LIFE SAVING CRADLE.

Apparatus Designed For Carrying Injured Persons Down a Ladder.

Invented by the wife of a retired admiral of the United States navy, a little cradle, or litter, is designed to enable injured or unconscious persons to be brought safely out of buildings where the only exit is a ladder, says Popular Mechanics. It was invented primarily for carrying sailors or soldiers from battlefield or fighting place to the hospital, but its adoption by fire companies is rapidly demonstrating its efficiency in the lines of peace. In making a rescue one fireman descends one rung ahead of another, thus distributing the load.

The cradle weighs but four and one-half pounds and makes a bundle only eighteen inches long and less than five inches in diameter. The cradle proper consists of a double thickness of heavy canvass three and one-half feet long

LADDER RESCUE FROM BURNING BUILDING.

and eighteen inches wide. To each end of a heavy canvas strip attached across one end of the main sheet and projecting ten inches at each side is a patented catch, held firmly in place with a piece of stout leather riveted directly to the canvas strip. A harness of canvas and leather is provided for each of the two men who are to use the appliance. Shoulder straps of canvas four inches wide, with two metal rings at each side, permit the cradle to be hooked to the shoulder harness.

Used as a litter, this device has proved much more flexible than the standard stretcher, which is of little use in descending or ascending stairs where sharp corners have to be turned. The new apparatus leaves the hands free.

Hydraulic Mining.

The beginnings of hydraulic mining reach back into the realm of mythology. The story of Jason and the golden fleece has its origin in that industry, for the Colchians, from whom Jason obtained the fleece, were great miners. They were of a country which abounded in placer gold, and their method of operation was to place a sheep's hide with the wool on it in a narrow brook and allow the water to carry the gold bearing sand over it. The heavy gold sank into the wool and was held there, while the lighter sand and debris were washed away by the water. The fleeces thus obtained were valuable, and it is supposed that they were used in trade and so came into the hands of the Greeks. Hydraulic mining has not progressed much since the time of Jason, the one essential difference aside from mechanical improvement being the present use of mercury to assist in holding the water borne particles of gold.—Engineering Magazine.

Electrical Copper Refining.

A plant laid out on a very extensive basis for the leaching and electrolytic precipitation of copper is being constructed at Chiquicamata, Chile. The ore body to be worked in this vicinity is in excess of 200,000,000 tons. The first unit of the plant now in course of erection has been designed to treat 10,000 tons of ore per day. The refinery will have an output of about 335,000 pounds of copper per day. Energy for separating the copper from the ore will be transmitted to the plant from a generating station on the coast over eighty-five miles of line at 100,000 volts.—Electrical World.

Withstands Great Heat.

It has been found by experiment that when the impure forms of bauxite containing considerable iron oxide are exposed to intense heat the bauxite is converted into a solid mass of emery which is so hard that it can barely be cut by steel tools and resists chemical, thermal and mechanical action to a marked degree. Recent applications of bauxite in brick, according to the United States geological survey, are in the lining of rotary cement kilns, lead refining furnaces and basic open hearth steel furnaces.

Protection For Chisel Edges.

A means to protect the cutting edge of a chisel when not in use is to wrap a piece of medium heavy paper around the chisel body to form a paper ferrule. The paper is cut into a strip about one and a half inches wide and six inches long. One side is glued, and it is then wrapped around the chisel. The protector is slipped up on the body when it is in use, but when placed in a chest the ferrule is brought down over the edge.

Motorcar Hint.

An automobile can be driven a considerable distance by repeated fillings of the carburetor float chamber when a feed pipe breaks.

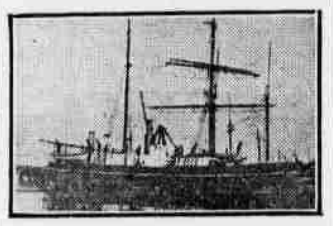
Loss of the Karluk A Serious Blow to Canadian Expedition.

THE 320 ton wooden whaler Karluk, flagship of the Canadian government's arctic exploring expedition, under command of Vilhjalmur Stefansson, was crushed in the ice and sunk on Jan. 11, near Herald island, northeast of Siberia.

The entire crew, including a party of scientists, excepting Captain Robert A. Bartlett and one of his men, is now on Wrangel island, with a plentiful supply of food and wood. Captain Bartlett, accompanied by Sailor Perry and some Eskimos, with a sledge and seven dogs, made his way across the ice to North Cape, Siberia, and then proceeded overland to Whaler bay, Siberia. There he was taken on board the whaler Herman, which carried him to St. Michael, where he now is, and from which point information of the Karluk's fate came by cable.

The expedition which Stefansson organized and commanded was undertaken for more than geographical reasons. It was sent out by the Canadian government not only to discover what might be lying in the Arctic ocean to the north of the Dominion, but also to take formal possession as British territory of any islands or even continents which might still be unknown.

On the maps of today there is a vast blank space stretching to the west of Banks and Melville islands to the north of Alaska and Siberia. To discover what it might contain, to see if there was any truth in the tradition



CAPTAIN ROBERT BARTLETT AND THE KARLUK.

that here was a mighty continent perhaps never yet trodden by the foot of men, the expedition went forth.

The whereabouts of the Karluk had been a mystery for months—since the time last September when after Stefansson had gone ashore on a land exploring trip she was caught in the ice and drifted away. There has been much speculation over her fate. The ship drifted for nearly four months—slowly drifted with the ice in which she was fast locked until finally the water poured in the engine room down the main hatch and the ship sank bow first.

Most of the provisions, scientific instruments and stores were placed on the ice before the ship took her downward plunge. Two houses were built on the ice—one of snow, the other of boxes covered with sails. There was a stove in each house, and plenty of coal was saved. This camp was called Camp Shipwreck and answered its purpose well until there was sufficient light to begin the march and transportation of stores to Wrangel Island, about sixty miles away, which was reached on Feb. 13 following and where a camp was established.

Realizing the necessity for immediate relief, Captain Bartlett left on Feb. 18 for the Siberian shore, 100 miles away. The little party made its way through a succession of fierce gales, and when it reached the mainland but four of the dogs had survived the trip. Emma harbor was made in the middle of May, after a remarkable march of 500 miles down and across the peninsula to the shore of Bering strait, and here Captain Bartlett was taken aboard the whaler Herman, which made for the American coast. As there was too much ice to permit a landing at Nome, the little party was finally landed at St. Michael, Alaska.

On the Karluk when she was carried away stuck fast in the ice were twenty-four persons besides Captain Bartlett. Among them were Dr. Henri Beauchat, a French scientist who had made a special study of the Eskimos; Allster Forbes Mackay and James Murray, who were companions of Shackleton in his dash for the south pole; Bjarne Mamene, George Mallock and William Baird McKinlay, as well as five Eskimos.

The revenue cutter Bear, now bound for Unalaska to cut a way through the ice for shipping bound for Nome, will be ordered to the relief of the marooned scientists and crew of the Karluk as soon as the cutter reaches Nome.

HOW SHIPS BREAK IN TWO.

Probable Cause of the Failure of the Oklahoma's Hull.

Breaks in two of the hulls of vessels, while they have occurred before, have been rare enough so that the recent disaster to the new oil tank steamer Oklahoma is of especial interest to vessel designers, says the Engineering News. According to the story told by one of the surviving members of the crew, the break in two occurred "when the vessel was picked up at either end by giant waves. While she hung thus suspended a third great comber washed high over her side and settled with a deafening crash on her deck."

What most probably happened is that the break in two occurred when the vessel amidships was raised high on the top of a wave, while the stern and bow were in the trough on either side. This would place the vessel's bottom in compression and the top deck sides of the hull in tension. A ship's hull is weakest to resist a bending stress under these conditions, since its bottom plating is heavier than its deck plating and the latter is cut away for hatch openings. The stresses were a maximum also because the vessel was not loaded. Under these conditions the principal weight of the hull is that of the engines and boilers in the after end, and the ballast in the tanks at the bow to keep the vessel on an even keel. With the load thus concentrated at the two ends of the hull and the central portion empty, the bending of the hull produced by a wave lifting the vessel amidships would be a maximum.

Similar cases of hull failures on the great lakes a dozen years or more ago resulted in an increase in the required thickness of the hulls of lake vessels. The wreck of the Oklahoma will probably have a distinct influence on the design of ocean tank vessels.

WHY A CHAIN BREAKS.

Scientist Explains the Strengthening Action of Annealing.

What happens to a chain in use that allows it to break under a certain load which it will safely carry after being annealed? The reply given offhand to the satisfaction of most people is, "It crystallizes." Has any one stopped to question if this be true? Break the chain link; that particular link at that particular place has a surface that looks crystallized. But is that particular link crystallized in any other part? I have never seen one that showed crystallization in any other place, says a writer in the American Machinist, and the only explanation I have heard was that of John Coffin, and his claim was that the link does not crystallize, but breaks in detail—that is to say, it starts a crack either where it is weakest or when it is subject to the greatest stress, and repeated stresses carry the crack farther and farther until complete rupture results. If we accept this as true, then what takes place, or what does annealing do?

John Collin explained and demonstrated before the American Society of Mechanical Engineers that if two pieces of steel which are perfectly fitted together be heated to a red heat they will weld together. Now may not this explain what happens when the chain is annealed? The cracks in the links must of necessity go in to a point where the metal has actually parted but not opened so as to admit moisture to oxidize the surfaces, and then when heated to the annealing point the crack welds up.

Tooth Making Machine.

Two engineers of Prague have invented an apparatus for the casting from metals of artificial teeth, which it is claimed eliminates all defects heretofore found in other machines in use for the manufacture of such teeth. The machines now generally employed are of two kinds. One of these is the press, which forces the metal into the form mechanically, but it is subject to the criticism that the pressure cannot be applied vertically, which often results in a sputtering of the molten mass. The other, the centrifugal apparatus, excludes the possibility of the application of a regulated power. The invention in question, it is claimed, obviates all difficulties heretofore experienced in the manufacture of such artificial teeth. The pressure on the form is always exerted vertically, and, the force being regulated automatically, it does not in any degree depend upon the skill of the operator nor upon the degree of force applied by him.

Device Prevents Shoplifting.

A sliding bar safety stand for displaying jewelry and fancy goods in stores that is designed to prevent shoplifting has been invented by the chief decorator of one of the big New York department stores. The device resembles the ordinary "T" stand, excepting that it has a sliding bar with ball stops placed at suitable distances over the main crossbar. The fixture can be opened at either end to enable the sales person to remove easily any of the articles displayed. Its safety features lie in the fact that only one end can be opened at a time and that two hands are necessary to operate the device.

Applying Calcimine Evenly.

When applying calcimine, alabastine or paint, if it is to be rubbed down, put on the different layers at right angles. The first coat, when dry, is composed of fine ridges of color. When the second coat is applied these ridges hold the color between them, thereby causing the surface to be covered evenly and thoroughly.

Preserving Metal Posts.

The part of a metal post that is set in the ground may be kept from rusting by painting it over with a coat of cement.

ALBANIA'S SHAKY THRONE.

Prince William Willing to Abdicate and Arouses German Wrath.

Prince William of Albania, formerly William of Wied, is having a difficult time in trying to hold down his very shaky throne. It is said that he is quite willing to abdicate, for the disturbances that have arisen are not at all to his liking. The fact that he took refuge on an Italian warship when threatened by rebellious subjects has awakened the ire of Germany. William was but lately a major of the Potsdam lancers. He is openly accused in Germany of revealing a "streak of yellow," which has not only damaged his own prestige, but has shamefully besmirched the reputation of the German army for bravery. William has abandoned the outward forms of royalty and has

PRINCE WILLIAM OF ALBANIA AND HIS FAMILY.

been practically a prisoner in Albania. The insurgents demand his abdication and the substitution of a Moslem ruler.

Almost insuperable obstacles have stood, in the opinion of practiced observers, in the way of evolving a state out of Albania. The race is divided into three large factions by adherence to the Mohammedan, Catholic and Orthodox religions, and there is a further tribal and clannish subdivision, with blood feuds in full force and little power of cohesion in a language scarcely reducible to writing. Consequently Prince William is not in love with his job, one which was practically forced upon him by the powers that are trying to create a state out of opposing factions that refuse to coalesce and over whom the unhappy prince has practically no control.

PLANNING ALASKA RAILWAY.

Engineers Appointed by President Start For the Field of Their Labors.

William C. Edes and Lieutenant Frederick Mears, U. S. A., appointed by President Wilson as members of the Alaskan railroad commission, have sailed from Seattle for Alaska, where they will map out the preliminary work. Both engineers were appointed by the president at the suggestion of Secretary Lane.

It is pretty well known that Colonel George W. Goethals, governor of the

Photos by American Press Association.

WILLIAM C. EDES (ABOVE) AND LIEUTENANT FREDERICK MEARS.

Panama canal, was Mr. Lane's adviser in the matter of appointments to the work in Alaska. Colonel Goethals seemed to think that it would be wise to have a civilian make the preliminary survey and that later, if necessary, the work should be turned over to the army engineers. Colonel Goethals requested the appointment of the young cavalry officer, Mears, to the work in Alaska. Lieutenant Mears has been chief engineer and general superintendent of the Panama railroad.