physis in these larvæ is always present, though greatly underdeveloped—ample proof apparently of the need of coassociation with the epithelial portion of the gland. Most emphatic is the effect produced on the adrenal, whose cortical or interrenal substance is greatly decreased. This discovery was greatly facilitated by the employment of those methods which fix and stain the lipoids of the cortical tissue. These changes in the adrenal tissue do not occur in thyroidectomized larvæ and are consequently not to be referred to the thyroid reduction which is coincident with them.

47 (1422)

On the occurrence of degenerative changes in the liver in animals intoxicated by mercuric chloride and by uranium nitrate.[1]

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The following observations are based on the study of fifty-two intoxications by mercuric chloride and eighty-four intoxications by uranium nitrate. Dogs were employed for the experiments. In the animals intoxicated by mercuric chloride, the poison was administered by stomach tube in the dose of 15 mgs. per kilogram. In the uranium intoxications, the poison was given subcutaneously in doses varying from 4 to 6.4 mgs. per kilogram.

The experiments were terminated at different periods during the intoxication without employing an anesthetic. Such a termination has eliminated the acute degenerative changes in the liver which may develop very rapidly from the use of such an agent. The changes in the liver in both types of intoxications have shown great variation in their severity and the rapidity with which they occur.

MERCURIC CHLORIDE INTOXICATIONS

All of the animals in this group, with eight exceptions, developed a severe gastroenteritis. The stools were frequent and

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contained blood and mucus. Twelve of the animals not only recovered from the gastroenteritis, but they failed to develop any delayed evidence of an intoxication. The remaining animals were either killed during the period of acute corrosive poisoning, or after having successfully passed through this stage, the experiments were terminated at different periods when the animals were suffering from the remote toxic effect of the poison.

As a result of these studies, the following observations have been made:

1. There is no relationship between the severity of the gastroenteritis and the extent of the degenerative changes in the liver. The degenerative changes in the liver consist first, in a deposition of fat in the liver cells surrounding the central vein of the lobule. The severer changes which follow consist in cloudy swelling and necrosis of these cells, and an extension of the process to the periphery of the lobule. The invasion of the necrotic area by endothelial leucocytes is usually not a prominent reaction.

2. The more extensive liver degenerations have occurred in those animals that have recovered from the acute gastroenteritis but have later shown remote evidence of the intoxication by the development of an acute kidney injury.

3. A final group of animals has recovered from both the gastroenteritis and the kidney injury, but at a later period has shown the gradual or rapid development of an acid intoxication and a kidney injury of sufficient severity to induce an anuria. The pathology of the liver in this group of animals has shown two types of response. Evidence of repair has consisted in finding liver cells with mitotic figures and occasionally large cells with more than one nucleus. Connective tissue cells are more numerous than in normal liver tissue. In addition to these changes of a chronic character that indicate the repair of some previous injury, the liver has shown acute degenerative changes which are most marked in the midzone and periphery of the lobule. These changes have consisted in an acute necrosis which is preceded by fatty infiltration and edema. In the areas of necrosis, the sinusoids are large and distended with blood.

URANIUM NITRATE INTOXICATIONS

The earliest evidence of liver injury in uranium intoxications has consisted in the appearance in the liver cells of fat in the form of dust-like particles. This deposition is more marked in the cells immediately around the central vein than it is at the periphery of the lobule. Following this change, the cells show granular degeneration, an increase in size, and the deposition of fat in larger masses. The later changes have consisted in marked cloudy swelling, followed by edema and necrosis. Such a termination is more marked near the center of the lobule than at the periphery. As the cytoplasmic degeneration progresses, fat appears in the cells in large droplets, and extends to the periphery of the lobule.

The rapidity of the development, and the severity of these changes have shown no definite dependence upon the size of the dose of uranium employed in the intoxication.

The severity of the degenerative changes in the liver and the amount of stainable fat present in the liver cells have shown a relationship with the age of the animal in which the intoxication is produced. The older animals have shown a susceptibility to uranium intoxication which has been expressed by the more rapid development of a liver degeneration and by these changes being more extensive than has been the case with the younger animals.

Associated with the occurrence of the degenerative changes in the liver, the animals develop an acid intoxication. Such an intoxication is of a severer type in old animals than in young animals.

At present an investigation is in progress which is concerned with the relationship of the liver injury induced by both mercuric chloride and uranium nitrate with the development of an acid intoxication.