low-water, afford protection from at least the less violent attacks of the breakers. Prof. Herdman, who has called attention to this subject, enumerates as the more important animals in protecting shore rocks: Foraminifera (such as *Planorbulina vulgaris*), calcareous and fibrous sponges, hydroid zoophytes, sea anemones, corals, annelids (serpula), polyzoa, cirripeds, mollusks (such as gregarious forms like the mussel and oyster, and gasteropods like the limpet), and simple and compound ascidians.[337]

In the prairie regions of Wyoming and other tracts of North America, some interesting minor effects are referable to the herds of roving animals which migrate over these territories. The trails made by the bison, the elk, and the bighorn or mountain-sheep, are firmly trodden tracks on which vegetation will not grow for many years. All over the region traversed by the bison, numerous circular patches of grass are to be seen which have been formed on the hollows where this animal has wallowed. Originally they are shallow depressions, formed in great numbers where a herd of bisons has rested for a time. On the advent of the rains they become pools of water; thereafter grasses spring up luxuriantly, and so bind the soil together that these grassy patches or "bison-wallows," may actually become slightly raised above the general level, if the surrounding ground becomes parched and degraded by winds.[338]

§ 3. Reproductive Action

Plants.—Both plants and animals contribute materials toward new geological formations, chiefly by the aggrega-

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[337] Proc. Liverpool Geol. Soc. 1884–85.

[338] Comstock, in Captain Jones's "Reconnoissance of N. W. Wyoming," 1875, p. 175.