

lation as to our exact location, and that's a great point, Professor."

"You mean to determine the latitude?"

"Exactly."

"Can you do it, Professor?" asked a dozen curious voices.

"Yes, I think so, with reasonable certainty, too. The stars will be our guide."

"And can the stars tell us how far we are from land?" inquired Ernest Blake.

"They can, my hearty," said the captain, "with my sextant and other guides, they have been my only map on many a voyage."

"You see," said Professor Ballentine, "that, were we at the north pole, the Polar star would be directly overhead. Were we at the equator, the Polar star would be exactly at the horizon. From the north pole to the equator is one-fourth of the circumference of the earth, ninety degrees. Should we go north one degree, or sixty-nine and three-fourths miles, the Polar star would rise one degree higher in the heavens. If we can devise an instrument to measure angles as a substitute for the sextant—"

"Which I can do," interrupted Captain Barr.

"So as to determine the height of the star in degrees," resumed the Professor, "we would at once know our latitude, for the number of degrees the star is above the horizon is the number of degrees we are north of the equator."

"I reckon you've got that right," said the captain, "but longitude, Professor; that's another thing," and Captain Barr drew out his old silver watch. "You see it run down on the island, and we've lost all reckoning of time; without that, at some given point, we're all at sea."

The Professor smiled placidly.

"Is that all the trouble, Captain? We can obviate that. My Jurgensen chronometer here has not run down since I left San Francisco, for I have kept it wound regularly."

"And you can give the correct San Francisco time?"

"To the minute. At night we will set up poles to a line with that same Polar star, which is to find us the latitude, and thus learn, with considerable accuracy, the cardinal points of the compass. The next day we will, by these poles, determine when the sun is exactly south, which will be at noon, as it is now near enough the solstice for little variation to exist; then we will note the difference in time between our place of observation and San Francisco, and every four minutes of time will indicate the degree of longitude which we are west of San Francisco. The sun passes, or seems to pass, over the three hundred and sixty degrees of the earth's longitude in twenty-four hours, and in one hour over fifteen degrees, and in four minutes over one degree, which is the reason why we divide the difference in minutes of time by four to find the difference of longitude in degrees."

The boys were much interested in the Professor's explanation, but the plan he suggested was never carried out, unforeseen occurrences the ensuing day preventing its accomplishment.

That day, about evening, Ned was walking along the shore alone, seeking, as was his wont, some new specimens for the Professor's cabinet of curiosities.

He had gone quite a distance along the headland, the tide being out, and was engrossed in watching a huge crab and sea aster. The curious creature had all kinds of strange places of hiding. There were some large specimens at the island, and the Professor had told of their habits, and referred to the *Birgus latro*, or great cocoanut crab.

This is one of the largest species of land-crabs, and feeds almost exclusively on cocoanuts, for which purpose its pincer-claws are developed to extraordinary power, capable of breaking a cocoanut shell or a man's limb. Although it climbs the trees, it does not pull the fruit, but feeds upon what falls to the ground. With its great claws it tears off the husk from the nut, and then, selecting the one of the three eyespots which is always the most easily pierced, prods it with one of its legs. Inserting the leg, it rotates the nut until the orifice is large enough to permit the insertion of its great claws to break up the shell and extract the contents with comfort.

Feeding on such nutritious diet, the *Birgus* accumulates a great deal of rich fat, which yields sometimes as much as two pints of oil. This oil, thickened in the sun, forms an excellent substitute for butter, and is also a most excellent anti-corrosive.

Dusk came on ere Ned was aware of it, as he sat engrossed in the movements of the curious creature before him.

He started to return to the camp, and began to work his way back over the rocks.

He cast a casual glance seaward as he reached the smooth beach.

It had grown dark, and he knew the evening meal would be ready by the time he reached camp.

Suddenly he started and stared intently seaward. A light danced up and down on the billows.

"A ship! a ship!" cried Ned Darrow, excitedly.

CHAPTER XXVIII.

ON THE ROCKS.

Ned Darrow did not lose time by hurrying to the camp to inform the others of his discovery.

Springing to the place where the binnacle lamp hung he hastily lit it.

He was amazed when he again looked seaward, to find that the light had disappeared.

He discerned instantly the cause of this. The ship, sailing southward, had passed out of his range of vision behind the headland.

"The lamp will not be seen," he murmured, anxiously. "The fire-wood! I must signal them."

On the beach lay a bundle of highly-inflammable knots of some resinous wood, placed there purposely for just such a contingency as the present one.

Ned slung the bundle over his shoulder.

He then ran to the headland and began climbing his way along its edge.

Wading and creeping, he finally reached its farthest available point.

"I must swim to the rocks beyond the point," he decided, and struck out into the water.

He reached an isolated rock at last, and scanned the southern horizon eagerly.

The light he had seen was again visible.

With his knife he scraped dry one of the wetted knots and applied a match.

The ship's supplies had contained a large quantity of these useful articles.

Instantly the knot blazed up and ignited others.

He piled them all together, and saw their ruddy glow crimson the waters about him.

Amid his excitement he did not consider his situation or its possible perils.

His eye was fastened on that dancing star of light in the distance.

It seemed to have changed its course. It certainly was coming again toward the island.