

In cross tests with the 2 substances named a sharp specificity was evident since guinea pigs treated with dinitrochlorbenzene gave no distinct reaction to nitroso-dimethylaniline, and vice versa, as exemplified in Table I.

TABLE I.
Guinea pigs sensitized to dinitrochlorbenzene or p-nitroso-dimethylaniline, and tested with 1/400 mg. of the former and 1/50 mg. of the latter by intracutaneous injection of 0.1 cc. of solutions of the substances in 1% saline. § The figures give the diameters in millimeters.

Treated with:		Tested with:	
Dinitrochlorbenzene	1	Dinitrochlorbenzene 10.5, pale pink, elevated, livid center 3	Nitroso-dimethylaniline almost negative
	2	11, pink, elevated, slightly livid center	3.5, pale pink, elevated
Nitroso-dimethylaniline	3	almost negative	8.5, pale pink, slightly elevated
	4	" "	11, pink, elevated

The animals treated with p-nitroso-dimethylaniline did not give definite reactions with dimethylaniline, nitrosobenzene, or p-nitrosophenol, nor did the animals treated with dinitrochlorbenzene react to 2:4 dinitrophenol, o- or p-nitrochlorbenzene, m-dinitrobenzene, or picric acid.

Preliminary experiments with 2:4 dinitrophenol, which has been reported to produce hypersensitiveness in human beings,³ gave suggestive but not quite conclusive results.

7445 P

Transplantation of Taste Organs in Adult *Triturus Viridescens*.

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A study of the development of taste organs in the living condition in embryos and larvae of *Amblystoma punctatum*¹ has shown a considerable degree of independence of the organs with respect to their normal (gustatory) nerve fibers. In the present studies an attempt was made to examine the relationship between the taste or-

§ An alcoholic solution of dinitrochlorbenzene was diluted with saline.

³ Frumess, G. M., *J. Am. Med. Assn.*, 1934, **102**, 1219; Anderson, H. H., Reed, A. C., and Emerson, G. A., *J. Am. Med. Assn.*, 1933, **101**, 1053.

¹ Stone, L. S., *Proc. Soc. Exp. Biol. and Med.*, 1933, **30**, 1256.

gans and their gustatory fibers in the adult salamander. Because of the peculiar advantage of an aquatic host in which tongue grafts would be bathed constantly in a fluid environment, the common *Triturus viridescens* was used.

A small segment from the tip of the tongue was transplanted either to the side of the body or to the tail fin or into the orbit in place of the excised eye. One hundred and eight operations were made and with the exception of 2 cases all were autoplasmic grafts. The operation was performed on chloretonized animals by means of fine iridectomy scissors and forceps manipulated under a compound dissecting microscope. Following the operation the animals remained quiet in moist chambers for 24 hours. They were then placed in water in individual glass aquaria and kept at room temperature.

The orbit with eyelids excised was found to be the most favorable site for the graft, for, in other places skin epithelium and body movements tended to interfere with early "takes". In 21 cases the graft was shed early or was later sloughed or completely resorbed. In the majority of transplants the circulation returned from 4 to 6 days after operation. This indicates how early the grafts are successfully healed in the new environment.

Edema of tissue underlying the epithelium of the graft mechanically distorted and flattened the epithelium and taste organs as early as the second day after operation. The edema then spread to the epithelium and some necrosis of cells took place. Leucocytes and macrophages made slight invasions as soon as circulation was reestablished. From the second to the twelfth day there was a progressive increase in mitotic activity in the epithelium. By the sixteenth and seventeenth days the taste organs had regained their normal appearance. In the few specimens killed from 18 to 28 days no sense organs could be identified. Whether these were exceptions or indications of a significant period in the change of organs following such an operation will not be clear until a larger number of animals are sacrificed during this time interval. Organ cells might have been present with no morphological characteristics to distinguish them from the surrounding epithelium. To us this seems more tenable than the possibility that all organ cells had completely degenerated, for grafts with similar histories in the living condition showed taste organs from 28 to 186 days after operation.

The results of these experiments show clearly that the taste organs can exist apart from the gustatory nerve fibers for at least as long as 6 months in the adult salamander. No special nerve stains have

as yet been used. It is therefore not known whether or not other nerve fibers in the new environment have exerted any influence upon the taste organs.

No direct evidence was obtained of the formation of new organs by budding such as already found in grafted tongues of larvae.¹ The tongue epithelium of the adult is too thick and the taste organs are too deeply imbedded to allow a satisfactory study of the living graft under the high powers of the microscope. However, during and after the proliferative stage of the epithelium mitotic figures were found in some organs. The size of the graft did not increase with the advance of age. As a matter of fact there was some decrease. Nevertheless, the older grafts showed many more organs than those at the time of operation or shortly after. This may indicate that taste organs increase in numbers in adult tongues by a budding process such as is found in larvae.

7446 P

Grafted Eyes of Adult *Triturus Viridescens* with Special Reference to Repeated Return of Vision.

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The present experiments are part of a series of investigations which have already been reported^{1, 2, 3, 4} on grafted larval and adult amphibian eyes. Over 600 grafts of functional eyes have been studied in various types of operations. All eyes while living have been observed daily and the findings have been correlated with closely staged histological preparations.

This report is based on the observations of 140 reimplanted and transplanted eyes in the adult *Triturus viridescens*. In all cases the eye has been placed in the orbit, *i. e.*, in its normal environment. In some cases the eyes have been regrafted as many as 2 and 3 times involving reimplantation and transplantation in different orders of sequence.

Following operation some reduction in the size of the eye takes

¹ Stone, L. S., and Ussher, N.T., PROC. SOC. EXP. BIOL. AND MED., 1927, **25**, 213.

² Beers, D. N., PROC. SOC. EXP. BIOL. AND MED., 1929, **26**, 477.

³ Stone, L. S., *J. Exp. Zool.*, 1930, **55**, 193.

⁴ Stone, L. S., and Cole, C. H., PROC. SOC. EXP. BIOL. AND MED., 1931, **29**, 176.