is placed above the beam, and is similarly guided in its descent by a parallel movement placed in the stand. The two beams are angularly notched in the manner shewn in the adjoining figure, which represents a side plan of the balance. Five cylindrical bars of adjusted weight rest in the arms of a rack, which supports them hori­zontally across each pair of notches, and at increasing ele­vations from the stand. These bars successively take their appropriate place on the double beam, and are each lifted by, and become as it were a part of it, so soon as the load placed on the scale exceeds the stated amount. Thus, when a letter exceeds half an ounce, the beam rises to, but does not lift, the first bar ; when it exceeds an ounce, it lifts the first, and rises to, but does not raise, the second ; and so on to the fifth. When it exceeds this, an eke-weight which accompanies the machine is placed in the square-shaped notches at the extremity of the beam, and five ounces or their corresponding postage are added to the subsequent indications of the balance, which anew traces the same progression. The weights or postages are marked on an upright which is fixed at one end of the stand, and are pointed out by a wire extended between the two beams of the balance.

In this balance, by Mr Freeman, Sutton-Common, there are various fixed angular fulcra and a constant weight. The beam, which is loaded at one end, rests on the angular fulcrum nearest the weight. The fulcrum is supported at each end by a frame which rises from the top of a pillar. The upper surfaces of the two supporting frames are ob­tusely rounded, and notched at intervals suited to receive each fulcrum in its turn. When a letter exceeds a half ounce, the beam turns on, but does not quit, the first ful­crum. When it exceeds an ounce, it turns on, but does not quit, the second, and so on ; the resting extremities of each successive fulcrum taking their appropriate place in a new pair of notches, and a pointer below shewing the result. This balance in general conception is a counterpart, or very nearly so, to Mr Willis’s, but is one which perhaps scarcely admits of being practically formed for very effective ope­ration.

The theory of balances depending on the properties of the lever is given at large under the articles Mechanics, pp. 358, 370, and Balance ; that of the spring is illustrated under Mechanics, p. 402 ; and the theory of those depend­ing on the properties of fluids is fully explained under Hydrodynamics, pp. 13, 14, and 19-25. (d. ι.)

WEIGHT, in *Physics,* a quality in natural bodies, where­by they tend downwards towards the centre of the earth. Or, weight may be defined, in a less limited manner, to be a power inherent in all bodies, whereby they tend to some common point, called the *centre of gravity,* or, to speak more accurately, to one another ; and that with a greater or less velocity, as they are more or less dense, or as the medium they pass through is more or less rare.

WEIGHTON, or Market-Weighton, a market-town of the east riding of the county of York, in the wapentake of Harthill, 192 miles from London and eight from Bever­ley. It chiefly consists of one long street, with a few of less appearance leading from it. It has a good corn mar­ket on Wednesday, and a canal communication with the Humber through the Ouse. The population amounted in 1821 to 1724, and in 1831 to 1821.

WEIGHTS AND MEASURES.

By *weight,* or, as some call it, the *measure of weight,* is meant the apparent force or tendency which any body or commo­dity has to descend ; and which, owing to the centrifugal force of the earth’s rotation, and the buoyancy of the air or other medium in which the operation of weighing is performed, is somewhat less than its real force, the latter being always proportional to the intensity of gravity multi­plied by the mass weighed. Accurate weighing is of great importance, since in general it affords one of the best prac­tical means of ascertaining the quantity of matter in bodies, and thence the values of the greater part of the necessaries of life. But although, in most cases, the buoyancy of the medium may have some effect, however small, it is evi­dent that any difference in the intensities of gravity, or of centrifugal force in different latitudes, or even on different planets, can, *cœteris paribus,* make no difference on the weights of bodies as obtained by counterpoising ; but the weight, when indicated by the force or resistance of a spring, will, *cœteris paribus,* be proportional to the intensity of gravity. The term *measure* in the present article more properly applies to the three following kinds of magnitudes, sometimes called geometrical : 1st, linear extent, such as the length or other linear dimensions of bodies ; 2d, area, surface, or superficial extent ; 3d, the bulk of bodies, or the solid space occupied by them, and which, when spoken of the vessels which measure or contain them, is called their contents or capacity. This article then is meant to treat of the usual standards of weights and measures, by comparison with which the amount of any article or com­modity is ascertained, whether in the ordinary affairs of life, the more extensive transactions of commerce, or where greater nicety is required in the arts and sciences. An­ciently standard weights or counterpoises were generally of Stone, though sometimes of metal. At present mostly all the smaller standard weights are made of some metal pos­sessing such a composition and hardness as may be less liable to be worn or corroded, counterfeited or altered ; and one of the best is a mixture consisting principally of copper and tin. The larger weights are generally of iron, though sometimes of stone. The more accurate standards of length are likewise of metal, but the larger sort is very generally of wood : chains, cords, and tapes are also used. The nicer measures of capacity are formed of metal or glass, but the larger and more common sort is mostly all of wood. After what immediately follows on the equaliza­tion of the standards in the British empire, by the late Dr Thomas Young, and his very compendious general table, we have added a more particular though brief account of the principal weights and measures at present used in dif­ferent parts of the world.

The preparation of the bill for ascertaining and esta­blishing Uniformity of Weights and Measures, which pass­ed the Imperial House of Commons in the session of 1823 (though without having been then carried through the House of Lords), had given occasion for a laborious and somewhat painful examination of the historical progress of the measures which have been taken respecting it, and es­pecially of the laws of England respecting uniformity of practice in different parts of the country ; for such a uni­formity, though generally esteemed by all governments a thing to be encouraged and enforced, had often seemed to be no more subject to the control of legislative enactment than the introduction of a uniformity of language and a grammatical accuracy of speech would be found in every part of an extensive empire.

Augustus is said to have endeavoured in vain to force **a** new Latin word into the language of ancient Rome : the