

presumably, the lymph-glandular tissue in general takes over the functions of the absent organ. There is the compensatory development of the parathyroids in athyrea, and further, the frequent, but not constant co-existence of atrophic disease of the thyroid and hypertrophy of the pituitary to which Boyce and Beadles (1) have more especially called attention. Similarly and curiously we meet with frequent persistence or enlargement of the thymus when either the thyroid or the pituitary body is the seat of disease. Thus not only is it a matter of peculiar difficulty in that class of diseases, which to-day we have specially to discuss, to determine which of the ductless glands is primarily and which secondarily affected, but the added difficulty besets us, that where the vicarious function is perfect and compensation is complete we may, in the apparently unaffected individual, meet with lesions of an organ—the thyroid for instance—of the same nature as, and every whit as extensive as, the lesions in well marked cases of those special forms of general disease which we are inclined to regard as the direct outcome of disease of that organ.

Time after time this co-existence of apparently identical lesions in cases of relative health and pronounced disease places us in a quandary, time after time we find ourselves groping vainly in a maze of facts which seem to point in all directions of the compass. And when the facts flatly contradict each other one cause of discrepancy must be this vicarious activity. In passing, I may suggest that vicarious activity affords a possible explanation of the not unfrequent cases in which we have the eventual co-existence of more than one of the diseases under consideration. If, for example, the thyroid be the seat of atrophic disease the compensatory hypertrophy and over-action of the pituitary may lead to eventual affection of that organ.

Yet another consideration, seriously weighing upon the morbid anatomist, is that two opposite processes may produce a similar symptomatology, one that he can recognise, another that he cannot. If the glands afford an internal secretion entering the lymph and so eventually circulating through the system, we know that the ultimate use of the secretion must be to effect a chemical transformation of some substance in some other part or parts of the system. There are thus four possible conditions, (1) production of an insufficient amount of internal secretion of any gland in consequence of disease of that gland, and (2) the assimilation or production of an excess of that substance which normally is acted upon and transformed by the internal secretion in question. In both cases there will be a heaping up in the system of the substance; in both cases there may be the same train of symptoms. In the one case the gland or glands may