of *S. ureae* cultures was contained within the cells and released on autolysis.

We are indebted to Dr. C. B. van Niel of the Hopkins Marine Station for free access to the culture collection, to Colonel Max Levine for cultures of several of the Enterobacteriaceae, and to Dr. William Negherbon for cultures of trypanosomes and detailed directions for their maintenance.

16118

Liver Injury in the Dog Following Use of 2-3-Dithiopropinol.* (BAL).

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Fifteen adult dogs furnish the basis for the observations which are to follow. The animals were kept in metabolism cages and given a diet of Purina Dog Chow. No restriction as to the amount was made in the diet or in the water intake. The dithiol was given intramuscularly at 9 a. m. and 9 p. m. on 4 successive days. The dogs were divided into 3 groups. The animals of Group I were given 5 mg per kilo of the dithiol per dose, those of Group II, 15 mg and the members of Group III, 30 mg per kilo. Prior to the commencement of the injections liver function studies were undertaken by the use of bromsulfalein according to the technique devised by Rosenthal and White.[1] For the normal animals and those of Group I, such observations have been satisfactory in that all of the dye was removed from the plasma within half an hour. In the animals of Group II and Group III receiving respectively 15 and 30 mg of dithiol per kilo the rate of removal was invariably prolonged beyond the half-hour period. The percentage removal however during this and subsequent periods was extremely variable. The evidence for the development of a liver injury from the dithiol is not confined to such variable functional observations but has been ascertained by obtaining biopsy material from the livers and by the study of such tissue in those animals that came to autopsy. The tissue was stained for lipoid material with Scharlach R and also with hematoxylin and eosin. A study of such material permits the following conclusions:

1. In the animals of Group I which received 5 mg of 2-3-dithiopropinol per kilo it was difficult if not impossible to ascertain by such a micro-chemical method whether or not there was any actual increase in lipoid material in the hepatic epithelium over that which can be frequently observed in such tissue designated as normal. In such animals lipoid material appears in the liver in the form of dust-like and larger particles or as minute droplets. This material is more noticeable in the periphery of the lobules following the use of a dithiol.

2. In the animals of Groups II and III which received either 15 or 30 mg of the dithiol per kilo, there develops a marked increase in stainable lipoid in the liver lobules in the form of larger or smaller droplets which may obscure the nuclei of such cells and replace the greater portion of the cell cytoplasm. Such a development is more uniform and more marked in the periphery than in the central portions of the lobules. In general as this area of the lobule is reached the lipoid material is not only reduced in amount but makes its appearance as small discrete droplets. This order of hepatic cell injury is more severe and develops earlier in the animals of Group III that were given 30 mg of the dithiol per kilo. In one animal of this group there developed by the fifth day of the experiment an extensive liver necrosis. The animal became comatose with

* 2,3-dithiopropanol (BAL), 10%, benzyl benzoate 20% in peanut oil.

1 Rosenthal, S. M., and White, E. C., *J. A. M. A.*, 1925, **84**, 1112.

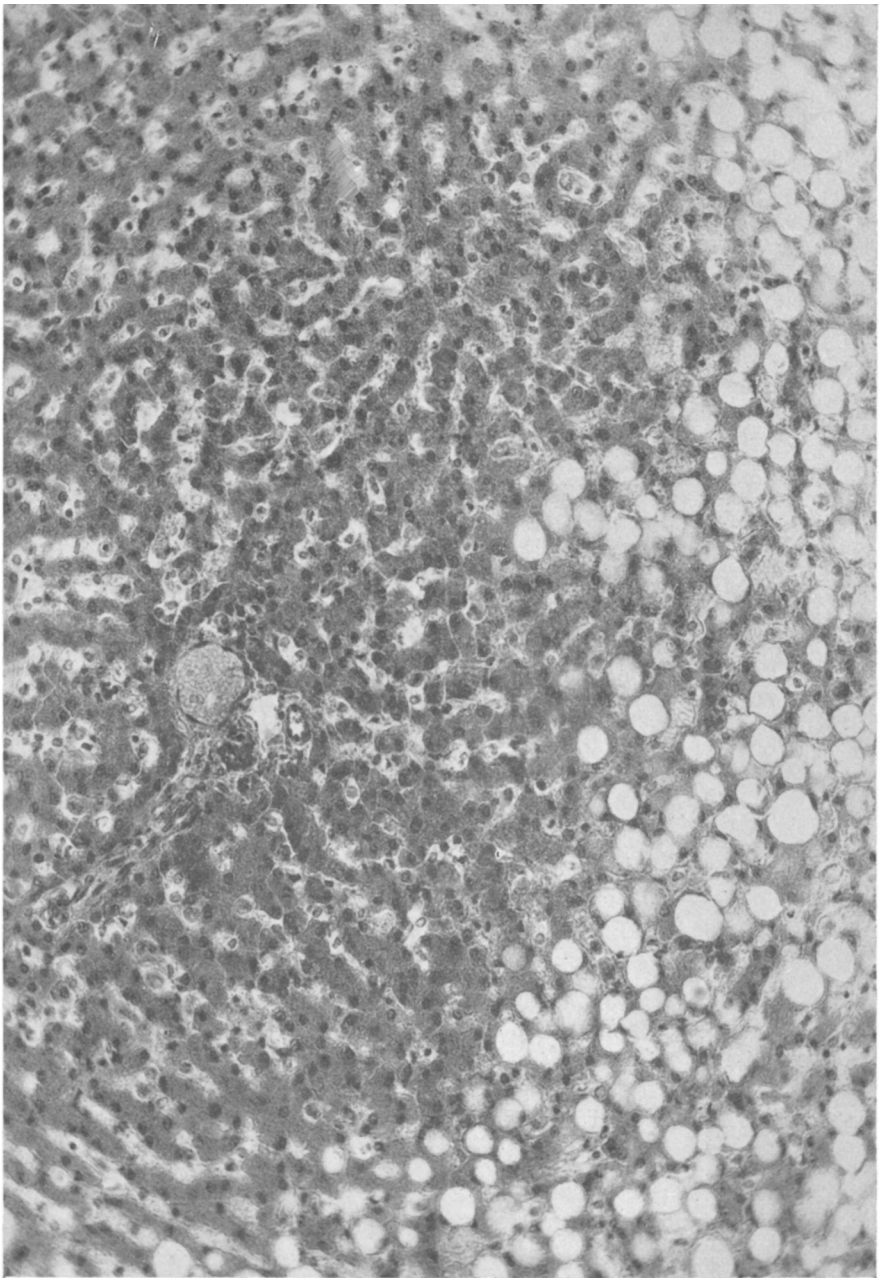

FIG. 1.

Microphotograph, Zeiss × 235, hematoxylin and eosin. The figure is from biopsy material of the liver of animal 3, Group III, on the fourth day of the use of 2,3-dithiopropanol, 30 mg per kilo. Fatty changes indicated by the appearance of larger and smaller droplets of such material are more marked in the periphery of the liver lobule and diminishes as the area of the central vein is approached. In the periphery of the lobule cellular degeneration is marked while in the region of the central vein cell structure is well preserved.

an air-hunger type of respiration and died on the fifth day.

3. The experiments indicate the ability of a dithiol when given to normal dogs in an appropriately large amount per kilo to induce an hepatic injury which is characterized by fatty degeneration of the hepatic epithelium and rarely by a necrosis of this tissue. Such observations do not necessarily imply that a similar order of cellular injury would be induced in the dog under the influence of an intoxication by salts of certain of the heavy metals. Such bodies offer a bond of union for the dithiols which in turn may prevent a toxic effect which they are capable of inducing in tissues of normal constitution.

16119

Influence of Diet upon the Hypertension and Nephrosclerosis Produced by Desoxycorticosterone Acetate Overdosage.*

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We have reported in a previous paper[1] that the hypertension and nephrosclerosis produced by administration of large amounts of anterior pituitary preparations may be prevented by decreasing the protein content of the diet from the normal of about 25% to 15%. In that publication attention was also called to the fact that adrenal enlargement was always marked in the hypertensive animals, which had been kept on a high protein diet, but was much less pronounced in the normotensive ones, which were given a low protein ration.

In order to clarify further the mechanism by which dietary protein affects the production of hormonal hypertension, we have now investigated its role in the production of the hypertension and nephrosclerosis induced by desoxycorticosterone acetate overdosage.

Material and Methods. Production of hypertension. Hooded castrated male rats, weighing 45 to 65 g, were unilaterally nephrectomized and implanted subcutaneously with two 40 mg pellets of desoxycorticosterone acetate (DCA). The animals were then divided into 2 groups: one received a 30% (Diet I), the other a 15% (Diet II) casein ration, both containing a large amount (4%) of NaCl, (for details see Table I). At the end of 40 days the surviving animals were killed and their kidneys and adrenals weighed and sectioned for histologic study, after fixation in "Susa" mixture. Eight animals in Group 1 and 5 rats in Group 2 were killed on the 20th day.

Blood pressure determinations. The blood pressure was determined by carotid cannulation (care being taken to avoid hemorrhages) on a representative number of rats on the 20th day of the experiment and in all surviving animals the day before autopsy, excepting 3 animals in which we missed the determinations. In order to spare the animals no control determinations were performed at the beginning of the experimental period; this appeared permissible as we had previously established[1] that the normal blood pressure of such rats, under our conditions, is 108 ± 14 (standard deviation) mm Hg. Statistical considerations revealed that 108 ± 28 mm Hg would include 95% of all normal rats, hence 135 mm Hg was taken as the highest normal blood pressure. The direct method

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1 Dontigny, P., Hay, E. C., Prado, J. L., and Selye, H., in press.