

bradycardia and heart-block were observed in patients with marked electrocardiographic abnormalities.

The increased A-V conduction time in typhus fever (Brill's disease), occurred usually at the time of the crisis. A similar observation was found in lobar pneumonia.²

Unlike the observations in acute rheumatoid (infectious) arthritis one not uncommonly found significant electrocardiographic changes in patients with gonorrheal arthritis.

Cases of erythema nodosum and erythema multiforme revealed very little evidence of myocardial damage and hence their relation to acute rheumatic fever is probably remote.

In none of the diseases studied was a definite progressive and continuous change observed from an RS-T abnormality to an inverted T-wave as is seen following an acute coronary artery occlusion. This may serve as a means of differential diagnosis between acute coronary artery occlusion and other conditions which may produce severe chest, sternal or precordial pain such as pneumonia or pulmonary artery occlusion.

7380 P

Induction of the Olfactory Placode by the Forebrain in *Rana pipiens*.

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Bell,¹ using embryos of *Rana esculenta*, attempted to show the relation of the brain to the development of the olfactory placode. He transplanted "that part of the brain which forms the olfactory lobe" to other regions of the body without obtaining any induction of an olfactory placode. His conclusion was that the olfactory placode developed independently of the brain. He did not, however, preclude the possibility of an early stimulus for olfactory placode formation being imparted by the brain to the ectoderm above it.

Recently we have been able to show that the part of the forebrain median and slightly anterior to the optic vesicle of the intermediate neurula stage of *Rana pipiens* has the power to induce an olfactory placode in the ectoderm of the flank (Fig. 1).

¹ Bell, E. T., *Arch. f. Ent. Mech.*, 1907, **23**.

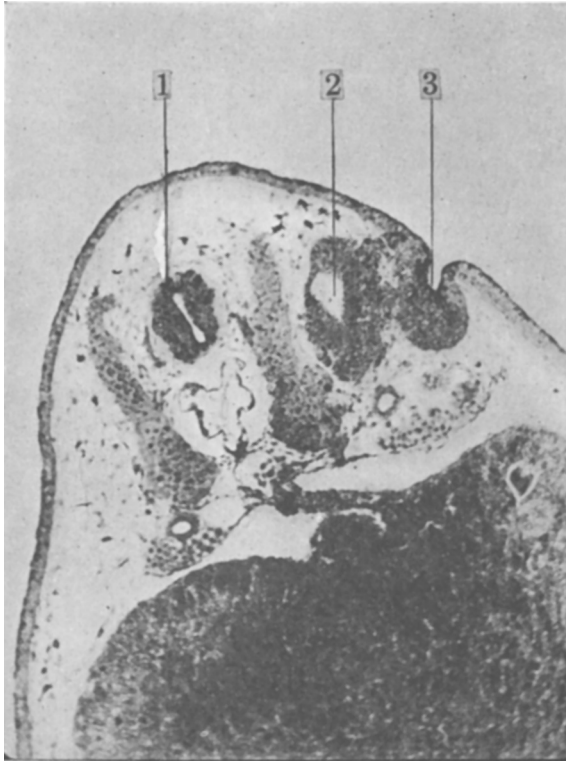


FIG. 1.

Induction of an olfactory placode. 1—spinal cord of host; 2—transplanted fore-brain; 3—induced olfactory placode.

After one accidental induction (from a transplant of an optic vesicle which evidently included some of the rest of the fore-brain) 3 series of operations were performed in an attempt to localize the olfactory placode inducing part of the brain. The following stages were used for the operation:

Early neurula—equivalent to stage 17 on Harrison's scale for *Ambystoma punctatum*.

Intermediate neurula—equivalent to stage 20 on Harrison's scale for *Ambystoma punctatum*.

Late neurula—equivalent to stage 22 on Harrison's scale for *Ambystoma punctatum*.

Early tail-bud—in which the olfactory placode is visible as a pigmented thickening of the ectoderm.

In series 1 and 2 pieces of the fore-brain anterior to the optic vesicle were transplanted to the flank in stages 17, 20 and 22. No definite induction was obtained, although defects appeared in the

olfactory placode on the operated side. In series 3 large pieces of the fore-brain of stage 20 median to and almost on a level with the optic vesicle were used. Of the 8 embryos operated on 5 had definite olfactory invaginations appearing in the flank region. Two of the 5 showed well developed olfactory canals connecting with the invaginations. In all cases the olfactory placode on the operated side was missing or rudimentary.

In all of the cases the head ectoderm on one side was lifted up, the required portion of the brain (including the proximal end of the optic vesicle in most cases) was removed, and the head ectoderm was replaced. The piece of brain tissue was transplanted underneath the ectoderm of the flank region of the same embryo. The embryos were sectioned after 3 or 4 days of development.

Some evidence has been obtained which indicates that the olfactory placode is determined in the head ectoderm some time between the late neurula and early tail-bud stages. In series 4 the brain tissue was removed in stages 20, 22 and early tail-bud and the head ectoderm was replaced. No olfactory placode developed except in the case of the early tail-buds. In this stage the placode is already visible and so the removal of the brain does not interfere with its continued differentiation.

Removal of the presumptive olfactory placode in stages 17, 20 and 22 resulted in the formation of an olfactory placode from the ectoderm which healed over the wound. Even after the placode has formed in the early tail-bud stage a second one will form after extirpation. This may be due to a re-induction of an olfactory placode by the brain and not a regeneration as claimed by Bell and by Burr.²

7381 P

Measurement of Circulation Time from Antecubital Veins to Pulmonary Capillaries.

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Several methods are available for measuring the circulation time from the antecubital veins through the pulmonary bed to the capil-

² Burr, H. S., *J. Exp. Zool.*, 1916, **20**, 27.

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