

primitive vessels: the anterior ventral aorta, the fourth left cephalic aortic arch, the fused portions of the primitive dorsal aortæ, and in some mammals the fused dorsal ends of the caudal arches.

The permanent adult aorta, in so far as it is formed by the primitive dorsal aortæ, ends posteriorly either at the bifurcation into the two common iliac arteries or at a point corresponding to this bifurcation, when by more extensive fusion involving the dorsal parts of the secondary arches there are no common iliacs, and the external and internal iliac arteries appear to arise directly and separately from the aortæ. In each case the continuity of the primitive aorta is interrupted, and the primary caudal arches are replaced by secondary caudal arches, after which the continuations of the aorta are represented by the vessels into which the secondary caudal arches are ultimately transformed.

Our conclusions are further supported by more extended observations on the anatomy of the posterior end of the aorta, and its terminal branches in mammals, and on the abnormalities they present in man, a general account of which is included in the memoir.

‘Further Observations upon the Comparative Chemistry of the Suprarenal Capsules, with Remarks upon the Non-existence of Suprarenal Medulla in Teleostean Fishes.’ By B. MOORE, M.A., Sharpey Scholar, University College, London, and SWALE VINCENT, M.B. (Lond.), British Medical Association Research Scholar. Communicated by Professor E. A. SCHÄFER, F.R.S. Received January 27,—Read February 10, 1898.

(From the Physiological Laboratory, University College, London.)

In a previous communication* we have shown that the paired segmental suprarenals of Elasmobranchs contain a chromogen which gives the same reactions as that of the medullary portion of the suprarenal capsule of higher vertebrates, while the inter-renal body in the same order of fishes contains no such chromogen. These facts were put forward in support of views previously expressed,† that the segmental bodies corresponded physiologically, as well as morphologically and histologically, to the medulla of mammalian suprarenal, while the inter-renal corresponded to the cortex.

Now it has been already pointed out‡ that the known suprarenal

* ‘Roy. Soc. Proc.’ 1897 (read December 11, 1897).

† Swale Vincent, ‘Roy. Soc. Proc.’ vol. 61, p. 64, and *ibid.*, vol. 62, p. 176, and other references (given in these two papers).

‡ Swale Vincent, *loc. cit.*

bodies ("corpuscles of Stannius") of Teleosts do not contain the physiologically active principle which is characteristic of suprarenal medulla. This is shown both by testing the action of an extract made from them upon the blood-pressure of a living mammal, and also by the effects of subcutaneous injection of an extract.* In both cases negative results are obtained.

The natural conclusion to be drawn from these observations would seem to be that the representative of the suprarenal medulla is absent in Teleostean fishes. But that an organ of such manifest and vital importance in mammals† should be totally unrepresented in by far the majority of living fishes, seemed to us so remarkable that we considered it necessary to furnish some further evidence upon this point.

In our previous paper upon the comparative chemistry of the suprarenal capsules,‡ we had to regret that material for investigation of the chemistry in Teleosts had been wanting. Since then, however, we have obtained six large specimens of *Gadus morrhua*. The suprarenal bodies obtained from these weighed in a moist state 0.42 gram. These were boiled with normal saline so as to make a 10 per cent. decoction; this was carefully filtered and the pale yellow filtrate tested for the chromogen with chromic acid, ferric chloride, &c., as described in our previous paper, but *no colour reactions whatever were obtained*. The same experiment was tried with material from *Anguilla anguilla*. As some observers§ have believed the lymphoid "head-kidney" to have something to do with the suprarenal bodies, we have tested this also for the chromogen, with entirely negative results.||

Again, we have examined other portions of the kidney with the greatest minuteness, but have failed to find anything which resembled the suprarenal medulla, either in its histological, physiological, or chemical features.

The chief facts in our possession are, then, as follows:—

1. The known suprarenal bodies of Teleosts resemble anatomically and histologically the inter-renal body of Elasmobranchs and the cortical portion of the suprarenal capsules of higher vertebrates.
2. An extract made from them, when injected into the blood-vessels of a living mammal, does not raise the blood-pressure.
3. The extract does not produce physiological effects when injected subcutaneously.

* Swale Vincent, *loc. cit.*

† See Oliver and Schäfer, 'Journ. of Physiol.,' vol. 18, No. 3, 1895.

‡ 'Roy. Soc. Proc.,' read December 11, 1897.

§ 'Weldon, 'Quart. Journ. Mic. Soc.,' vol. 24, p. 171, and vol. 25, p. 127; also Groszlik, 'Zool. Anz.,' 1885.

|| It has been previously determined that "head-kidney" contains no physiologically active substance.

4. The bodies do not contain the chromogen which is always present in suprarenal medulla.

5. The lymphoid "head-kidney" presents none of the features, anatomical or histological, which would lead one to conclude it had anything to do with the suprarenal gland: moreover, extracts prepared from it have no physiological action, and contain no chromogen.

6. Other portions of the kidney give the same negative results.

7. No other gland or tissue which might be suprarenal medulla is revealed by the most careful dissection.

From these observations we are forced to the conclusion that the medullary portion of the suprarenal capsules is non-existent in Teleostean fishes.*

"The Effects of Extirpation of the Suprarenal Bodies of the Eel (*Anguilla anguilla*)."
By SWALE VINCENT, M.B. (Lond.),
British Medical Association Research Scholar. Com-
municated by Professor E. A. SCHÄFER, F.R.S. Received
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(From the Physiological Laboratory, University College, London.)

Since an extract obtained from the suprarenal bodies of Teleostean fishes produces no rise of blood-pressure when injected into the blood-vessels of a living mammal,† and since the extract produces no physiological effects when injected subcutaneously,‡ and, moreover, contains no chromogen, it§ seems clear that these bodies contain nothing corresponding to the medulla of the suprarenal capsules of the higher vertebrata.¶ These results entirely corroborated the opinion previously entertained from morphological and histological considerations, that the suprarenal gland of Teleostean fishes consists entirely of cortex.||

Now all we know about the functions of the suprarenal capsules is confined to the medulla,¶¶ and although the cortex bears every appear-

* There may of course be some gland or tissue somewhere in the body which pours into the blood-stream a substance having the same physiological action as that which can be extracted from mammalian medulla, but unless this were a definite gland, and possessed a recognisable histological structure, we could not reasonably call it suprarenal medulla.

† Swale Vincent, 'Roy. Soc. Proc.,' vol. 61, p. 68.

‡ Swale Vincent, 'Roy. Soc. Proc.,' vol. 62, p. 177.

§ B. Moore and Swale Vincent, 'Roy. Soc. Proc.,' vol. 62, p. 280.

|| Swale Vincent, 'Anat. Anz.,' vol. 14, No. 5, 1897, p. 152; see also ‡.

¶¶ Oliver and Schäfer, 'Journ. of Physiol.,' vol. 18, No. 3, 1895, p. 269; Swale Vincent, 'Journ. of Physiol.,' vol. 22 (Nos. 1 and 2), Sept. 1, 1897, p. 119.