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grow, even in young children, near old-standing inflamed surfaces or fractured bones by an increased flow of blood to the part. When Hunter inserted the spur of a cock into the comb, which is well supplied with blood-vessels, it grew in one case spirally to a length of six inches, and in another case forward, like a horn, so that the bird could not touch the ground with its beak. According to the interesting observations of M. Sedillot,¹⁴ when a portion of one of the bones of the leg of an animal is removed, the associated bone enlarges till it attains a bulk equal to that of the two bones, of which it has to perform the functions. This is best exhibited in dogs in which the tibia has been removed; the companion bone, which is naturally almost filiform and not one-fifth the size of the other, soon acquires a size equal to or greater than that of the tibia. Now, it is at first difficult to believe that increased weight acting on a straight bone could, by alternately increasing and diminishing the pressure, cause the blood to flow more freely in the vessels which permeate the periosteum and thus supply more nutriment to the bone. Nevertheless the observations adduced by Mr. Spencer,¹⁵ on the strengthening of the bowed bones of rickety children, along their concave sides, leads to the belief that this is possible.

The rocking of the stem of a tree increases in a marked manner the growth of the woody tissue in the parts which are strained. Prof. Sachs believes, from reasons which he assigns, that this is due to the pressure of the bark being relaxed in such parts, and not as Knight and H. Spencer maintain, to an increased flow of sap caused by the movement of the trunk.¹⁶ But hard woody tissue may be developed without the aid of any movement, as we see with ivy closely attached to an old wall. In all such cases, it is very difficult to distinguish between the effects of long-continued selection and those which follow from the increased action of the part, or directly from some other cause. Mr. H. Spencer¹⁷ acknowledges this difficulty, and gives as an instance the thorns on trees

¹⁵ H. Spencer, 'The Principles of Biology,' vol. ii. p. 243.

¹⁶ Ibid., vol. ii. p. 269. Sachs,
'Text-book of Botany,' 1875, p. 734.
¹⁷ Ibid., vol. ii. p. 273.

¹⁴ 'Comptes Rendus,' Sept. 26th, 1864, p. 539.