

fermentative processes found in nature would work in the same way.

Drying is extremely detrimental. A few seconds' exposure would kill the embryos instantaneously. If they were covered with slime, their lives may be a little, though not appreciably prolonged.

Of cheap chemical sterilizers, 5 per cent saturated NaCN would be fatal to embryonated eggs in 90 minutes, and 0.025 saturation of $\text{Ca}(\text{ClO})_2$ would suffice in half that time.

In conclusion, spontaneous hatching takes place under the following experimental conditions: (1) alternate freezing and thawing; (2) sudden raising of temperature, *e. g.*, from 26° C. to 36° C.; and (3) the suitable adjustment of the hypertonicity of the medium, *e. g.*, exposure to 6.25 or 3.15 per cent NaCl for a few minutes, followed by dilution with *aqua dist.* to lower it to isotonicity.

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Abnormal development of the nasal cavity of dogs due to interruption of the respiratory current.

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Only one experiment on the influence of the respiratory current on the growth of the nose was found in the literature, and this had been incompletely reported. In clinical material the conditions are too complex to bring into sharp contrast the effects of different factors.

The respiratory current was interrupted on the left side of the nose of eleven puppies by introducing cotton through a window cut at the dorsal end of the hard palate. Freshly weaned animals were used, and the experiment continued in most of the series for 46 days. During this period the face is growing rapidly. Packing was changed daily, and the animals maintained in excellent health.

In six dogs the conchæ showed markedly incomplete develop-

ment on the operated side, leaving a wide open space adjoining the septum. The usual marked curvature of the conchæ was almost completely lacking. The septum was slightly concave on the operated side, and the frontal sinus on the average slightly larger. Histologically no difference on the two sides was demonstrated with certainty. The face showed no unusual asymmetry.

A perfect contrast of the condition as to air circulation on opposite sides was prevented by a pressure atrophy of the septum allowing the packing to extend somewhat over onto the unoperated side. This may explain the negative outcome in five of the animals.

Three possible factors in bringing about the arrest of development suggest themselves: namely, infection, stoppage of drainage, and the elimination of the physical effects of the air current, chief among which are fluctuations of pressure, temperature and moisture.

Since mild infection such as observed in the puppies are frequently found on the unoperated side without resultant incomplete development, it is improbable that they have an appreciable influence. The absence of any marked inequality of conchal development in any of ten control animals, some of which must almost certainly have had infections, is further ground for this conclusion. No plug was found which might interfere with the drainage either at the very frequent examinations of animals made during the course of the experiments or at the autopsies. The slight bending of the nasal septum toward the unoperated side suggests a stoppage of drainage, as does also the slightly greater average size of the rudimentary frontal sinuses on the operated side. The evidence as a whole, however, points to the physical effects of the air current as the cause of the abnormal development. A further series of experiments is to be carried out in which it is believed the possibility of a blocking of drainage can be eliminated.