Removal of one or both occipital lobes of the cerebrum does not abolish labyrinthine nystagmus. True labyrinthine nystagmus has never been observed after complete decerebration, although the slow deviation of the eye persists. The slow component of nystagmus is of labyrinthine origin. The quick component is probably of cerebral origin.

The results suggest that the vestibular mechanism is connected far more closely with the phylogenetically older motor system (von Monakow) than with the phylogenetically newer system.

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Experimental nephritis in guinea-pigs by subcutaneous injections of chromates.

By **W. OPHÜLS.**

[*From the Pathological Laboratory of Cooper Medical College and Stanford University.*]

After having determined that 1 centigram of bichromate of potash is very nearly a lethal dose for guinea pigs of from 500–750 gm., forty guinea pigs were used in an effort to produce, if possible, lasting anatomic lesions in the kidneys by repeated injections. Great difficulty was encountered in continuing larger doses on account of the extensive necroses produced at the site of injection. In the end it was found that a $\frac{1}{2}$–$\frac{1}{5}$ per cent. solution of chromate of potash to which an equal amount of carbonate of soda had been added was most satisfactory, although still quite irritating. As our experience has taught us that sublethal doses are most effective in experiments of this character, injections of one or one half centigram were used in one half of the experiments and the doses crowded as closely as the animals would tolerate; in other series smaller doses down to a quarter of a milligram were employed and continued for long periods (in one case for nearly two years). The immediate effect of the injection of large doses in the guinea pig is the production of an albuminuria which is usually quite limited in amount and the appearance in the sediment of desquamated cells from the uriniferous tubules, much more rarely of casts. The kidneys in the acute intoxication

are very markedly hyperemic, there is more or less fatty degeneration and well marked necrosis and desquamation of the epithelium, later cast formation also occurs. The glomeruli are hyperemic, do not show any distinct histologic lesions. Hemorrhages from them were not observed. The lesions are hardly severe enough to account for the early death of the animals. I have become rather strongly persuaded that the chromates cause death in guinea pigs not primarily by their action upon the kidneys, but in a different way, although nothing definite could be ascertained in this regard.

Results with Injections of One Half Centigram.—Several guinea pigs died from the first or second dose. Four lived from five months to $15\frac{1}{2}$ months. The immediate reaction from each dose was well marked and it was impossible to give the doses very frequently; the highest was 12 doses in five months. One of these animals receiving five doses in seven months showed merely cystic dilation of some glomeruli similar to that which was observed in controls;[1] in one, apart from well marked epithelial lesions, there was a slight diffuse interstitial process; the other two showed definite small areas of collapse of degenerated tubules but with very little evidence of new formation of connective tissue between them.

Results with Injections of One Quarter of a Centigram.—Few animals died after the first injections; the immediate reaction on the part of the kidneys in most instances was very slight and the doses could be repeated more frequently. Some of these animals lived for one year or more, one for nearly two years. All showed more or less well marked epithelial lesions with formation of casts, very few interstitial lesions of a character which was not encountered in the controls also. In these few there were small areas of collapse of degenerated tubules and very little new formed connective tissue between them.

Experiments with smaller doses even when very frequently repeated and continued for long periods were entirely negative so far as the kidneys were concerned.

Hearts and bloodvessels remained normal in all animals.

The conclusion seems justified that it is impossible to produce

[1] See Ophüls, "Occurrence of spontaneous lesions in kidneys and livers of rabbits and guinea pigs," *Proc. Soc. for Exp. Biol. and Medicine*, 1911, viii, 75.

severe lasting renal lesions in guinea pigs with chromates, probably because in these animals the chromates are too toxic in a general way and too slightly effective on the kidneys locally.

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Experimental nephritis in rabbits by subcutaneous injections of chromates.

By **W. OPHÜLS.**

[*From the Pathological Laboratory of Cooper Medical College and Stanford University.*]

Rabbits are relatively more susceptible to the action of chromates than guinea pigs. Animals of from 2,000–2,500 gm. in weight sometimes die after the injection of two centigrams of bichromate of potash. The acute renal lesions produced by large sublethal doses are much more marked than those found in guinea pigs under similar conditions. There is marked albuminuria, much degeneration, necrosis and desquamation of the epithelium and abundant formation of casts of different kinds. The extreme lesions which may develop after a while as a result of crowding of large doses were described by me in 1908,[1] but they do not necessarily follow even repeated administration of large doses.

Fifty animals were experimented upon. The dosage varied between two centigrams and two milligrams. Some of the animals were kept alive for a year or more. So far as epithelial lesions are concerned the experiences are similar to those in guinea pigs, except that the epithelial lesions became more severe and seemed to continue longer after the last injection. Very marked interstitial lesions were observed at times, but they resemble those observed spontaneously[2] so closely and occurred so irregularly, sometimes soon, sometimes late after the administration of various doses and sometimes not at all, that any definite conclusion of their relation to the injections could not be arrived at.

Hearts and bloodvessels remained normal in all animals.

[1] Ophüls, " Some interesting points in regard to experimental chronic nephritis," *Journ. Med. Res.*, 1908, xviii, 49.

[2] Ophüls, *l. c.*