

no common formation of the skull will be found to exist. The generalizations and specializations of phrenologists are weaker and less coherent than a house of cards, or a rope of sand. Nevertheless, they afford the means by which quack scientists gull and amuse the public; while, at the same time, they afford the channels by which cunning and unscrupulous persons, filch from the pockets of the innocent, a livelihood.

Because I have condemned the localization of function in the brain adopted by phrenologists, it does not follow that the doctrine of localization of function is wrong. The surface of the brain has many centres upon it, whose functions have been carefully studied. In addition to these centres, there are tracts of nerve matter connecting them with each other, so that an associated or concerted acting of the brain centres becomes possible—indeed is of constant occurrence. One hears the word "Rose" spoken, and immediately the image of a rose is recalled; there is a recollection of its odor, of its color, of its size and shape, and a stimulus goes to the proper centres, so that the word "Rose" may be spoken or written, if it is so willed. It is these tracts or paths of nerve matter that enable the brain to build up our complex ideas. It will be seen, from what has been said, that the word "Rose" carries with it many elements, such as color and shape, learned by experience through the eyes; taste, by the tongue; odor, by the nose; weight, by the hands. But all these qualities of taste, color, odor, weight, etc., go to make up our complex idea of what a rose is. These varied primary, or elemental ideas, have reached the brain by separate channels, have formed memory pictures on the centres, which, in turn, have become associated by means of the inter-central nerve paths into complex ideas.

In addition to the impressions reaching the brain through the nerves of hearing, sight, taste and olfaction,

there is a constant stream of sensations pouring into the brain along the nerves of feeling. It has now been pretty well settled that some of the nerve fibres conduct sensations of heat, others of cold, some of pain, and still others that sensation known as muscular effort, or the muscular sense. All these are carried to different parts of the brain and there registered. From this registry, they can be called up as a memory of past experiences. A person lifts a certain object a number of times, and the muscular sense becomes educated to the effort required for the task. In course of time the person can guess closely as to the weight of a given article, by the muscular exertion needed to raise the article. By repeating these efforts, the person acquires the power of judging the weight of bodies, and the muscular effort that will be required to lift them. Some persons have acquired the power to determine a weight of twenty from one of nineteen; or, even, one of forty from one of thirty-nine equal parts.

Any one can see at a glance how vastly different this view of things is from the view of weight, size and calculation, as taught by the phrenologists. The former is founded on sound, scientific facts, collected and collated by the most careful observations and experiments; while the latter is a guess, and a bad one at that. For example, phrenologists place color and size just above the outer angle of the eye; whereas every anatomist and physiologist knows that the visual centre for the perception of color and size is at the back of the brain on the occipital region. As another instance of the absurdity of the old phrenology, I may mention that the faculties of conscientiousness and hope were located on that part of the brain's surface which is known to control the movements of the leg. What a difference! Once more, let me cite an example of the crudeness of the so-called phrenology. By this pseudo-science,