

another way; for Trembley observed with the hydra, that the reproduction of the head after amputation was checked as soon as the animal put forth reproductive gemmæ.⁵

Between the production, by fission, of two or more complete individuals, and the repair of even a very slight injury, there is so perfect a gradation, that it is impossible to doubt that the two processes are connected. As at each stage of growth an amputated part is replaced by one in the same state of development, we must also follow Sir J. Paget in admitting, "that the powers of development from the "embryo, are identical with those exercised for the restoration from injuries: in other words, that the powers are the same by which perfection is first achieved, and by which, "when lost, it is recovered."⁶ Finally, we may conclude that the several forms of budding, fission, the repair of injuries, and development, are all essentially the results of one and the same power.

Sexual Generation.—The union of the two sexual elements seems at first sight to make a broad distinction between sexual and asexual generation. But the conjugation of algæ, by which process the contents of two cells unite into a single mass capable of development, apparently gives us the first step towards sexual union: and Pringsheim, in his memoir on the pairing of Zoospores,⁷ shows that conjugation graduates into true sexual reproduction. Moreover, the now well-ascertained cases of Parthenogenesis prove that the distinction between sexual and asexual generation is not nearly so great as was formerly thought; for ova occasionally, and even in some cases frequently, become developed into perfect beings, without the concurrence of the male. With most of the lower animals and even with mammals, the ova show a trace of parthenogenetic power, for without being fertilised they pass through the first stages of segmentation.⁸ Nor can pseudova which do not need fertilisation, be dis-

⁵ Paget, 'Lectures on Pathology,' 1853, p. 158.

⁶ Ibid., pp. 152, 164.

⁷ Translated in 'Annals and Mag. of Nat. Hist.,' April, 1870, p. 272.

⁸ Bischoff, as quoted by von Sie-

bold, "Ueber Parthenogenesis," 'Sitzung der math. phys. Classe.' Munich, Nov. 4th, 1871, p. 240. See also Quatrefages, 'Annales des Sc. Nat. Zoolog.,' 3rd Series, 1850, p. 138.