

homogeneous gelatinous protozoon to vary and assume a reddish colour, a minute separated particle would naturally, as it grew to full size, retain the same colour; and we should have the simplest form of inheritance.<sup>70</sup> Precisely the same view may be extended to the infinitely numerous and diversified units of which the whole body of one of the higher animals is composed; the separated particles being our gemmules. We have already sufficiently discussed by implication, the important principle of inheritance at corresponding ages. Inheritance as limited by sex and by the season of the year (for instance with animals becoming white in winter) is intelligible if we may believe that the elective affinities of the units of the body are slightly different in the two sexes, especially at maturity, and in one or both sexes at different seasons, so that they unite with different gemmules. It should be remembered that, in the discussion on the abnormal transposition of organs, we have seen reason to believe that such elective affinities are readily modified. But I shall soon have to recur to sexual and seasonal inheritance. These several laws are therefore explicable to a large extent through pangenesis, and on no other hypothesis which has as yet been advanced.

But it appears at first sight a fatal objection to our hypothesis that a part or organ may be removed during several successive generations, and if the operation be not followed by disease, the lost part reappears in the offspring. Dogs and horses formerly had their tails docked during many generations without any inherited effect; although, as we have seen, there is some reason to believe that the tailless condition of certain sheep-dogs is due to such inheritance. Circumcision has been practised by the Jews from a remote period, and in most cases the effects of the operation are not visible in the offspring; though some maintain that an inherited effect does occasionally appear. If inheritance depends on the presence of disseminated gemmules derived from all the units of the body,

<sup>70</sup> This is the view taken by Prof. Haeckel, in his 'Generelle Morphologie' (B. ii. s. 171), who says: "Lediglich die partielle Identität der specifisch constituirten Materie im

elterlichen und im kindlichen Organismus, die Theilung dieser Materie bei der Fortpflanzung, ist die Ursache der Erbllichkeit."