

Examrace

Scientific Phenomena: Iron Nail Floats on Mercury and One Leans Forward While Climbing a Hill

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Scientific Phenomena

An Iron Nail Floats on Mercury but Sinks in Water. Give Reasons, Why?

An iron nail floats on mercury, because the weight of mercury displaced by it and hence the upward thrust is more than its weight, the density of mercury and iron being respectively 13.6 gm per c. c. and 7.6 gm. per c. c. The density of water being 1 gm. / c. c. , the upward thrust is much less and hence the iron nail sinks.

A Flash of Lightning is Seen Before the Sound of Thunder Heard. Why?

It is because of the fact that light travels faster than sound.

One Leans Forward While Climbing a Hill

While leaning forward, the centre of gravity of the body also shifts forward and this helps climbing.

A Dead Body Floats in Water After Some Time

A body weighs less when weighed in water because of the apparent loss in weight being equal to the weight of the water displaced. There is an upward thrust exerted upon a body immersed in fluid called buoyancy, equal to the weight of the fluid displaced and thus the dead body floats in water after some time.

Why Are We Advised to Empty the Ink from Our Fountain Pen Before Going up in an Aeroplane?

As we go up in an aeroplane the air becomes rarer and the pressure of the atmosphere therefore falls, so that the volume of the air inside the fountain pen will also increase and the ink will be pushed out thus spoiling the clothes and hence the advice.

Wet Clothes Dry Slowly on a Rainy Day. Why?

On a rainy day, the air in the atmosphere contains more water vapour than on a dry day. As a result, evaporation is slower.

Why It Does Not Hurt when We Cut Our Nails?

Nails are the parts of the body which have no connection with either the blood vessels or the cartilage and hence the nerve system is unaffected. Consequently, cutting them will not injure us.

It Takes More Time to Cook Meat and Vegetables at Hill Stations. Give Reasons, Why?

Meat and vegetables can be cooked properly and quickly at a temperature of 100°C . Since at hill stations, the pressure is decreased and hence the boiling point is lowered thus causing a serious drawback in cooking which will therefore take a much longer time.

A Blotting Paper Absorbs Ink. Why?

A blotting paper contains minute pores. These pores will be filled with ink. Thus, the ink will be retained by the paper.

How a Ball Which Falls down, Bounces Up?

A ball on falling to the ground is slightly deformed. On account of the elastic force coming into existence due to the deformation the ball tries to recover its original size. In doing so it presses the ground and in accordance with Newton's third law of motion it receives a reaction upwards and hence it bounces up.

Why a Needle Sinks in Water, Whereas an Iron Ship Floats on It?

The specific gravity of a needle which is a solid piece of steel is decidedly greater than water and it, therefore, sinks in water; whereas an iron ship is so designed that the total weight of water displaced by it is greater than the weight of the ship itself. The ship, therefore, floats by the upward thrust of water.

Why a Convex Mirror is Used by the Motorist to See the Road Behind Him?

Due to the formation of miniature size images, a convex mirror has a large field of view. Consequently, the motorist sees a large number of objects behind the car simultaneously. It also avoids reflection of the sun rays which are diverged and scattered.

Why is It Dangerous to Allow Extra Passengers on the Upper Deck of a Double-Decker Bus?

There are chances of the double-decker bus tilting if the upper deck gets over-loaded with passengers. In fact, the upper deck and lower deck act as a counterbalance to each other and secondly, the upper deck has no support on top of it. With extra load on the upper deck, the centre of gravity of the bus is raised and the resulting instability can make the vehicle tilt.

A Hydrogen Balloon Rises. Why?

Hydrogen is lighter than air. The weight of hydrogen in the balloon is less than the weight of the air displaced by it.

Why an Iron Nail Gains Weight on Rusting?

Rusting is nothing but iron oxide. In fact, iron in the presence of moisture absorbs oxygen to form iron oxide. Hence on absorption, iron gains a weight equal to the amount of oxygen consumed.

Give Scientific Reasons as to Why a Clinical Thermometer Should Not be Dipped in Boiling Water?

A clinical thermometer is an ordinary Fahrenheit thermometer, calibrated from 95°F to 110°F, whereas boiling water usually acquires a temperature of more than 100°C or 212°F in water. It is, therefore, dangerous to dip a clinical thermometer in boiling water because it is difficult for it to accommodate such high temperature, as a result of which it might burst.

Why is It More Difficult to Breathe on Mountains Than on Plains?

On the mountains the density of air is much less than in the plains and so the oxygen content for volume is reduced considerably. During the act of breathing a definite supply of oxygen is needed per breath which being deficient, breathing becomes difficult.

Why Cloudy Nights Are Warmer Than Clear Nights?

Cloudy nights are warmer than clear nights because clouds prevent radiation of heat from the ground and air.

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