

ART. II.—*The Study of Developmental Abnormalities as an Aid to that of Human Embryology, based on Observations on a Persistent Left Superior Vena Cava.* By D. P. FITZGERALD, B.A., M.B., R.U.I.; Lecturer on Osteology, University College, Cork.

It is probably the experience of most teachers of anatomy that it is not easy to get students to secure any real grasp of the facts of embryology, and that this is the case even where plentiful provision of sections and of the splendid models now to be found in most Schools of Medicine are at hand. The reason of this is quite obvious. It is due to the fact that students do not see for themselves the various stages which follow one another in the passage from the earlier to the later conditions of development. It occurs to me to suggest that a good deal can be done in the way of removing this difficulty by utilising the various abnormal conditions met with from time to time in the dissecting room and illustrated by specimens in our museums, for many of these abnormalities are nothing more nor less than object lessons of ordinarily transient conditions in human development. Thus, from a study of a specimen of cleft palate valuable lessons can be drawn as to the development of the hard palate and the nature and position of the intermaxillary bone; an example of Meckel's diverticulum will illustrate the position of the ductus omphalomesaraicus, and specimens of any of the various forms of pseudo-hermaphroditism will serve as texts for a discourse on the development of the external genitalia. To illustrate my meaning I desire to give a short account of a case of persistent left superior vena cava which has recently been met with in this dissecting room and the use which has been made with it in explaining the development of this part of the vascular system. The "subject" of examination was a well-formed male, aged fifty years, and with unusually large arteries generally. The presence of a left superior vena cava brought well into evidence that trend towards bilateral symmetry which usually results from developmental errors in the thoracic

cavity. A bilateral condition of viscera and other structures is pleasing, and it seems strange that we must attribute such a state in certain parts of the body to some deviation from the natural course of development.

The following diagrams will, I hope, make clear the process by which the rare occurrence of the anomaly under consideration can be explained, and I give them, not in the order corresponding to the natural course of events and that usually adopted by most writers, but in a sequence that, from experience, I am satisfied will be of some value for teaching purposes. The readiness with which the students in my anatomy classes followed the various phases leading *from* the developmental error to the early condition satisfied me that, by emphasising the facts they could observe for themselves in the direction of a careful examination of the abnormality, its anatomical relations and comparison with the opposite natural state, a gradual transition to the early foetal state was more readily intelligible to them than if I had adopted the more usual (and more scientific) procedure of explaining the existing anomaly by tracing events *from* the embryonic type.

Diagram I. gives a representation of the condition met with in the cadaver above referred to. A vein, about one-third the diameter of the normal right superior vena cava began at the extreme left end of the left innominate vein, and passing almost vertically downwards in the superior mediastinum in front of the aortic arch, close to and slightly to the left of the vagus nerve, crossed in front of the root of the left lung, above which it received the vena azygos minor superior (this latter vein arching over the root of the lung). Then, turning inwards behind the left auricle, it expanded to nearly four times its calibre, and formed the coronary sinus which, normally placed, opened as usual into the right auricle.

My next diagram (II.) shows the changes leading to the normal condition of the parts. The greater part of the vein has become obliterated, the upper portion remaining pervious as the left superior intercostal vein, and the lower part as the coronary sinus and the oblique vein of Marshall. The occluded part is often represented by a fibrous cord ("vestigial fold of

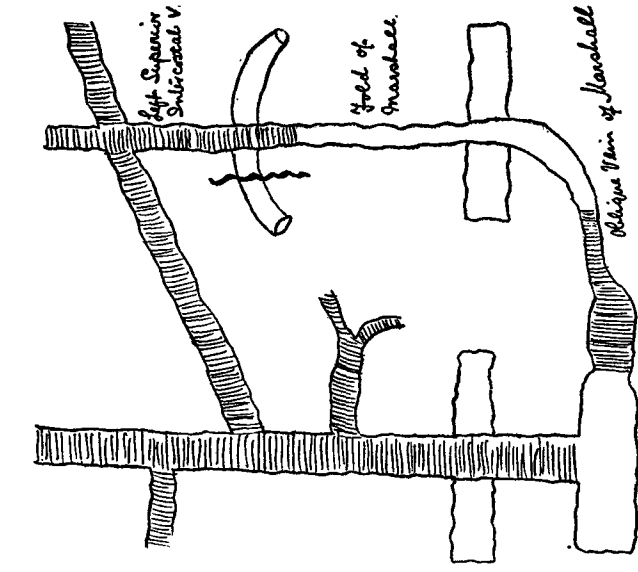


Diagram I.

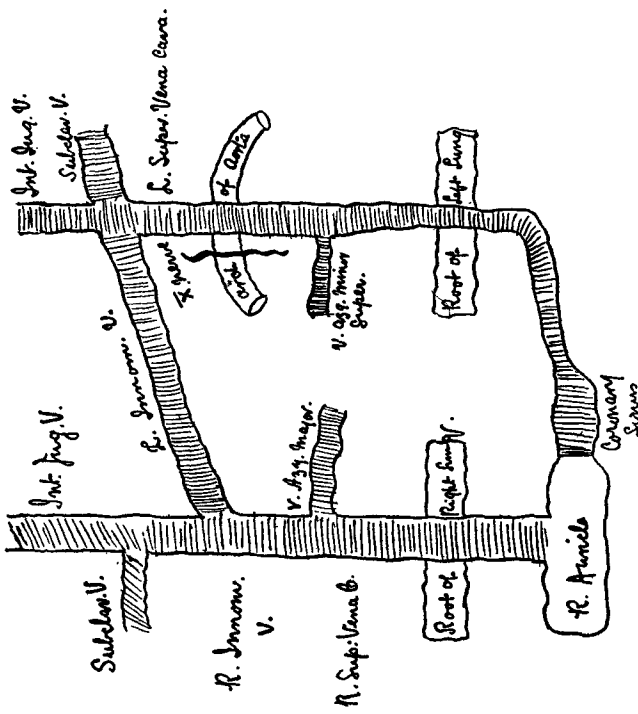


Diagram II.

Marshall") stretching from the left innominate vein to the coronary sinus. This embryonic relic I have often seen.

Diagram III. shows another stage in the foetal condition.

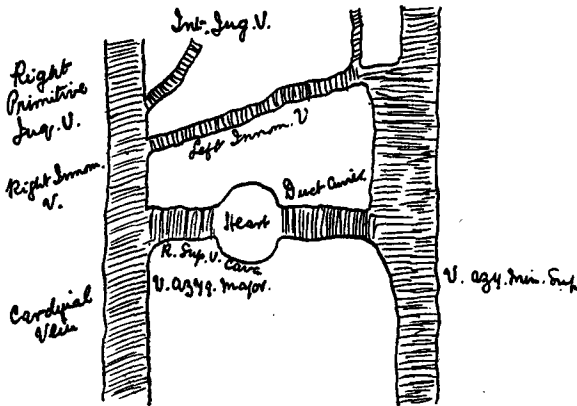


Diagram III.

Here we see the two internal jugular veins connected by a transverse branch—the future left innominate vein ; the lower part of the right primitive jugular forming the right innominate

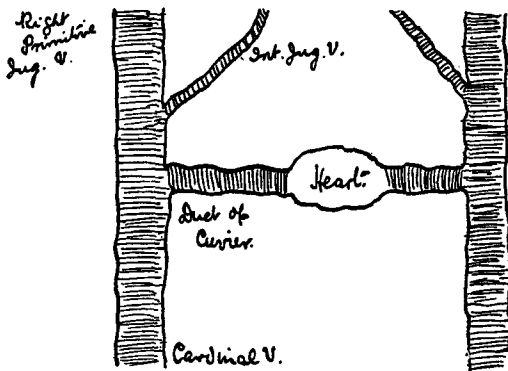


Diagram IV.

passing inwards to the heart as the right duct of Cuvier—the future right superior vena cava. We also observe the upper part of the right cardinal vein becoming the vena azygos

major. On the left side we note the upper part of the cardinal vein becoming the vena azygos minor superior; and the lower part of the primitive jugular vein and the duct of Cuvier, the persistence of which gives rise to a left superior vena cava.

Diagram IV. shows a still earlier condition—viz., the two primitive jugulars, the forerunners mainly of the external jugulars; the two cardinal veins and the Cuvierian veins opening into the heart.

Such a procedure of observations of this anomaly may help to some extent to a thorough understanding of the main changes in the foetal condition that lead to normal developments, and may conduce to a clear grasp of the significance of the many abnormalities not infrequently met with in the disposition and relations of certain structures.

ART. III.—*A Study on Hand Sterilisation.* By CHARLES GREENE CUMSTON, M.D., Boston, Mass.

WHEN Lister published his first writings in 1867, which overthrew the then existing theories of the process of wound repair, it was supposed that the cause of suppuration was derived from the atmosphere, and that by excluding the entrance or contact with air the most minute vegetable organism causing decomposition, suppuration and wound infection would be prevented, as occurs in the healing of subcutaneous wounds. At the same time Lister pointed out a means by which an antiseptic action could be obtained—namely, the use of carbolic acid, by the virtue of which the bacteria contained in the air would be rendered harmless. Contact of the wound by the air containing the germ he endeavoured to prevent by surrounding the field of operation with a fine spray of the acid in solution. During the operation, as well as the dressings, the spray was kept in action, and in consequence of the unhopd for results obtained, made evident by a marked decrease in suppurative processes following operations, the method became rapidly adopted in all parts of the world.

After a time it became recognised that it was not by contact