

BALLOONS AND BALLOONING.

WE condense from the July number of the London *Quarterly Review* the following information on this interesting subject :

In 1782, the brothers Montgolfier, in France, made small balloons of thin silk, which, filled with heated air, rose rapidly. The following year they constructed one on the same principle, thirty-five feet in diameter, which rose high in the air and travelled a mile and a half. The same year Prof. Charles, of Paris, filled a small balloon with hydrogen gas, which travelled many miles. On its descent the peasants thought it a demon from another world, which notion the fetid odour of the gas confirmed. It was exorcised, fired at, and destroyed with clubs. Louis VII. forbade the risking of human life with these dangerous playthings, but yielded to the importunity of volunteers, who ascended safely several thousand feet, (1783).

Gay-Lussac, in one of his ascents, when very high, threw out a common deal chair, which fell in a field where a peasant girl was at work. The balloon was invisible, and it was thought that the chair must have fallen from heaven, but the uncomfortable provision for the celestials was a matter of surprise. The most fantastic notions were conceived as to the possibilities of ballooning—one being a project of invading England with an army descending from the skies.

In 1784, successful ascents were made from Edinburgh and from London. A cabinet council was broken up that the King and ministers might witness one of them. In 1785, a French aeronaut crossed the channel from Dover to Calais. Air voyaging became very popular. Green, an English aeronaut, made 1400 ascents, and took up 700 persons, including 120 ladies. He once ascended sitting on a pony suspended from the balloon. He travelled, on another

occasion, from London to Weilburg, in Germany, 500 miles, in eighteen hours. M. Nadar, in his balloon "*Géant*," seventy-four feet in diameter, took up a two-story house, weighing three tons. In 1808, a balloon burst at a great height, but spreading like a parachute, let the occupants safely to the ground. This was often afterwards safely done by design. Parachutes were employed with success for descending, even from immense altitudes. One enthusiast dropping himself from a height of 5,000 feet, with a new-fangled parachute which failed to work, was dashed to pieces.

The most important recent improvement in the balloon is the guide rope, generally from 500 to 1,000 feet long. When resting on the ground it takes considerable weight off the balloon, and prevents a rapid fall. Its trailing checks the horizontal motion more gently than the anchor, and it gives persons on the ground something to lay hold of in assisting the descent of the aeronaut. The going up is easy enough—*facilis ascensus*—but the coming down, or rather the safe landing, that is the difficulty.

A captive balloon at London, ninety-three feet in diameter, used to take up thirty-two persons at once, 2,000 feet. A 200 horse-power engine was employed to bring it down again. The balloon is yet, for the most part, a huge and dangerous toy, notwithstanding all the efforts made to control its direction. Arago, Coxwell and Glaisher made it render important service to science. The latter rose to the height of 37,000 feet, or seven miles, in order to examine the constitution of the upper air. He lost consciousness and nearly lost his life at this great altitude. In April of the present year, two French scientists died from the rarefaction of the air at those great heights.

The application of balloons to the