

45. "Water always seeks the same level." Illustrate this and mention an apparent exception to this law.

46. What effect on the boiling point of water is produced by adding salt thereto, and what effect on the freezing point by addition of alcohol?

47. Account for the presence of perpetual snow at high altitudes under the equator.

48. "The denser a liquid the slower the evaporation." Why?

49. How are "Laws of Nature" discovered?

50. (a) A glass of cold water being brought into a hot room has its surface covered with moisture.

(b) On a certain clear, starry, cold and dry night in winter, thermometer at 28°, the windows of a heated ball-room being suddenly opened, clouds formed near them.

(c) On some occasions clouds will be noticed hanging round the sides of mountains, while the top and the bottom are clear.

(d) The lower surfaces of clouds are invariably flat.

Explain fully the above phenomena.

#### NOTES.

Few people can have any notion of the tremendous effects produced by what is known as the "bore" of the River Amazon. Up to the present time, all that we have known of this extraordinary phenomenon is derived from the account given by the French astronomer, Condamine, who visited Brazil in 1735. In 1881, however, Mr. John C. Branner, of the Geological Survey of Pennsylvania, happened to be travelling on the Amazon, and availed himself of the opportunity to make some personal observations, as well as to obtain information from persons dwelling near the mouth of the great river. He has embodied the results in a paper of unusual interest in a recent number of *Science*. The natives, it appears, have a wholesome dread of the *pororoca*, as the "bore" is designated in the vernacular, and every sug-

gestion, on the part of Mr. Branner, of a desire to witness the *pororoca* in actual operation, was received with the liveliest demonstrations of horror. "God forbid," said the boatmen of the Amazon, "that we should ever see the *pororoca*." Mr. Branner, however, found a man who had been face to face with it, and certainly his experience was sufficiently exciting to satisfy the most adventurous spirit. The Araguay is a river which empties by a wide estuary into the Atlantic, immediately north of the mouth of the Amazon; the mouths of the two rivers may, in fact, be said to form but a single estuary. This man, who was a Brazilian soldier, had, with several companions, gone down the Araguay in an open boat, and as the tide went out they found themselves just inside a sand-bar which lies across the mouth of the river. They then proposed to avail themselves of the next incoming tide to carry them over the shallows and up the Amazon. We give Mr. Branner's words as to what followed. "Shortly after the tide had stopped running out, they saw something coming toward them from the ocean in a long, white line, which grew bigger and whiter as it approached. There was a sound like the rumbling of distant thunder, which grew louder and louder as the white line came nearer, until it seemed as if the whole ocean had risen up, and was coming charging and thundering down upon them, boiling over the edge of this pile of water like an endless cataract, from four to seven metres high, that spread out across the whole eastern horizon. This was the *pororoca*! When they saw it coming the crew became utterly demoralized, and fell to crying and praying in the bottom of the boat, expecting that it would certainly be dashed to pieces, and they themselves drowned. The pilot, however, had the presence of mind to heave anchor before the wall of waters struck them; and, when it did strike, they were first pitched violently forward, and then lifted, and left rolling and tossing like a cork on the sea it left behind, the boat nearly filled with water. But their trouble was not yet ended; for before they had emptied the boat two other