and the diet plus the bile fed for 15 days. The idea was to determine if bile would exert a curative action on rickets already established. The rats on the diets containing bile were abundantly controlled by rats on the same diet without the addition of bile.

The following results were obtained:

Group I. 7 cc. of pig bile per day prevented the development of rickets. On gross examination of the animals the bones were found normal. On microscopic examination the cartilage proved completely calcified. In the case of some animals, however, the trabeculæ showed here and there traces of osteoid in excess of the normal. 3 cc. of pig bile per day did not completely prevent the development of rickets. 1 cc. exerted a well marked inhibitory action but did not prevent the development of the condition.

Group II. 7 cc. of pig bile per day completely cured rickets when fed for a period of 15 days. 5 cc. and 2.5 cc. of bile per day did not completely cure the rickets. 5 cc. of bile exerted a manifestly greater curative action than 2.5 cc.

The controlled rats all showed rickets.

Further experiments on the effect of bile in the prevention and cure of rickets are now in progress and will be reported later.

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Hyperplasia in the brain of amblystoma.

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An experimental study of the effect on the brain of *Amblystoma* of the transplantation of an additional nasal placode has given some rather curious and interesting results. When a right nasal placode from an *Amblystoma* embryo is transplanted into the reentrant angle between the optic cup and nasal placode of a host, there results either complete fusion, partial fusion, or the maintenance of complete integrity of the two placodes. When the union is more or less complete, a majority of the experiments show an augmentation in size of the olfactory nerve through the

addition to it of axones derived from the neuro-epithelium of the transplant. The ingrowth of the enlarged olfactory nerve trunk into the cerebral hemispheres results in an increase of the cellular content of the olfactory bulb amounting to approximately 30 per cent. No such increase occurs in those instances where the transplant has made no contribution to the olfactory nerve.

In the experimental embryos where the transplant did not fuse with the placode of the host, the outgrowing fibers from the neuro-epithelium of the transplant pursued either one of two courses. In a majority of cases they established connection with the pars dorsalis thalami with resulting hyperplasia of a restricted region in the central gray. Several experiments resulted in the axones from the transplant joining the ophthalmic branch of the Vth cranial nerve, ascending along it and terminating in the ophthalmic ganglion. Here again hyperplasia of the cellular elements in the ganglion occurred.

It is suggested that the growth of axones into a field of growing neuroblasts is a factor in producing cell proliferation, the degree of which is dependent upon the number of ingrowing nerve units. More than the normal number of these can produce hyperplasia of the region.

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The effect on the involuntary nervous system of arsenicals and the salvarsan group.

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I.

Investigations on the effect of nonspecific therapeutic agents by one of us (E. M.) have shown that these all become effective through their action on the involuntary nervous system. These findings were mainly obtained from observations of intradermal injections of Aolan, a nonspecific lact albumin preparation. After these injections were administered intradermally, an acute