develop. The ganglionic elements of the 9th and 10th fuse in a massive ganglion which is 40% larger than normal, but is smaller than the double ganglion content which would be expected. The nerves arising from the fused 9th and 10th form regular but enlarged trunks with regular distribution, containing, however, a greater number of fibers than are normally found in these nerves.

A careful study has been made of the distribution of the cellular and fiber contents of the cord lying posterior to the region of the transplantation in 26 cases from a series of 200 animals operated upon. The relations of the cells and fibers as indicated by the percentage of the total area which they occupy is remarkably regular. The motor areas are increased in size and in the number of cells which are found within them. The sensory elements have been displaced dorsally in the cord and due to their compactness show an increase in the number of fibers found in the dorsal fiber area.

The conclusion is drawn from the above experiments that a quantitative increase in the number of cells anterior to the spinal regions of the cord due to the presence of a small part of the posterior region of the medulla will produce a definite hyperplasia in the regions behind the graft. Detwiler has shown that the sensory cells respond primarily to the changes in the peripheral field and that motor hyperplasia of the cord in the normal position is due to intrinsic influences. In the present report a small segment of the medulla involving none of the spinal segments can cause, when transplanted, a hyperplasia of the ventral area of the spinal cord. Since this effect is not nearly so marked as when a larger transplant is used, as in Detwiler's cases, the result must be interpreted as due to the quantitative increase of cells and fibers contained in the additional medulla oblongata.

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Imbibition in Disintegration.

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Studies of the lethal effects of cyanide solutions on *Amblystoma punctatum* embryos have demonstrated that water relations play an important rôle in their subsequent disintegration. The manner in which this water is taken up, whether by osmosis or imbibition, has received little attention. The separate evaluation of water in these

2 rôles appears essential to a basic understanding of the disintegration process.

Measurements of density should help to reveal the nature of the water entering the tissue for it is generally recognized that water of imbibition increases in density whereas water taken up osmotically does not increase in weight per unit volume. An embryo imbibing water will increase its weight when weighed in water and will at the same time decrease the total volume of embryo plus solution. An embryo taking up water by osmosis, however, may increase its own volume but the total volume of the embryo and solution will remain constant. Water taken up in this manner will not alter the weight of the embryo when weighed in water. To determine the amount and rate at which *Amblystoma punctatum* embryos took up water by imbibition, the following method was used:

A small Gooch crucible was suspended by a fine wire from one of the hooks of an analytical balance. A beaker containing the cyanide solution (M/125,000 in tap water) was placed beneath the crucible so that it hung completely immersed in the solution. Weights were hung from the hook above the crucible to balance the pan on the side opposite.

The embryos used were in the yolk plug stage enclosed only in the vitelline membrane. Twenty-five were introduced into the crucible in each trial. The weight of the embryos was then recorded as quickly as possible and at intervals of one-half hour thereafter until disintegration began. An increase in weight was observed after a few minutes. The increase was most rapid during the first hour, then slowed gradually. A few moments after the embryos ceased to gain in weight they began to disintegrate, at which time there was a decrease in weight. Embryos at the same stage were weighed in tap water as controls. These controls gave no evidence of disintegration and made no increase in weight in 4 hours. In all these trials the temperature was maintained constant at 20°C.

These observations suggest that the pressure due to imbibed water may be a positive factor in disintegration; and that cyanide solutions in some way increase the ability of embryos of *Amblystoma punctatum* to imbibe water.