

because the earth attracts the matter. Now put another lump on pan *B*. If the pan *B* still remains up we say the mass on *A* is heavier than that on *B*; if the pans come to the same level and the pointer stands at zero the two masses are equal.

It is the attraction of the earth upon the masses placed upon the pans which produces the motion of the balance. The attraction of the earth upon a mass is called its *weight*, and so in the balance it is the weights of the bodies which are compared. But if the weights of two bodies are equal their masses are equal, and so the balance allows us to compare masses.

13. Sets of Weights. We have agreed to take a lump of platinum-iridium as our standard of mass (§ 8).

In order to duplicate it we simply place it on one pan of the balance, and by careful filing we make another piece of matter which, when placed on the other pan, will just balance it.

Again, with patience and care two masses can be constructed which will be equal to each other, and which, taken together, will be equal to the original kilogram. Each will be 500 grams.

Continuing, we can produce masses of other denominations, and we may end by having a set consisting of

1,000,			
500,	200,	200,	100
50,	20,	20,	10
5,	2,	2,	1
.5,	.2,	.2,	.1 grams

and even smaller weights.

If now a mass is placed on pan *A* of the balance, by proper combination of these weights we can balance it and thus at once determine its mass.