solid constituents may be increased in amount, both absolutely and even relatively, after administration of alcohol. In this instance alcohol was introduced into the stomach. The excretion of inorganic constituents, while showing a well marked increase after the injection of alcohol into the gastrointestinal canal, did not keep pace with the gain in proportion of organic matter.

Further study is in progress.

TABLE I. — EFFECTS OF ALCOHOL, INJECTED INTO THE GASTROINTESTINAL CANAL, ON THE ELIMINATION OF BILE (COLLECTED IN 15-MINUTE PERIODS).

No.	Volume before injection of alcohol into the gastrointestinal canal.	After injection of alcohol into the gastrointestinal canal.	
		Volume.	Percentage increase.
	c.c.	c.c.	
I	0.5	1.2	140
II	0.5	0.9	80
III	0.5 (1 hr.)	1.0 (1 hr.)	100
IV	0.15	0.7	365
V	0.7	1.8	160
VI	0.4	0.9	125
VII	0.1	0.4	300
VIII	0.2	0.6	100
IX	0.3	0.5	66
X	0.3	0.45	50
XI	1.3	1.3	—
XII	0.25	0.5	100

TABLE II. — EFFECTS OF ALCOHOL, INJECTED INTO THE GASTROINTESTINAL CANAL, ON THE ELIMINATION OF SOLIDS IN THE BILE (COLLECTED IN 15-MINUTE PERIODS).

No.	Before injection.			After injection.			Percent. increase after injection.			
	Vol.	Total solids.	Ash.	Vol.	Total solids.	Ash.	Vol.	Total solids.	Organic matter.[1]	Inorganic matter.
	c.c.	mg.	mg.	c.c.	mg.	mg.				
I	0.5	34.2	4.6	1.2	78.8	9.9	140	130	132	115
II	0.5	48.6	1.2[2]	0.9	87.6	11.8	80	80	—	—
III	0.7	74.0	9.3	1.8	211.1	19.7	160	185	195	112
IV	0.4	42.3	6.4	0.9	85.1	10.2	125	100	108	60

17 (109). **"Some effects on rabbits of intravenous injections of nicotin,"** with demonstrations: **I. ADLER** and **O. HENSEL.**

A solution of 1 in 200 of the chemically pure nicotin furnished by Merck was used. Of this solution, 1/3 of a c.c., equal to 1 1/2

[1] Calculated by difference from the total solids. The weights of organic matter are purposely omitted from the first two sections of the table.

[2] Probably some analytic error accounts for this anomalous result.

mg. of nicotin, was injected daily into the ear-vein of the rabbits. About ten seconds after such an injection the animal is seized with a typical convulsion lasting from three to five minutes, after which it is apparently entirely well until the next injection, when the same thing recurs. This may be repeated with great regularity and without any exception every day and no tolerance to the poison seems to develop. In two animals it was attempted gradually to increase the daily dose to ½ c.c. This, however, proved too dangerous and was abandoned. All animals thereafter received the same daily dose of ⅓ c.c., which was never increased or diminished. A number of animals died before they had received a sufficiently large number of injections to cause any definite lesion. Death ensued in some instances from some cause not at all referable to the nicotin poisoning, but in others from numerous small infarctions in the lungs, possibly caused by the intravenous injections. Cerebral hemorrhages, which are found so often in rabbits treated with adrenalin injections, were never found in these animals.

In animals which outlived a certain number of injections, various distinct and characteristic lesions were found. It seems, however, that not all animals are equally susceptible. What has been observed in the numerous experiments with adrenalin seems to be true also for nicotin. Now and then, how frequently the authors were not able to say, rabbits are found that will respond to the daily nicotin injection with the typical convulsion, but after months of this treatment fail to show any of the characteristic lesions about to be described. These lesions seem to be identical in every respect with those found after intravenous injections of adrenalin. After 18 injections slight changes are apparent in the bulb and arch of the aorta. After 38 injections very marked and characteristic macroscopic and microscopic lesions can be recognized. Aneurysmatic dilations of the aorta are very distinctly visible. There may be either a single aneurysm, or, what is more frequent, several in various parts of the vessel.

These dilations, as a rule, do not involve the entire circumference of the vessel, but only a limited portion of it, thus presenting the appearance of aneurysmatic pouches. On the interior surface of the aneurysmatic dilations and their immediate neighborhood, larger and smaller patches of calcification of varying shapes are

apparent. Their margin is somewhat raised above the surface of the intima, their center somewhat depressed. The more numerous the injections the more pronounced and extensive the alterations appear, but they are always of the same character. The authors have not yet concluded their experiments and they have not yet been able to carry the number of injections beyond 50. The lesions here described have nothing in common with human arteriosclerosis. They are in every essential identical with what B. Fischer describes as the result of adrenalin and digalen injections. It can be demonstrated that the primary lesion takes place in the muscle cells of the media and first of all in those nearest to the intima. Here the nuclei become broken up, the chromatin is scattered, the entire cell becomes necrotic and is finally destroyed. This process gradually extends downward in the direction of the adventitia. As the muscle cells disappear, the elastic fibers, under pressure of the blood-current, are first stretched, then broken up. The entire wall of the vessel in this spot is thus attenuated and distended and finally calcified. There is distinct *arterial necrosis*. Thus far the authors have been able to find these lesions only in the aorta. The fact that they are found mainly in the aorta, that they occur in patches, that they begin with necrosis of the muscle cells and that thus far only adrenalin, digalen and nicotin, all three vasoconstrictors, have been found to produce them, would suggest an affection of the vasovasorum as the underlying cause. This, however, is not yet proved.

In all advanced cases the left heart has been found hypertrophied. Certain minute lesions have been found in the heart muscle. The kidneys have thus far only shown a moderate degree of hyperemia. An occasional trace of albumin appeared in the urine but never any sugar. In every case that has received a sufficient number of injections very definite changes are noted in the liver. The liver cells appear entirely normal, as do also the central vein and the interlobular vessels, but the interlobular bile ducts, even at a very early period, are found surrounded by a mantle of leucocytes which increases in size after the injections are continued. The leucocytes not only surround the ducts but are found within the walls and even in the interior of the duct overlying the epithelium. This latter is always perfectly normal and the

lumen, though perhaps here and there partially obstructed by leucocytes, is always sufficiently open to permit the free passage of bile. Bile is never found in the urine. In no case have the authors ever found anything suggesting cirrhosis or degeneration of the liver cells.

18 (110). **"Tumors of wild animals under natural conditions": HARLOW BROOKS.**

The author referred to the great importance of the etiology of neoplasms and the well-recognized fact that research along this line must now rest almost entirely on experimental studies of the lower animals. By this series of observations the author hoped to establish what may be called a "normal" rate of occurrence. This can be based only on observations of large numbers of animals which have been in captivity for only relatively short periods and which must be kept under far different conditions than is possible in the ordinary zoölogical park or in the laboratory animal house.

The author's observations were made on a large number of wild animals, most of which were captured direct from the wild, and which after capture and transportation were placed under the most carefully studied natural conditions ever attempted in any large zoölogical collection.

The occurrence rate of new growths in such a group of animals, comprising most of the known species of the reptiles, birds, and mammals should furnish a valuable contribution to the study of the etiology of tumors, especially since the animals included in this collection were, for the most part, at least, pure and uncontaminated, except for such crossing as normally takes place in nature. The animals of the New York Zoölogical Society have been selected by experts for their purity of type and every one is submitted to a careful veterinary examination before becoming a member of the collection. Notwithstanding that this examination might have been expected in some cases to have excluded animals afflicted with tumors, the records show that none have been rejected for this defect.

Of 2,645 living animals which have been under the charge of the author and his associates for the past five years, no case of