

I'LL BELIEVE

The candle flickered, then grew brighter, and the figures of three men could be seen seated around a low table. They were in the old wooden cabin at the edge of Willowhill forest. It was about nine o'clock one bitter cold night in February. Jim Hill and his two fellow-hunters had left Willowhill early in the evening; Bill Cobb another hunter was to join them later. While the men waited for Cobb they smoked and chatted, quite forgetting the weather outside and the time as well. Their conversation was suddenly interrupted by the sound of a dull thump outside the cabin.

"Sounds like a bag of potatoes that someone let fall," said one of the men.

"It does," replied Bill as he raised his huge form from the stool and strolled to the door, "but I don't see any potatoes out here, nor our friend Cobb. It's time that fellow's here—of course he never gets away on time no matter where he's going."

The three men sat down again. Hill remained silent for some time.

"What are you thinking about so deeply, Hill?" asked Merrel, one of the hunters.

"Do you believe in forerunners?" came Hill's reply.

"Absolutely no", Merrel answered quickly.

"I never give much heed to them", said the other, "why do you ask?"

Hill finished filling his long stem pipe, struck a match and puffed slowly, sending big whirls of smoke to the ceiling. "Well I do, and I'll tell you why. When I was a young fellow at home I was staying with my mother one night; the rest of the family had taken the horse and sleigh and had gone skating on the pond about a mile from home. I agreed to stay with Mom. Her father was at our house, and he was feeling pretty low; I wanted to be handy in case she would need help.

"It was a night just like this, cold you know, after a fresh fall of snow. We were sitting in the kitchen; I was reading, and Mom was sewing.

"Papa's not as well tonight Jim", she said without looking up; "I hope your father and the children return soon. I feel safer when they are here."

"Just then we heard the sound of a sleigh turning at the front door.

"There they are now," I said.

"But what on earth made them come to the front door?", Mom wondered, "you had better go and see what they are doing."

STAIRWAY TO THE STARS

Lately, our magazines and newspapers have written a great deal about rockets and space craft. Naturally this would arouse a great deal of interest in the topic, but you don't realize how much—nor did I until a day or so ago. I mentioned the Rocket's (Richard) unfortunate accident to a sporting friend, and he asked me if it was a Thor or an Atlas.

The rocket of today is a flying vehicle propelled by a chemical rocket motor. This motor burns fuel and oxygen, both of which it carries, and is driven by the reaction of its exhaust. The burning of the fuel causes the exhaust gases to expand and push out through a vent in the tail, the kick or recoil moves the rocket forward. Thus unlike the propeller driven plane which needs air to pull itself through, or the jet which needs the oxygen of the air to burn its fuel, the rocket can travel through the virtual vacuum of space. This independency of atmosphere, and its high power-to-weight ratio are the most valuable features of the rocket.

Probably the best way to learn about something is to trace its history and so let it be with rockets. They were invented by the Chinese, sometime after gunpowder was first used and their original form was that of a firework, much like our skyrockets of today. Then some ingenious Chinaman constructed a sort of super, king-sized rocket that he thought would be a colossal success, against the invading Mongol cavalry—it was.

Following this, the next notable use of rockets was against the British cavalry in India. The overgrown skyrockets were very inaccurate and did little damage; but, even though John Bull kept a stiff upper lip, his horses didn't, and the rocket carried the day.

While dismayed at what the rocket had done to them, the British were enthralled with what it could do to their enemies. Accordingly William Congreve started developing rockets for them. His version was all metal, larger than its predecessors, but still very portable and handy. But, like the others it was powered by a charge of gunpowder which burned unevenly and made accuracy a joke. Thus, the rocket did not become anything but a mass bombardment weapon. Incidentally, this is the type referred to in the "rocket's red glare", in the American National Anthem.

It was not until the beginning of the twentieth century that the rocket was brought under control. Prof. R. H. Goddard, an American, developed a rocket using liquid fuel. This meant that steady, even thrust could be maintained, which would put an end to the dangerous unpredictability of the rocket's flight. These rockets used liquid oxygen and a liquid fuel for power, and by letting the oxygen expand around the outside of the combustion chamber before using it, he kept the intense heat from melting the

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