

APPLIED STATICS

CHAPTER I.

MECHANICS.

In its general interpretation, the subject of Mechanics treats of the Laws of Motion, of the relations that exist between matter and motion, and of the laws of equilibrium of what are termed **forces**.

Force, although popularly regarded as a definite, concrete idea, is the same sort of thing as velocity or acceleration, and is measured by the rate at which a mass changes its velocity.

In Engineering Mechanics, however, it may be considered as a definite quantity, capable of being measured, and represented by a number, the unit of which is the weight of one pound *avoirdupois*.

We speak, therefore, in popular phraseology of a force of ten pounds, or of a force **acting on a body**, or of forces **acting in certain directions**, just as if a force were a concrete thing, these being merely convenient, although scientifically misleading, modes of expression, which have been so ingrained into the whole subject of Mechanics that it would require a vast amount of circumlocution to avoid their use.

The following subdivision of Mechanics is generally used:—

1. Kinematics, which treats only of the geometry of motion.
2. Dynamics, which treats of the relations between matter and motion.
3. Statics, which deals with the laws of equilibrium of forces.

Although the subject of Statics alone will be considered here, yet the student should bear in mind that the second section, that of Dynamics, treats of Newton's Laws of Motion, which are given here because of their importance, especially the Third Law, the applications of which are continually occurring in statical problems.