It has thus been shown that the blood hæmoglobin synthesized by *Daphnia* in response to oxygen deficiency in the water has the following functions: it resists asphyxia, and it assists feeding and reproduction. The aid to reproduction is both by producing more eggs and by supplying hæmoglobin to the eggs and so accelerating development.

These results will soon be published in full elsewhere.

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Supersensitivity of Denervated Organs to Chemical Stimuli

The analysis of phenomena such as the 'pseudomotor reactions' or the 'paradoxical pupillary dilation' has revealed that structures deprived of their normal nerve supply show a supersensitivity to chemical stimuli. In 1939 Cannon formulated the law of denervation: "When in a series of efferent neurones a unit is destroyed, an increased irritability to chemical agents develops in the isolated structure or structures, the effect being maximal in the part directly denervated". In their recent monograph on "The Supersensitivity of Denervated Structures"[1], Cannon and Rosenblueth have discussed various factors which might be responsible for the sensitization of cells after degenerative section of their efferent nerve supply, such as inactivity, suppression of the release of chemical mediators, or removal of some kind of 'trophic' influence of nerves on the cells.

In our experiments we have, instead of excluding nerve impulses by severance of efferent nerves, attempted to make such impulses ineffective on the innervated structures. This can be achieved pharmacologically by treatment with drugs which render the effector cells insensitive to the chemical mediators of nerve impulses. The submaxillary gland of the cat affords a preparation well suited for experiments of this kind. Stimulation of the main secretory nerve of the gland, the chorda tympani, evokes an abundant flow of saliva; after administration of atropine, however, chorda stimulation has no secretory effect. Stimulation of the cervical sympathetic nerve, or intravenous injection of adrenaline, is likewise followed by salivary secretion. This effect is not antagonized by moderate doses of atropine. Some days after section of the chorda tympani, the gland is found to be supersensitive to adrenaline[2]; the threshold dose of adrenaline for the parasympathetically decentralized gland is much smaller than that for the normal gland, and a moderate dose of adrenaline gives a much greater response from the decentralized than from the normal salivary gland.

In a series of cats, atropine was injected subcutaneously twice daily over a period of 7–10 days. As pharmacological and clinical experience suggests that some kind of 'habituation' to atropine may occur, the doses of atropine given were increased successively, the first dose being 0·5 mgm./kgm., the last dose 10–15 mgm./kgm. Some 15–20 hr. after the injection of the biggest dose, the cats were anæsthetized with chloralose. The submaxillary ducts were cannulated, and the sialogogue effect of adrenaline was tested. The atropine-treated glands were invariably found to be supersensitive to adrenaline. The sensitization resembled that brought about by section of the chorda tympani. Thus, in a series of cats in which the chorda of one side had been cut aseptically at the beginning of the atropine treatment, the threshold dose of adrenaline, estimated after atropine pretreatment, was found to be of the same order of magnitude on both sides. A dose of adrenaline which evokes a just perceptible salivary secretion from a normally innervated, untreated gland was found to elicit an almost maximal response after atropine treatment, just as is the case after degenerative section of the chorda. It seems reasonable to assume that the sensitization is brought about in the same way in both instances. The main difference between the two types of sensitization is that section of the chorda abolishes nerve impulses (or at least denervates the submaxillary ganglion), whereas atropine antagonizes the action of the transmitter substance on the effector cells. The atropine experiments, therefore, may shed some light on the mechanism responsible for the sensitization of the gland to chemical agents.

An attempt was made to prevent the sensitization developing after severance of the chorda by daily injections of pilocarpine. Unfortunately, only one cat has so far survived the injection, twice a day, of 1 mgm. of pilocarpine per kgm. during eight days. In this animal the adrenaline sensitivity of the parasympathetically decentralized gland was found to be as low as that of a normally innervated gland.

The experiments described here do not support the theory that the normally innervated gland is subjected to a 'trophic' influence, the disappearance of which is followed by supersensitivity of the gland to chemical agents. Nor can the sensitization occur consequent on a suppression of the liberation of the transmitter substance. Changes in the cells, due to absence of chemical stimuli or to the inability of stimulating substances to attach themselves to certain receptors, may in some way be responsible for the supersensitivity to chemical agents which appears after section of the chorda or pretreatment with atropine.

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Deoxyribonucleic Acid Content of Ovarian Cells in *Artemia salina*

In the ovary of *Artemia salina*, some oocytes undergo a peculiar transformation[1]. After the primary growth period, numerous granules giving a positive Feulgen reaction appear in the nucleus, fuse into clumps, and finally give rise to a large homogeneous droplet of strongly Feulgen-positive material. This droplet is expelled into the cytoplasm through a hole in the nuclear membrane. The nucleus remains as a clear vesicle containing nucleoli and ribonucleic