To prevent the reading from being affected by any accelerations at right angles to the direction of motion, a second parallel axis was fitted, which was geared to the first one and had attached to it masses having the same mass movement as the disk itself. Compensating these two axes added up in the direction of motion, but neutralized one another in any direction at right angles. The accelerometer, therefore, read in one of the three directions of space only and was not affected by even violent movements in the other two directions.

With this instrument the author had measured the road resistance of various classes of road and had obtained figures varying from 50 pounds to 210 pounds per ton. On main line railways the resistance was usually from twelve pounds to thirty pounds per ton, depending on the speed. Measurements had also been made of the resistance to motion when a motorcar was coasting. In this way the horsepower and the engine friction could be measured and a figure for the mechanical efficiency could be obtained. By the use of the accelerometer road resistances could be read off at sight, the air resistance of various shapes of car body could be determined, the boiler horsepower and indicated horsepower of the engine could be obtained for various speeds, while it was possible to trace step by step the losses of power in transmission to the road wheels.

MINE RESCUE DEVICE.

Apparatus Permits Men to Work For Hours in Deadly Gases.

Experiments at the Lancashire and Cheshire miners' rescue station, Atherton, the first station of its kind in Great Britain, have developed a rescue apparatus with which it is said that the men so equipped can work for five or six hours in the most deadly gases without the slightest inconvenience or exhaustion.

The weight of the apparatus is twenty-eight pounds, but nearly all



FRONT VIEW OF RESCUE APPARATUS.

this weight is borne by a belt around the waist, says Popular Mechanics. The feature of the device is the absence of a helmet. A headpiece, provided with straps, holds the mouthpiece in position over the chin and lips, and a light clamp fits over the nose, closing the nostrils. The supply of air is drawn from the breathing bag, which hangs down from the shoulders in front, through pipes leading to the mouthpiece. The exhaled breath is carried by another pipe to a receptacle filled with caustic soda, by which the poisonous gases are absorbed. Goggles are worn to protect the eyes.

A New Explosive.

Cheddite, an explosive that has been extensively used for the past ten years in Europe, is about to be introduced in Canada, says Mines and Minerals. The explosive will not freeze and is practically non-toxic. It will burn in the open air without explosion. Nitric, hydrofluoric and sulphuric acids when poured over the powder do not cause it to explode. Nitric acid has no effect on it whatever, but it effervesces under the action of hydrofluoric acid and burns brightly when sulphuric acid is poured over it. When it is charged in a drill hole and exploded the smoke is not injurious, and men can go back at once to their working places without even obtaining a headache.

Color of Sparks.

The color of the sparks given off by an emery wheel is a guide to the kind of metal being ground. Sometimes this is the most easy and handy way of distinguishing tool steels. Cast iron gives off dull red sparks, and they stay close to the emery wheel. Wrought iron gives a spark similar to cast iron in color, but more like the spark from mild steel, which is bright yellow and flies from the wheel considerably. Self hardening tool steel and the tungsten alloy steels make a thick shower of dull sparks, very much like the cast iron sparks in color.

County School Fund In Good Shape

Superintendent Ford reports that the school fund of the county is in good shape.

The receipts for the county from all sources from June 20, 1910, to June 19, 1911, is \$75,708.09. This includes the balance on hand from last year. The disbursements were \$61,179.84; leaving a balance on hand June 19, 1911, of \$14,528.25.

The estimated value of the school buildings in the county is \$54,235. The estimated value of furniture, apparatus, etc., is \$12,958. Total insurance carried, \$16,940.

The average monthly salary paid male teachers, \$69.62 plus; for female teachers, \$58.45 plus.

The average salary paid teachers in more than one room was \$66.04. The average salary paid the principal having more than one room was \$97.

The county school superintendent traveled 2000 miles during the year attending to his official duties.

There were 1666 pupils enrolled and 116 teachers employed.

The percentage of attendance during the year was 90.

Hot Air Irrigation

Continued from first page

was next considered. This company, successor to the Oregon Development Company, has 31,028 acres selected under the Carey act. The original contract with the state was executed in 1902, and the project should have been completed last year, but was not, and a supplemental contract was made by which five more years were given in which to finish the work.

Largest of all is the Central Oregon Irrigation Company, which has 214,000 acres. This company took over two old companies and applied for more land of its own. This company has got water on some of the land, but at present is financially embarrassed. Also, the company has sold more lands than it has water to cover, but as not all purchasers have asked for water there is today plenty of water for those on the ground and using it. The Desert Land Board is considering the question of preventing further sales of lands until provision is made for an adequate water supply by construction of an additional canal, known as the North canal, or of permitting further sale and have the company deposit part of the proceeds with the state as a guaranty. The company insists that it has abundant assets to construct the North canal. While everything appears satisfactory so far, the matter must be adjusted at an early date. The Board inspected the project personally and had an engineer on the job.

Insofar as the Desert Land Board is concerned, it merely acts as an agent for the government and is really a go-between for the government and the settlers. No deeds are given to this segregated land by the government until affidavits are submitted and approved by the Desert Land Board that there is sufficient water for the acreage involved. There is an instance where false affidavits were made that water was abundant, whereas it was not, and the government gave the deeds. It is difficult to place the responsibility for this manipulation and false affidavit and as it happened several years ago, the present Board does not intend probing the transaction. What the Board is determined to do, however, is to try to straighten out the snarl into which these projects have become involved so that the rights of settlers will be protected, the companies will make good and as many as possible will be satisfied.—Oregonian.

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