of the distillate daily for the same time. The distillate contained a considerable amount of ether and the amount eaten corresponded to the distillate from only one half the amount of residue that was fed. Three rabbits were used as controls. The diet of all was alfalfa and oats. The thyroids of the control rabbits were practically normal, while those of the animals receiving the "cabbage fat" residue were definitely hyperplastic as were also the thyroids of the rabbits fed on the distillate, although the amount of distillate fed was comparatively small.

These experiments we believe indicate that the goiter-producing substance in cabbage is extractable with ether and is volatile.

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Effect of Medulla Transplantation.

J. S. NICHOLAS.

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The experiments recently reported on the transplantation of parts of the central nervous system indicate that cellular hyperplasia can be induced in regions of the cord which normally have a low motor content. Heterotopic transplantations of the cord show conclusively that extensive hyperplasia, both motor and sensory, can be obtained. Previous experimentation by the author[1] has indicated that, with the cord in its normal location, there is a direct dependent relationship between the cellular content of the trunk segments of the cord and that of the regions anterior to it. These experiments are in direct confirmation of Detwiler's results.[2]

The present series of experiments deals with the transplantation of an additional medulla just posterior to the normal medulla oblongata of the urodele embryo. A transverse section is made at the lower part of the medulla and the parts of the nervous system separated. The transplant which includes the ear capsules with the portion of the medulla in close association with them is then placed between the separated parts. The tissue contains Mauthner's cell area and the regions of the ninth and part of the tenth cranial nerves.

The transplanted ear capsules fuse with the normals, giving rise to a large mass of cartilaginous tissue which increases the proportions of the head and apparently permits the interpolated portions to

[1] Nicholas, J. S., *Roux's Arch. f. Entw. Mechanik*, 1929. Bd. 118.

[2] Detwiler, S. R., *J. Exp. Zool.*, 1925, **41**.

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.

DONALD H. BARRON. (Introduced by J. S. Nicholas.)

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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