

meable to Sudan III under the conditions of the experiments already described.

The authors demonstrated the general facts in this connection pertaining to rubber and gold beaters' skin.

Experiments along these lines, with additional membranes, pigments and liquid media, are in progress, in an effort to obtain further knowledge of the functions of membranes in diffusion.

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**Occurrence of spontaneous lesions in kidneys and livers of rabbits and guinea pigs.**

By **W. OPHÜLS.**

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In view of the importance of the occurrence of spontaneous lesions in the kidneys and in the livers of rabbits and of guinea pigs in reference to the experimental work on these organs, Dr. E. C. Dickson and myself have made a careful study of these organs and incidentally of the heart and of the aorta in fifty rabbits and in one hundred guinea pigs. The animals used were partly fresh animals from the market, partly animals raised at the laboratory.

Many of the rabbits had been used in the physiological laboratory and had been killed immediately after the experiments; some died of coccidiosis; a few had been injected with material supposedly containing pneumococci without result; others had never been used. Several old rabbits that had been in the laboratory for a year or longer were especially selected on account of the greater likelihood of the existence of renal or hepatic lesions in them. Twenty-eight rabbits, among them some of the old ones, had entirely normal kidneys, nine showed slight parenchymatous lesions, three a few small areas of cellular infiltration. In ten we found scattered small areas in which were marked interstitial lesions with the formation of small depressions on the surface. Four of these proved to be radially arranged chronic septic foci which extended from the vicinity of the papilla to the outer surface.

In the other six cases the same arrangement of the new formed connective tissue in narrow radial bands which start deep in the pyramids was noticeable although no evidence of a septic infection could be discovered. The interstitial lesions were accompanied by marked epithelial lesions in two cases only, producing to a certain extent the picture of a chronic parenchymatous nephritis, although the lesions were never very extensive. Lesions of the blood-vessels or primary lesions of the glomeruli were not found in any case. The lesions described by the writer in his paper on experimental chronic nephritis<sup>1</sup> in rabbits 52 and 48 are probably spontaneous ones. Only six normal livers were encountered; the rest showed various stages of coccidial infection with more or less cirrhosis and sometimes cirrhotic processes in cases in which coccidia could not be demonstrated. We are very strongly of the opinion that our findings throw very serious doubt on the numerous reports of the experimental production of cirrhosis in the liver of rabbits as this animal would seem to be entirely unsuitable for such experiments. No gross lesions of the heart or of the aorta were discovered in any of the animals.

Of the one hundred guinea pigs the large majority had been injected with sediment from urine or other material suspected of containing tubercle bacilli; a few only actually developed tuberculosis. There were several especially selected old animals. Sixty-three of the one hundred had absolutely normal kidneys, two showed slight parenchymatous lesions and in thirty-five there were scattered small areas of cellular infiltration in the cortex which were sometimes rather numerous, at other times they were found with difficulty only on careful examination of several sections. They consist largely of lymphocytic cells and few larger cells with vesicular nuclei. They do not seem to have much tendency to develop into fibrous tissue although occasionally such a change was observed but always to a limited degree only. A reason for the existence of these foci could not be discovered. The lesions described in the writer's article on "Experimental Chronic Nephritis"<sup>2</sup> in guinea pigs as representing the early stages of renal lesions in chronic lead poisoning are probably of

<sup>1</sup>*Journal of Medical Research*, 1908, XVIII., 497.

<sup>2</sup>*Journal American Medical Association*, 1907, XLVIII., 483.

this character. In few cases fibrous thickening of the capsules of glomeruli and cystic dilatation of the same were observed as spontaneous lesions similar to certain types of glomerular cysts described by E. C. Dickson in his paper on the "Experimental Production of Chronic Nephritis in Animals by the Use of Uranium Nitrate."<sup>1</sup> These were, however, rare exceptions, whereas in uranium poisoning such glomerular lesions seem to be nearly constant. Large scars or lesions of the blood vessels were not found in any case.

Of the livers two showed extensive necroses, a disease probably familiar to all who handle many guinea pigs. In one case there was a slight cellular infiltration of the periportal connective tissue and in two sufficient new formation of connective tissue to speak of it as an incipient cirrhosis. A condition resembling cirrhosis therefore seems to occur spontaneously in guinea pigs also, but, so far as our observations go, it is quite rare. Heart and aorta were carefully inspected in all cases, but nothing abnormal was noted in any instance.

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### **Spontaneous nephritis in wild rats.**

By **W. OPHÜLS.**

Among the very many rats examined in San Francisco for plague only very few were found that showed evidences of dropsy and of renal disease. One such rat was carefully examined at our laboratory through the courtesy of the U. S. Public Health and Marine Hospital Service. This rat showed a very marked general oedema. The kidneys are small, distinctly granular. The measurements are  $26 \times 14 \times 10$  mm. The heart is moderately but distinctly enlarged, measuring in the formalin hardened specimen from base to apex—23 mm., the largest transverse diameter is 19 mm. and the largest antero-posterior diameter 14 mm. There are no gross lesions of the aorta. In sections of the kidneys the blood-vessels are found in a normal condition. The glomeruli are also quite normal except a few which show slight fibrous thickening

<sup>1</sup>*Archives of Internal Medicine*, 1909, III., 375.