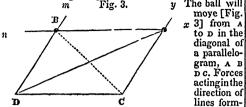
body will in this case move to p; and if the lines be drawn from that point to B and c, the ball will move in the diagonal of a rectangle. Let us now suppose the two forces to be unequal, and not to act on the ball in the direction of a right angle, but in that of an acute angle. y The ball will



ing an obtuse angle will also produce motion in the diagonal of a parallelogram. For instance, if the body set out from π instead of Λ , and be impelled by the forces mand n, it will move in the dotted diagonal B c.

Circular motion is produced by the action of two forces on a body, by one of which it is projected forward in a right line, whilst by the other it is continually directed towards a fixed point. For instance, if I whirl a ball fastened to my hand with a string, it is acted on by two forces, and has a circular motion; one of the forces is that which I give it, which represents the force of projection, the other force is the string which confines it to my hand. If during its motion the string were suddenly to break, the ball would fly off in a straight line, and this, because it would then be acted on by only one force; for, as we have said, motion produced by one force is always in a direct line. The point or line, to which the motion of a body is confined, is called the centre or axis of motion. This centre or axis remains at rest, whilst all the other parts of the body move round it: when a top is spun, the axis is stationary, whilst every other part is in motion round 't. There is one circumstance in circular motion, which must be carefully attended to; which is, that the further any part of a body is from the axis of motion, the greater is the velocity. The force, which confines a body to a centre, round which it moves, is called the centripetel force; and the force which impels a body to fly from the centre, is called through the centre is supplied with perforated the centrifugal force. In circular motion, these two wings, which, by turning the handle, give motion forces balance each other.

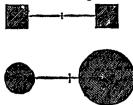
If a ball be thrown in a horizontal direction, it is acted upon by three forces, viz., the force of projection; the resistance of the air through which it passes; and the force of gravity which finally brings it to the ground. Bodies thus projected describe a curve line in their descent. It the forces of projection and of gravity both produced uniform motion, the ball would move in the diagonal of a parallelogram; but the motion produced by the force of projection alone is uniform, that produced by gravity is accelerated; and it is this acceleration which makes it fall in a curve instead of a straight line. The curve line which a ball describes, if the resistance of the air be not taken into-consideration, is called in geometry a parabola.

The middle point of a body is called its centre of magnitude, that is, the centre of its mass or bulk.

The cei tre of gravity is the point about which all the parts of a body exactly balance each other, in every position of the body; if, therefore, this point is support-ed, the body will not fall. When a boat is in danger of being upset, it is dangerous for the passengers to rise suddenly : this is owing to their raising the centre of gravity. When a man stands upright, the centre of gravity of his body is supported by the feet. If he lean on one side, he will no longer stand firm. A rope-dancer performs all his feats of agility, by dexterously supporting his centre of gravity ; whenever he finds himself in danger of losing his balance, he shifts the heavy pole which holds in his cream than that of another, the difference will be

hands, in order to throw the weight towards the side that is deficient; and thus by changing the situation of the centre of gravity, restores his equilibrium. A person carries a single pail of water with great difficulty, owing to the centre of gravity being thrown on one side; but two pails, one hanging on each arm, are carried with much greater tacility, because they balance each other.

When two bodies are fastened together, they are to considered as forming but one body. If the two bodies be



of equal weight, the centre of gravity will be in the middle of the line which unites them; but if one be heavier than the other, the centre of gravity will be pro-portionably nearer the heavy body than to the light one.



This is a churn much used in the States, and from its simple, compact, portable shape, we are inclined to think it is both cheaper and better than many of those new fangled contrivances with high sounding names, such as the "Thermometer Churn," "Atmospheric Churn," &c. &c. The The shaft passing cut needs no explanation. wings, which, by turning the handle, give motion to the cream.



This is a very useful invention, though but little known. It costs a mere trifle compared with its utility, especially in large dairies. The object of the lactometer is to ascertain the proportion which the cream bears to the milk of any particular cow, or the produce of a whole dairy. Lactometers of different kinds have been invented, the best is called the five or six glass lactometer.

The principle of the instrument is, that if new milk is poured into glass tubes, and allowed to remain, the division between the cream which floats upon the surface of the milk will be so evident, that its depth will be easily measured; and should the milk from any cow produce more