



A VISION OF THE FUTURE: A RED CROSS AEROPLANE VISITING A BATTLEFIELD TO SUCCOR THE WOUNDED.

The battle of the future, according to the much discussed article of Count von Schlieffen, which the Kaiser read to his generals recently, will begin with an aerial engagement, when the airship will be at the mercy of the more manageable aeroplane, which will be able to mount higher than its adversary and drop a deadly rain of explosives from above. But the aeroplane can be used on an errand of mercy as well as for destructive purposes, and the scene which our artist has depicted, where a Red Cross aeroplane visits a battlefield to rescue the wounded, is well within the bounds of possibility.

—The Graphic.

NATURE THEIR STUDY.

Continued from third page.

his own meals. Here he dwells through the summer months among the wild, unhackneyed scenes of nature. It was here that he received President Roosevelt. He has not depended entirely upon the products of his fertile brain for a livelihood, but has raised high grade grapes and celery as well.

Mr. Burroughs occasionally breaks the "monotony" of his West Park home by jaunting off to other parts of the earth. His journeys have included England, where he was sent by the government, in company with other Treasury clerks, in charge of \$3,000,000 in bonds; the Yellowstone, which he visited with President Roosevelt, and Alaska, which he visited in 1899 as a member of the Harriman expedition. On the Alaskan expedition he was much in company with Muir.

A naturalist who has known him a long time and lived near him describes Burroughs as a "true, consistent and natural democrat." Although he had seen Burroughs when Emerson, Holmes, Julia Ward Howe and a score of other notable men and women were in the room, he declared that he had seen only one man to whom the demeanor of Burroughs was any different from that with which he greeted his farmer neighbors. That man was John Muir.

If Burroughs's life has been spent among peaceful scenes and has contained little excitement, barring that involved in his lively skirmish with the "nature fakers," Muir's life has been filled with things of dramatic interest. The latter chose the wilderness for his home, and in his wanderings as an observant tramp has found many things which have placed his name well up on the roster of naturalists. A dictionary of biography defined Muir as "geologist, botanist and lover of nature." When Agassiz and Joseph Le Conte met in San Francisco, and were talking about the glaciers of the Pacific Coast, Professor Le Conte remarked that John Muir knew "more about the subject than any other man."

"Yes," said Agassiz, bringing his hand down on the table, "he knows all about it."

Among his conquests are sixty-five glaciers which he discovered among the mountain heights of the West where none was known to exist. He found Glacier Bay, Alaska, and the great river of ice known to-day as Muir Glacier. There was no softness in Muir's early life. His father was a Scotchman who thought that all one's spare moments should be devoted to the study of the Bible, and that a birch switch was a good schoolmaster. Law and order reigned in his house, and all lights had to be out by a certain hour. In the Wisconsin wilderness to which David Muir took his family when John was eleven years old the work of clearing the land developed muscle and gave the ambitious son an opportunity to work out his mathemati-

cal problems on the chips which his axe threw off. Having the mind of an inventor, he finally obtained from his father permission to rise earlier in the morning than other members of the family to have time for himself. Perhaps David Muir thought this arrangement would leave his son little time for mischief, for who rises earlier than need be? By force of will John immediately cut down his sleeping hours from ten to five, and changed his rising hour from 6 to 1 o'clock in the morning. His father's diplomacy, if there was diplomacy about it, had failed.

John gloried in these quiet hours by himself, and his knife immediately became busy. One piece of machinery after another grew beneath the edge of its blade. Although he had never seen a clock, he produced several, one of which was in the form of a scythe hung on a burr oak sapling, representing the scythe of Father Time. It indicated the days of the week and month, and had attachments for lighting fires and lamps and setting a sleeper, willing or unwilling, upon his feet at any hour arranged for. He made a thermometer out of the end rod of his father's wagon, so fastening it to the side of the house that the expansion and contraction of the rod were registered on a dial. He invented an automatic sawmill, a device for feeding the horses, a bathing machine, a barometer, a pyrometer, an hydrometer, safety locks, etc. When he was not working on some labor saving device he was reading, and the hours spent in the cellar in the winter before the fires were built were precious to him.

John was fearful that when his father discovered his wooden mechanisms they would be ordered into the kitchen fire. One day his sister came to him and said:

"Feyther kens what yer doin', John."

But David Muir, who frowned upon the too literal interpretation of his permission to rise early, had not the heart to destroy the inventions of his son, but satisfied his conscience by talking of the wicked waste of time which would be better occupied by the study of God's Word. It is reported that after the clock was set up in the parlor he stepped in quietly, when he thought he was alone, his watch in hand, to ascertain if it kept good time.

It was a turning point in John's career when he finally overcame his modesty sufficiently to adopt the repeatedly offered advice of the neighbors to take his inventions to the state fair at Madison.

"No one will look at my poor things," he had said.

"Yes, they will," said the neighbors, "and you'll get into a machine shop. You've got too much genius to stay here all your life."

With the bundle of inventions in wood over his shoulder and \$6 in his pocket he set forth. This was in 1860. His demeanor and his burden interested the conductor and the engineer of the train on which he travelled to such an extent that they acceded to his request to be permitted

to ride close to the engine. He sat on the tender nearly all the way. With the exception of the time he rode on an avalanche, Muir says this was the most exciting ride he ever had. The exhibit had not only space, but a place on the "line." Shyly he hung about in the crowd that gathered before his inventions, too modest to acknowledge himself to the interested visitors as the author of the things which were so much praised. The newspapers praised them, but Muir did not read the accounts. When asked why he did not do so he replied that his father had always warned him against the deadly poison of praise.

The inventions did lead to employment, but when he learned from a student he chanced to meet that he could study at the State University at a cost of less than \$1 a week he took four years' work there, supporting himself largely by toil in the harvest field, by school teaching and by odd jobs. His room, while he was studying in an irregular way the subjects he was most interested in, was a place to make one marvel. He built a desk which contained a clockwork which would bring each book before him at the time he should begin its study. It worked whether he was there or not to take advantage of its monitor-like hints. It is recorded of him that he once invented an appliance for lighting a fire at a given time. This he made use of when teaching school. It relieved him of the necessity of reaching the schoolhouse early.

"I felt neither pain nor faintness," he wrote, "the thought was so tremendous that my right eye was gone, that I should never look at a flower again."

In 1867, with a plant press on his back, a small bag and three books, a New Testament, Burns's poems and Milton's "Paradise Lost," he started from Louisville for a tramp of one thousand miles across the Southern States to Florida. During most of the journey he slept outdoors. Then he crossed to Cuba, with the intention of going to the headwaters of the Amazon, but had to give the latter plan up, owing to the fever which he caught in the swamps of Florida. He then went to California by way of Panama, and found his field, the "great side of the continent."

Many years of his life have been spent in tramps by himself through the mountains of the West, studying nature in all her phases. For ten years he went up and down their sides seeing no white men and only one tribe of Indians. In these years he made careful notes and sketches of his discoveries. He carried little with him, his outfit consisting of a notebook, a thermometer, a barometer, a clinometer, a watch, a bag of bread, a little sack of tea and a cup in which to brew it. He used to regret that he could not eat a meal in the spring that would last him until fall. The days when he was obliged to come down to the "bread line," as he called it, to replenish his supply of food, he counted as almost so much lost time.

While he does not think of them as ad-

ventures, yet he has had experiences which seem a thrill through the reader as he follows lines which describe them. Once he so far got the dangers of an earthquake as to go forth from his hut to a point where he could watch the falling rocks and study the phenomena, exclaiming as he did so with scientific enthusiasm: "A noble earthquake!"

On another occasion, in his desire to complete some observations for the government, he was caught in a violent wind and snow storm on the peak of Mount Shasta. He lay for seventeen hours in his shirt sleeves, the mercury in the thermometer below zero, keeping warmth in his body by stretching himself over the jets of sulphur steam which rose from the fissures of the mountain. Blistered by the heat on one side, he suffered from frostbite on the other, but came through with nothing worse.

His interest in glaciers has taken him to Switzerland and Norway, and he was a member of one of the Jeannette relief expeditions to the Arctic.

He has been honored by his own college by Harvard University. When asked by his son, Gray and others why he did not come and accept a professorship, he said: "There are already plenty of professors in the college. I want a few observers in the wilderness. I want more than a professor, whether noticed or not." He was married in 1879, and has two daughters. He now lives on a fruit ranch in the Contra Costa Hills, California. In his comfortable and roomy home it is said that he is spending much time writing out his many notes.

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