volume of gastric fluid secreted after 3½ hours of histamine injections was equal to that of the control series during the same period. With extremely large doses (3.5 to 5.5 mg per kg) the secretion appeared to be concentrated with respect to acid. However, the response was not uniform and the acidity values in this group were widely distributed. Further study would be required to determine whether a dissociation between acid and water secretion really does occur in the rat as these results might suggest. These results do not confirm those of Roe and Dyer[3] who found that 0.03 mg of histamine phosphate per kilo does stimulate an acid secretion. The curves of both the volume and acidity of their histamine-treated rats parallel closely those we obtained in our series that received no histamine. Polland[7] found no free acid secreted by the rat after huge unstated doses of histamine.

With respect to the effect of histamine on the gastric secretory cells, the rat behaves like the skate[1] and necturus[2] rather than other rodents (groundhogs,[4] guinea pig).[8] The extremely high tolerance of the rat to histamine is well known.[9] The ineffectiveness of histamine in the rat as a secretory stimulant may perhaps be related to the rapid rate of disappearance of injected histamine from the blood and the relatively small amount of histamine retained by the stomach.[10] Since histamine is a potent gastric secretory stimulant in the anesthetized groundhog,[4] guinea pig,[8] cat,[11] dog,[12] pigeon[6] and chicken,[6] it is unlikely that the ineffectiveness of histamine in the rat was due in these experiments to the use of anesthetics.

Conclusion. In the rat gastric secretion is continuous. Histamine has little if any effect on the gastric secretion of the (anesthetized) rat.

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Return of Vision in Transplanted Adult Salamander Eyes After Several Days of Refrigeration.*

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It has been shown that adult salamander eyes can be transplanted successfully if they are grafted immediately after enucleation.[1,2] Return of vision 4 times in the same eye repeatedly transplanted demonstrates[3] how successful the results can be. The capacity of an adult salamander eye to recover is tested further in the following experiments by isolating it from its blood supply for a long period.

Fifty-nine enucleated adult *Triturus viridescens* eyes were refrigerated from 0°C to 8°C in sterile Ringer's solution for periods varying from 2 to 14 days and then transplanted into freshly denuded orbits of new

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hosts. Under freezing conditions (0°C) the eyes were usually imbedded in solid ice in a little over an hour after they were placed in the refrigerator. The grafts exposed to the lowest temperature were first thawed in cool (10°C) Ringer's solution before transplantation. After 4 days these eyes are usually clear but the iris sinks inward with the pupil relaxed and distorted. By 7 and 8 days the cornea may be either slightly or densely opaque. In some cases, portions of the cornea, along with degenerating iris cells, begin to slough. The lens usually becomes opaque and degenerated, and by this time only rarely is it still clear. All of the grafted eyes which had been frozen showed little power for recovery. They sloughed or were rapidly resorbed so that by the second month they were merely small white sacs.

When the eyes were maintained at a higher temperature (8°C) in the ice box better results were obtained. At the end of 2 days at this temperature the eyes appeared about the same as at the time of excision. A few eyes transplanted at this time recovered and showed return of vision by the third month. Compared with eyes grafted immediately after excision recovery was slower in the survivals. The degeneration stages seemed to take place earlier and were so extensive, in some cases, that by the second month they were resorbed.

When kept in the ice box for 3 days at this temperature (8°C) more extensive injury to the cells was produced. The eyes still remained clear but the luster and color of the iris was not as brilliant as in the beginning of the experiment. The appearance of the iris indicated that degeneration was more rapid after transplantation. The cornea usually became cloudy but in some cases it was thick and clear enough to observe circulation in the iris as long as 86 days. Most eyes became small, darkly pigmented sacs by the end of the second month. Some eyes showed prolonged attempts to recover during the second and third months but all became gradually smaller and finally resorbed. When kept for 4, 5 and 6 days at 8°C the eyes became progressively softer and more extensively damaged. Although some eyes after transplantation varied slightly in the time at which they finally degenerated, the longer they were kept in the ice box the earlier the grafts began to break down and slough portions of the eyeball. Although one transplant which had been in the ice box for 4 days still had a semi-transparent cornea at 90 days, those grafts which had been refrigerated for 5 and 6 days had undergone considerable resorption by the fortieth day. During the first month some eye tissues such as the cornea and small portions of the iris often made short but futile attempts to regenerate.

The most ideal temperature for preserving the cells of the eye alive over longer periods was between 4°C and 6°C. The success after 3 days of refrigeration at this temperature is indicated by the fact that eyes in some cases had recovered vision at the end of 3 months. When kept for 4, 6 and 7 days, at this temperature the lens and cornea are nearly always clear and the iris, although paler in color, showed no degenerating cells on the surface. In nearly all of these grafts return of circulation was clearly seen. Some cases resorbed slowly but not without an attempt to recover. In 2 cases, for example, where the eyes had remained in the ice box for 7 days, the pigment pattern of the iris was attempting to reform by the fortieth day, and newly regenerated lenses had formed from the dorsal iris. These eyes are still progressively recovering during the second month.

At the end of 10 days in the ice box at this temperature the cornea still remains clear but the lens begins to take on an opaque appearance. The iris is about the same as at the end of a week. By the 14th day the chief change consists of the complete breakdown of the lens and the general softness of the eyeball. When transplanted at this time many loose cells appear under the clear cornea indicating how easily the cells of the interior of the bulb can be dislodged by the manipulations during operation. These eyes break down rapidly during the first 3 weeks after transplantation. The cornea may, however, remain partly clear for this period. Remnants of it and the sclera are about the last to resorb.