

LIFE BUOY DESIGNED BY REAR-ADMIRAL HICHBORN.

The Franklin life buoy, a unique invention of Rear-Admiral Hichborn, is now in use, not only on all vessels of the United States navy, but also to a great extent on the vessels of all considerable naval powers. Like all other useful inventions, it is simple in principle, being a hollow air-tight, metallic ring, provided with two automatic torches which make it possible to locate the buoy at night. The torch staffs are so pivoted to the ring that they will lie in the same plane and stow neatly against the side of the ship as shown in the smaller illustration when the buoy is not in use; but when it is dropped, they assume, by virtue of the weight of their lower ends, a vertical position in the water, thus raising the signals above the surface. Each torch staff is fitted with a chamber at the lower end containing calcium phosphide, a chemical which ignites by contact with the water. When the buoy is dropped, the seals of these chambers are broken automatically, and admission of water permitted, and the gases of combustion ascend and produce a large flare at the top, the combustion being so regulated that there is no danger of over-heating. The flotation of the buoy is sufficient to sustain three men, the central space accommodating one in a sitting position, supported by a chain which crosses the opening, as shown in the second illustration. Generally two of these buoys are hung near the stern, where they can be most easily dropped entirely clear. The most striking test of their efficiency in our service occurred on the ill-fated "Maine," about a year before she was blown up in Havana Harbor. On the morning of February 6, 1897, in latitude 34° north and longitude 75° 42' west, a position a little south of Cape Hatteras, the "Maine" was breasting a terrific storm, such as would have tried the seaworthiness of the staunchest ship. In executing an order, Gunner's Mate Chas. Hassel and Seaman Kogel were washed overboard. The two buoys were immediately dropped, and Hassel was seen to reach one of them, but Kogel seems to have been stunned, for he made no apparent effort to save himself. Seeing this, Landsman Wm. J. Creelman jumped overboard, and made a futile attempt to rescue him, and after failing succeeded in reaching the same buoy to which Hassel already clung. In the meanwhile, the port life-boat manned by a volunteer crew under command of Cadet Walter Gheradi was lowered, but it was soon found that in the terrific sea, it was quite impossible to reach the imperiled men with the boat, and the crew were hauled aboard by life lines, the boat being abandoned. By this time the two men on the buoy had been lost sight of; but their bearings had been kept, and when the ship steamed in their direction, the torches were soon sighted through the blinding mist of rain, and by the most skillful handling the two men were safely hauled over the bow and landed on deck, so little injured by their adventure that both returned to duty the next day, one of them, Hassel, only to perish in the terrible catastrophe of the following year. Creelman is now a gunner's mate on the "Iowa."

An Alaska Geyser Region.

BY E. HAZARD WELLS.

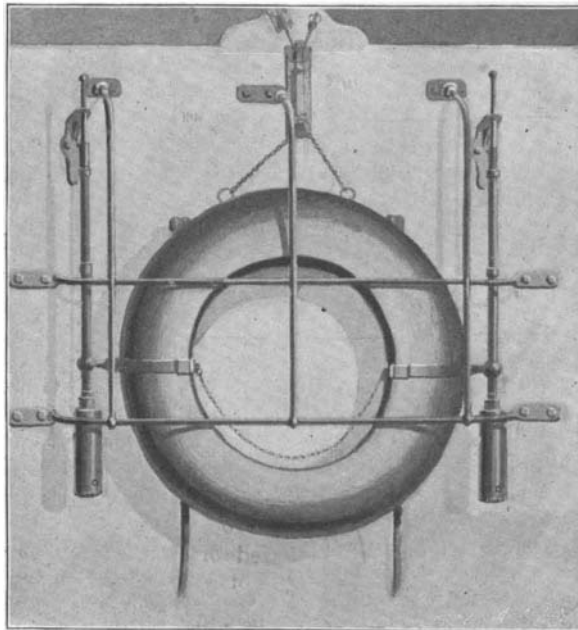
A remarkable geyser region exists in Alaska near the head of the Copper River, according to the statement of Capt. W. R. Abercrombie, United States army, who spent last summer in that locality conducting government explorations. The Captain was recently in Seattle outfitting for another expedition to the Copper River and furnished the writer with the following statement:

"The geysers lie between Mt. Sanford and Mt. Wrangell, near the head of the Copper River. Great puffs of steam shoot into the air from a point about midway between the two peaks. When I stood upon one of the foothills of Mt. Sanford last August, I could see the steam blown upward from many points with great energy. The country was frightfully broken and it was impossible to distinguish the spots from which the jets arose. I feel certain, however, that there are giant geysers at work there, as the jets had the typical pulsation of the geysers of the Yellowstone. I believe that those of the Mt. Wrangell district are much the largest of any on the continent, judging from the quantity of steam thrown out.

"As I looked off over the forty mile gap between Mt. Sanford and Mt. Wrangell, a marvelous sight met my eyes. Mountains jagged and angular thrust their needle-like points upward in all directions out of masses of ice and lava. Not a vestige of forest or green vegetation could be seen. It was the wildest, weirdest sight that I ever beheld. In the distance loomed the imposing circular cone of Mt. Wrangell, with clear-cut, even-rimmed crater. There was no fire nor smoke to be seen. On the contrary, the mountain appeared silent and cold. I know that it has been the popular supposition that

Mt. Wrangell is an active volcano, but I believe that to be a mistake. The geysers that lie between Wrangell and the Copper River have given rise to the error. The steam from them rises in a direct line between Copper Center, on the Copper River, and Mt. Wrangell, producing the ocular illusion that the crater itself is throwing out steam.

"It is my belief that no human being could cross the tempest-tossed region lying between Mt. Sanford

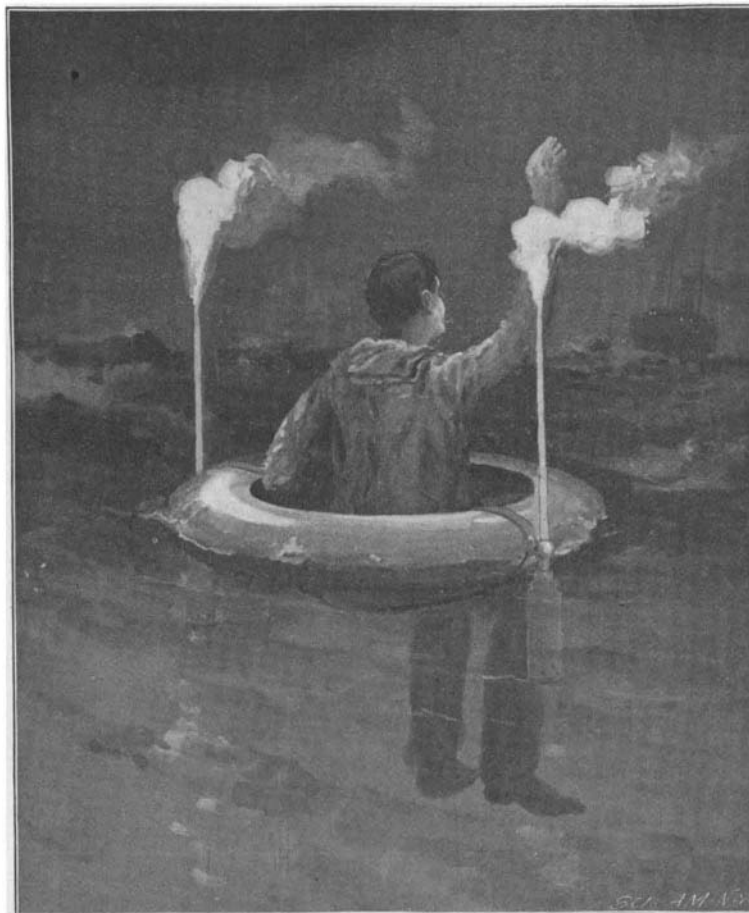


THE LIFE BUOY SUSPENDED FROM SIDE OF SHIP.

and Mt. Wrangell, with its frightful chasms, broken lava beds and glaciers. No man to my knowledge has ever reached Mt. Wrangell, although some thirty prospectors had penetrated to Mt. Sanford when the government party of which I had charge reached the spot last summer. I do not believe that there is any way to get to Mt. Wrangell except possibly from the north near the extreme head of Copper River. Men must carry in supplies or starve. The country will not yield game, except an occasional bear or mountain sheep. There are some enormous bears in the immediate vicinity of Mt. Sanford, which resemble the noted St. Elias grizzlies.

"One that I encountered had black fur with silver tips, a brownish face, and weighed fully 1,800 or 2,000 pounds. He was a monster in every sense of the word. When fired at, he ran off through a canyon.

"The immense lava beds which lie to the northwest of Mt. Wrangell present a strange appearance. The



FRANKLIN LIFE BUOY IN OPERATION AT NIGHT.

stuff is dark colored and apparently granitic and is tossed about in great chunks and slabs, some of them as large as houses. The lava gradually disappears under an ice cap as it approaches Mt. Wrangell, from which it evidently was thrown out. It would be an impossibility for any one to cross the lava beds.

"One thing that struck me forcibly was the large amount of mineral-bearing quartz cropping out around

Mt. Sanford, and, in fact, throughout the entire upper Copper River country. Up to the time that I left there last fall, little genuine prospecting had been done by miners, owing to the difficulty of getting in supplies. Men had to carry their stuff upon their backs. After I have cut through the military road this year, things will be different. I believe that the Copper River runs through a rich mineral belt.

"There are five large mountains in a group near the head of the Copper. They are Mt. Sanford, Mt. Drum, Mt. Tillman, Mt. Wrangell and Mt. Blackburn. These range in height from 12,000 feet upward. No exact measurements have ever been made. I do not know whether Mt. Wrangell is higher or lower than Mt. St. Elias, but it is certainly much higher than any other peak in central Alaska, with the exception of Mt. McKinley.

"Sofar no prospecting has been done upon the upper Tanana River, near where it approaches the Copper. No boats succeeded last summer in ascending the Tanana, which is one of the largest tributaries of the Yukon. I was not able to judge of the mineral possibilities of the Tanana, not having investigated the stream very far. I do know, however, that the upper Tanana runs through what is at present the best game country in Alaska. There are thousands of moose and caribou there.

"My work this year will not be so much of an exploratory nature as it was last year, but I expect to secure considerable new data, which will be utilized, in all probability, in the published report of explorations in Alaska, which the War Department expects to issue soon after Congress grants an order passing it to print."

Mt. Wrangell is one of the most interesting features of the North American continent. It lies in a region difficult of exploration and enshrouded in mystery. The Alaskan natives have some superstition connected with the "big mountain," and refuse to go near it. In 1890 I endeavored with three assistants to force a passage across Alaska from Forty Mile Creek to Mt. Wrangell, by way of the Tanana River, and tried in vain to secure native guides at several villages. Offers of guns and ammunition were made without avail. I was told that no man could go to the mountain and live. Pushing ahead, without guides, we ascended the Tokio River, then unmapped, and proceeded toward Mt. Wrangell, crossing a tempest-tossed country, which became more and more forbidding as we advanced. It seemed as though primeval nature, gathering together all of her gigantic energies, had there endeavored to upheave an apex to the North American continent. Our provisions finally gave out, and we only escaped starvation by eating our one dog and roots which were found at various places. We managed to get back to the Tanana, and descended that river to the Yukon. So far as I know, this was the first and only attempt ever made by an exploring party to reach Mt. Wrangell. It can be seen from a great distance, owing to its extreme height, and up to the present time has always been classed among active volcanoes, owing to the ribbons of steam or smoke which have been discerned rising apparently from its crater. Capt. Abercrombie, however, has had superior opportunities for observation, and his declaration that giant geysers exist would account for the superstitious fear of the natives in regard to this particular mountain, which makes them unwilling to approach it.

Active volcanoes exist in Alaska and volcanic phenomena are not unfamiliar to the people there, but geysers are not known to exist in any other region than around Mt. Wrangell.

Liquefying Hydrogen.

It is now over twenty years since Raoul Pictet, of Geneva, announced the results of experiments carried on with the object of liquefying that most refractory of all the so-called permanent gases, hydrogen, but up to a week or two ago all efforts in this direction were, at the best, problematical and unconvincing. Now, however, a grand achievement has been effected by Prof. Dewar and his able assistant, Mr. Robert Lennox. These investigators, by the undoubted liquefaction of hydrogen, have put the finishing stroke on the line of research initiated by Faraday when he first reduced the gas chlorine to a liquid. The new agent of scientific research, liquid hydrogen, congeals the air surrounding the containing tube into a snow-like solid, and a piece of cork sinks to the bottom when put in the liquid; the temperature at the boiling point is 21° absolute, or -252°, a temperature representing a pressure which is immeasurable. The liquefaction of hydrogen is a triumph of theory as well as practice, for in face of all the enormous difficulties which have been encountered, theorists have never deviated one jot from the conviction, which sound reasoning long ago showed, that there is no such thing as a permanent gas.—Knowledge.