Some hyperplasia of the parathyroid gland was observed in a group of rats receiving infra-red radiation. The glands of the corresponding group, receiving ultra-violet, were of normal size.

Ash analysis of the bones of 18 rats protected against rickets with ultra-violet radiation showed slightly higher ratios between the ash and organic residue, than those of a similar group of litter mates that had received in addition to the ultra-violet, a daily exposure to near infra-red radiation.

These experiments have been in progress, in collaboration with Mr. L. A. Jones of the Eastman Kodak Company, for the past two years.

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Some Experiments on Reducing Reaction of Cerebro-Spinal Fluid.

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Benedict's copper method for determining blood sugar[1] has been applied to the study of a considerable series of spinal fluid specimens. The values obtained agree almost exactly with published results obtained by the technique of Folin and Wu. A series of direct comparisons described by Lyttle and Hearn[2] and confirmed by a few experiments in our own series showed that the difference was approximately 3 mg. %, expressed in terms of glucose. The Folin method gave the slightly higher values. It seems probable that the non-glucose reducing compounds which cause rather marked differences in the sugar values in whole blood and plasma do not enter the spinal fluid in appreciable amounts.

Since the compounds which reduce the "uric acid reagents" in acid solutions, but which are not precipitated by silver lactate are supposed to be in part responsible for these differences in blood, studies were carried out to demonstrate their presence in or absence from the spinal fluid. They either were absent, or were present in traces so slight that they could not be demonstrated.

The rate of reduction of Benedict's copper reagent by pure glucose and by spinal fluid was compared. After heating for 1 minute the apparent sugar was 1½ to 2 times as high as when the heating was continued longer. If the time of heating was between

[1] Benedict, S. R., *J. Biol. Chem.*, 1925, lxiv, 207.

[2] Lyttle, J. D., and Hearn, J. E., *J. Biol. Chem.*, 1926, lxviii, 751.

3 and 15 minutes the values obtained were constant. Long periods of heating—30 minutes to 1 hour—gave lower values. The reduced copper is therefore oxidized more rapidly in spinal fluid preparations than when reduction is brought about by pure glucose in water. Benedict has stated that similar changes are observed in blood filtrates. The more rapid reduction during short periods of heating may be due to a similar cause, or may be brought about by the presence of a small amount of a very readily oxidized material in the fluid.

Although there seems to be a small amount—about 5 mg. %—of reducing material in the spinal fluid which is not fermentable by yeast, the amount which is not destroyed by the colon bacillus, and which is therefore almost certainly not a carbohydrate, is very small. It seems to be present in concentrations of about 1 mg. % expressed as glucose.

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Action of Pilocarpine on Pupil of Guinea Pig.

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It has been shown that pilocarpine dilates the normal and constricts the denervated pupil of the rat. The mode of its action has also been discussed in a previous paper.[1] The normal pupil of the rat is constricted, due to the powerful sphincter tone of the iris. The purpose of this investigation is to determine how a naturally dilated pupil (weak sphincter tone) would react to pilocarpine.

Solutions of pilocarpine hydrochloride (2-10%) were instilled into the conjunctival sac of pigmented and albino guinea pigs. Pilocarpine caused in every instance dilation of the pupil and abolished the light reflex. The result was even more striking if the pupil was first reduced in size by sectioning the cervical sympathetic. The same solutions of pilocarpine invariably produced pupillary constriction in rabbits. The pupil dilated by pilocarpine did not react to usual quantities of arecoline, muscarine and physostigmine (0.5-1% solution), the latter drugs acting orthodoxly in normal guinea pigs. Atropine and "sympathomimetic" drugs increased the size of the pupil dilated by pilocarpine.

[1] Koppányi, T., *J. Pharm. and Exp. Ther.*, 1928, xxxiv, 73.