

20.—Bodies at rest, with respect to the surface of the earth, are really in motion, and their motion is not constant nor in a straight line. Are the forces which act on them in equilibrium?

21.—Upon which will the effect of a given force be greater, a body initially at rest or a body in motion?

22.—Express the atmospheric pressure at sea-level in absolute units.

23.—Why are "top-heavy" bodies unstable?

24.—What mechanical advantage may be gained in a copying press in which the hands move through 1 inch, while the end of the screw descends $1\frac{1}{2}$ inch?

25.—How many cubic feet of water will a 10-horse-power engine raise in an hour from a mine 300 feet deep, a cubic foot of water weighing $62\frac{1}{2}$ lbs?

26.—When a force acts on a body at right angles to the direction of its motion, so as to cause it to revolve in a circle, does it do work on the body? Why?

27.—Does the sun do work on the planets, which revolve about it, by virtue of the mutual attraction between it and them? Explain.

28.—Is the energy of the planets increased by this attraction? Do the planets move in circular orbits?

29.—When a force acts upon a body and causes it to move a given distance, in what language would you describe the effect of the force?

30.—How does energy differ from power?

31.—If an engine should raise 55 lbs. 10 ft. in a second, and at the end of a second its energy should be exhausted, could it properly be called a one-horse-power engine?

32.—A cannon ball is shot into empty space; how great a force will be required to deflect it from its path?

33.—Can a child sitting on a sled start or stop the sled by pulling on a cord attached to the sled? Why?

34.—Why does not every body move when acted on by force?

35.—Why does a body thrown horizontally into the air fall to the earth?

36.—Is the expression "one-horse-power per second" admissible, as, for instance, when we wish to convey the idea that a horse-power *lasts*, or is exerted for one second?

37.—How many dynes of force are required to set a mass in motion?

38.—How many dynes are required to make a gram-mass move with a velocity of 9.81^m per second, the force acting constantly for one second? What, if it act for two seconds?

39.—What is the force acting on a falling gram-mass in Ontario?

40.—Is a spring balance a force measurer or an energy measurer? Why will it not answer both purposes?

41.—How can a force of 5 lbs. raise a ton 10 ft. with a perfect machine?