

## PATHOLOGY.

## ON THE PATHOLOGY OF URÆMIA.

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Dr. Hampeln, passing in review the various theories which have been put forth as to the essential cause of uræmia, refers first to the question as to the source of urea. Prévost and Dumas first, in 1823, found a large accumulation of urea in the blood of a dog whose kidneys had been extirpated. Later observations have established the fact that a trace of urea is usually present in the blood of healthy animals and of man. Upon these data was based the theory that urea, being formed in the blood and in the tissues, and filtered off or excreted by the kidney, necessarily accumulates within the system after the removal of the kidneys. Oppler was the first to maintain that a portion of the excreted urea is actually formed by the kidneys. He found that the blood of an animal whose ureters had been ligatured, contained a greater accumulation of urea than that of one whose kidneys had been extirpated; and this excess of urea in the former case he attributed to the re-absorption of urea, which had been formed in the kidney itself. Zalesky went still further, and, in opposition to all previous observers, denying that any excess of urea is found in the blood of an animal whose kidneys have been extirpated, maintained that urea is formed entirely by the kidneys.

The difficulty of exactly comparing the results of nephrotomy with those of ligaturing the ureters is much increased by the fact that animals whose kidneys have been extirpated die sooner than those which have undergone the less formidable operation of ligature of the ureters; and the larger accumulation of urea in the latter class of cases may be in part explained by the relatively greater duration of life. With reference to the source of urea, it appears to be an established fact that a portion at least is formed in certain of the tissues and in the blood; it is probable that another portion is actually formed in the kidney itself, that the gland generates as well as excretes urea. The undoubted excess of urea in the blood and in the tissues in the advanced stages of renal degeneration, is explicable only on the theory that the kidney is not the only source of urea, and it is probable that some of this compound is formed in the blood, in the muscles, and in the liver. Then, with reference to the theory of uræmia, it is a well established fact that with uræmic symptoms the blood contains an excess of urea, and urea is found in the tissues, in the vomited matters, and in the dropsical effusions; while the diminished excretion of urea by the kidneys is explained partly by retention, and partly by the diminished formation consequent on anæmia and general malnutrition. Animals whose kidneys have been extirpated, or whose ureters or renal arteries have been ligatured, present symptoms similar to those of uræmia in the human subject (vomiting, convulsions, and coma), and die within a period varying from twenty-four to sixty hours. When urea is mixed with the food of animals, it acts as a powerful diuretic, and is rapidly excreted by the kidneys. Voit, however, is said to

have produced uræmic symptoms in dogs by feeding them with urea while they were deprived of water.

Falck found that 15 grammes of urea injected beneath the skin of rabbits killed them in from two to three hours, the symptoms being trembling, convulsions, hurried breathing, coma, and at length arrest of the breathing and heart's action. The subcutaneous injection of from 7 to 10 grammes of urea killed these animals in from six to thirty-six hours. A dog was killed in half-an-hour by the subcutaneous injection of 25 grammes of urea; another dog, after the injection of 20 grammes, recovered. Lastly, Falck injected into the jugular veins of five cats 15 grammes of urea, and the animals died with uræmic symptoms in from forty minutes to one and a half hours.

Goernann found that, whereas rabbits survived ligature of the ureters for a period of about forty-eight hours, the injection into the jugular of 2 grammes of urea after ligature of the ureters killed one animal in two hours, and others in periods varying from eight to twenty-four hours. The general result of these observations and experiments is to confirm the theory, that the symptoms which are commonly designated uræmic are due to the accumulation and retention of urea in the blood and in the tissues, consequent on the suspended or diminished excretory function of the kidneys.

## PRACTICAL MEDICINE.

## A GRAVE COMPLICATION OF TYPHOID FEVER.

By C. F. MAUNDER, Surgeon to the London Hospital.

Typhoid fever having just lately attracted a good deal of attention from the profession, two cases associated with hernia which have come under my observation will have some interest for it.

Case 1 is that of a feeble old gentleman seen by me in consultation with Dr. Gillies, after three or four days' illness. He had been the subject of what proved to be a direct inguinal hernia of the right side, which the doctor thought he had partially reduced by taxis; but vomiting persisted, and was now stercoraceous. Aperient medicine had been rejected by the stomach, and there was constipation. His illness apparently began with sudden pain in the inguinal region. I explored the inguinal swelling, and disclosed an old hernial sac, empty, with a very narrow neck indeed, and loaded with superitoneal fat. Some days subsequently I heard from Dr. Gillies that our patient was undoubtedly the subject of typhoid fever, and, later still, that he had recovered, in spite of the surgeon but much to the credit of the physician, as I think.

Of course, in the early stage of possible fever, with no special symptom to guide, obstinate and stercoraceous vomiting with a history of hernia and a swelling in a hernial region demand an exploratory operation. It is preferable to perform such an operation unnecessarily than to risk the possibility of death from strangulated hernia.

CASE 2.—A young man who had been ailing for

many days was the subject of an inguinal hernia on the left side. The belly was tympanitic and tender, and he kept the left thigh flexed on the pelvis to relieve discomfort in the inguinal region. Handling the inguinal swelling caused pain. Constipation with nausea and sickness existed. His dull, listless aspect led me to look for a rose-rash, and three or four spots were found. I now obtained the aid of Dr. Down, who pronounced the case to be one of typhoid fever. The question of operation was no longer entertained, and the progress of the case showed it would have been superfluous.

In this latter instance, but not in the former, the duration of the illness associated with rose-rash materially aided the diagnosis; while, on the other hand, the flexed left thigh and tender bubonocoe tended to throw the observer off his guard.

## THERAPEUTICS.

## OIL OF MALE FERN IN TAPE-WORM.

T. S. Galbraith, of Seymour, Indiana, writes: "Mrs. W. had suffered for two years or more with tape-worm. During the time she had taken turpentine, pumpkin-seed, etc., with the effect of dislodging many joints of the parasite, but only to re-form at the expiration of six or eight weeks. After the usual fast, one drachm of the oil of male fern was given in half an ounce of syrup of acacia. The dose was repeated in an hour. At the end of another hour a brisk cathartic was administered, with the effect of bringing away 22 feet of the worm without the head. The patient was much relieved, and for three months improved in general health. At this time all the symptoms returned. Directed a fast of twenty-four hours; gave a full dose of castor-oil at bed-time. Next morning added half an ounce of the fern-oil to a little sweet milk and acacia syrup, and gave one-third hourly, following this by a cathartic. An immense mass of worm was passed soon after, and though the head was not discernible it must have been present, since the patient has continued entirely well now for ten months."—*American Practitioner*.

## METATARTRATE OF MAGNESIA.

The efforts which have been made, since the introduction of citrate of magnesia, to replace the citric acid, in consequence of its relatively high price, have hitherto been unsatisfactory. When ordinary tartaric acid is used in combination with magnesia, the solution, at first clear, quickly becomes turbid and deposits the greater part of the salt formed. M. Leger reports (*Repertoire de Pharmacie*, June 25, 1873) that, if metatartaric acid be used, which is obtained by heating tartaric acid to about 170° C. (338° Fahr.) it forms with the magnesia a very soluble tasteless salt the purgative action of which is more energetic and more certain than that of the citrate. The method adopted by M. Leger in the preparation is to heat over a gentle fire, in a porcelain capsule, or better still, a silver basin, a small quantity of tartaric acid until it melts, carefully stirring it from time to time. Small portions of fresh acid are succes-