condition has yet been demonstrated. Todd believed that paralysis following a fit was due to exhaustion of the brain from excessive action; this view has been accepted by Hughlings Jackson and others. Clark, who has had abundant opportunities of studying this subject, says: "It is not necessary to invoke any other state than exhaustion to explain the temporary paralysis in epilepsy."

In the preceding case the persistence of paralysis probably depended on the rapidity with which the fits followed one on another. Negative pathologic findings would be additional evidence in favor of exhaustion, as the probable cause of paralysis.

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CANNABIN TANNATE (MERCK).*

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In response to a request of the Secretary of the Council on Pharmacy and Chemistry, I have recently investigated the preparation listed by Merck & Co. as cannabin tannate.

The name of this preparation would naturally lead one to suppose that it is a chemical union (salt) of tannic acid and some basic principle contained in *Cannabis indica*. Whatever the chemical constitution of the substance may be, it evidently contains tannic acid as one of its constituents. This is indicated by the dark blue color imparted to its watery solution on the addition of a few drops of a ferric chlorid solution.

As sold by Merck it is a greenish-brown powder, slightly soluble in water, slowly soluble in alkalies, and possesses a bitter and highly astringent taste. In fact, when applied to a mucous surface it acts much like tannic acid. On account of its bitter astringent taste, tardy solubility, and astringent action on mucous membranes, it is a very unpalatable preparation. Further, its astringent action leads one to doubt whether it can be absorbed from the alimentary tract otherwise than very slowly.

The symptoms most characteristic of *cannabis indica* intoxication are as follows: first, an apparent stimulation of the psychic functions which has given rise to the more or less romantic literature on this phase of its action; second, a condition of quietness, lack of response to external surroundings and finally sleep. On account of the latter effect the drug has enjoyed a considerable reputation as a hypnotic. Dogs are said to be very susceptible to the influence of the drug, showing a decided narcotic effect. "After a primary ataxia, excitement and nausea and vomiting, the animal tends to fall into a deep and prolonged sleep during which the sensation of pain is much diminished, while the reflexes persist."

An attempt was made to see if any of the symptoms characteristic of *cannabis indica* could be elicited in dogs by the administration of the preparation under consideration.

EXPERIMENT 1.—Subject, a dog, weight 6 kg. Five grams of cannabin tannate were shaken up in 200 c.c. of water rendered alkaline by the addition of sodium carbonate (only a partial solution resulted). Forty c.c. containing one gram of the drug, were administered by means of a stomach-tube (stomach previously empty) every two hours for four doses. Fifteen minutes after the second dose the animal began to show

nausea and soon began to vomit, the vomited matter apparently containing all the drug previously administered. The two subsequent doses were promptly vomited. Aside from the nausea and vomiting, the dog showed none of the other symptoms characteristic of *cannabis indica*—no ataxia, no psychic stimulation or depression, and no tendency to sleep.

EXPERIMENT 2.—Subject, a dog, weight 8 kg. Five grams of the drug in 100 c.c. of alkaline water were administered by means of a stomach-tube (stomach previously empty). Thirty minutes afterward the animal showed nausea and began to vomit. Apparently everything was vomited up. All subsequent doses were promptly vomited. In this experiment the animal showed no other symptoms characteristic of *cannabis indica* intoxication—no ataxia, no mental depression and no sleep.

EXPERIMENT 3.—This experiment was carried out on myself as a subject and consisted in the taking by mouth of four doses, each one gram, every two hours. Aside from a very astringent feeling extending from mouth to stomach and some nausea, no other symptoms became manifest. The discomfort in the stomach seemed to be due, in part at least, to the astringent action of the tannic acid.

By way of comment on the results of these experiments, it might be noted in the first place that the only symptom in any way characteristic of *cannabis indica* poisoning exhibited by the dogs was the nausea and vomiting. Judging from the vomited matter one would be led to think that very little of the drug was absorbed from the alimentary tract. This is what might be expected. Tannic acid alone administered by mouth imparts a like astringent feeling in the stomach and intestines and may result in vomiting and purging. The latter actually occurred in dog 2. If experiments on dogs prove anything at all as to the action of *cannabis indica*, this preparation exerts no demonstrable hypnotic action, and in man no psychic derangement, either in the form of a stimulation or depression.

Hence cannabin tannate as a therapeutic agent not only exhibits no action similar to that of *cannabis indica*, but is practically inert. Even if active in such a form, the preparation possesses so many undesirable physical properties as compared with other preparations of *cannabis indica* as to render it therapeutically superfluous.

CASE REQUIRING IMMEDIATE NEPHRECTOMY.

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The following case requiring immediate operation came under my observation June 28, 1908:

Patient.—J. M. C., aged 46, farmer, weight, 165 pounds, height 5 feet 7 inches.

History.—The patient was born in Georgia, reared on a farm and has always been in good health, being noted as one of the strongest men of the county. About twelve years ago, while he was walking through the woods with an ax on his shoulder, a falling limb from a tree under which he was passing struck the ax driving it forcibly against the right occipital region, producing a fissure fracture of the vault, accompanied by considerable concussion of the brain. After some weeks' confinement to the house, during which time the patient gradually recovered from what at first appeared to be a very serious brain injury, he again assumed the duties of his farm, having made a complete recovery. Operative measures were not indicated, the expectant plan having been pursued. The patient's health at the time of the injury was good. He had been well for many years, except for a slight disturbance of digestion.

Present Injury.—About 5 p. m., June 28, 1908, the patient was riding a bare-backed horse at full speed down a hard lane,

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trying to round up a calf. On making a right-angled turn, he was thrown with terrific force against the ground, the body being doubled on itself on alighting. He made an attempt to get up, but soon abandoned it. Later, by the help of two of his children, the patient managed to get to his house a few hundred yards' distant. I was then summoned.

Examination.—On my arrival, about twenty minutes after the injury, the patient was rolling from side to side of his bed, extremely restless and very pale. His extremities were cold, he was bathed in perspiration and complained of feeling chilly. The pulse was at first imperceptible, but soon became evident, though it was very weak and about 85 a minute. Respiration caused pain, and was, therefore, jerky and restrained. Nausea and vomiting quickly ensued; the patient complained of marked pain about the junction of the eleventh and twelfth ribs with the spinal column and thence to the iliac crest on the right side. All over the right kidney region palpation was painful and the tissues boardlike. The right hypochondrium was also resistant and painful to the palpating hand. The skin was not bruised; there was not even an abrasion to be seen, save on the right side of the face over the malar bone, where an area the size of half the palm was noted. The left wrist was slightly sprained. Further than this nothing was made out worthy of notice. Morphine and strychnin were administered hypodermically to control pain and to quiet the patient. There was no desire to urinate immediately after the injury, but later the patient called for the urinal, only to strain without voiding. One hour after my arrival the man's pulse was 96 and more feeble; vomiting was persistent, the expression bad, and collapse more marked. A catheter was introduced into the bladder, when bright red blood escaped in large quantity. The bladder was next dilated and found to hold water. The kidney region was more resistant by this time, the hardness extending over the whole right abdomen. The patient complained of inability to get his breath and also of great thirst. A diagnosis of ruptured kidney with intraperitoneal hemorrhage was now made and steps toward surgical intervention were taken. Since the patient was in a precarious condition which was hourly becoming worse and more than twenty-four hours removed from well-equipped hospitals, it was determined to operate on him in his home with whatever aid could be readily summoned.

Operation.—It was noon the following day before all preparations were ready. Every hour had witnessed the rapid sinking of the patient; hematuria had continued well marked. A tumor was easily made out above the injured kidney. The abdomen was dull to percussion, painful all over to palpation. Patient was semi-comatose, pulse 140, respiration 10 (due to morphine), temperature 100.6. Vomiting had become more frequent; collapse was well marked. After a rural operating room and equipment had been prepared, there being marked deficiency of instruments and dressings, both in quality and quantity, with the aid of three other physicians, two or three laymen acting as nurses, the patient, now apparently moribund, was placed on the table. The right kidney was hastily exposed by the ordinary lumbar incision. It was found imbedded in and surrounded by blood, its capsule being stripped off by its extravasation. A rent partially dividing the kidney into halves, extending into the kidney pelvis, was made out by the palpating hand. Since the man's condition was such as to demand the quickest possible action, it being necessary to stimulate heroically by strychnin and whisky hypodermically, as well as by normal salt solution intravenously, clamps were placed on the renal vessels, the ureter severed, and the kidney removed. The clots of blood surrounding the kidney having been removed, the cavity was packed with gauze and the wound partially sewed up. As an index to the degree of exsanguination present, I simply mention that it was unnecessary to ligate or clamp a single vessel, save the renals. The patient was then hastily turned on his back and the abdomen opened. The peritoneal cavity contained several hundred cubic centimeters of bloody fluid, which was washed out with normal saline solution. Drainage wicks were again placed, and both wounds dressed. After about twenty minutes' work

directed at overcoming the shock, which was alarming in the extreme, the patient was removed to his bed, showing signs of slight reaction.

Postoperative Treatment and History.—Stimulation was kept up and pushed to the point of intolerance. Repeated infusions were given. Slowly response became evident and the pulse gained in tone and rhythm. Urine was soon voided and contained only a trace of blood. There was no post-operative vomiting. The day following operation found the patient in encouraging condition. Mentality was good; the urine was voided in sufficient quantities, and there were no further signs of bleeding. The pulse was fairly strong, regular and running about 100 to the minute. The wounds were draining nicely. There was no evidence of peritoneal inflammation. On the third day the wounds were dressed, clamps removed, and the cavities repacked. Convalescence was at this time well established. The daily output of urine was normal in amount and constituents, save a decided ring of albumin which was explained as "congestive albuminuria" and which soon disappeared. The patient began eating, the nourishment being confined altogether to liquids. The bowels moved normally; the pulse came down to 85; the temperature remained around normal, reaching 100 only twice or three times during convalescence. The man was urged from the first to drink large quantities of water. Notwithstanding this, and the preliminary bladder irrigation, a mild degree of cystitis developed about the tenth day, causing considerable temporary trouble, but was quickly controlled by the use of twenty grains of hexamethylenamin daily, the amount being gradually decreased. This slight annoyance was the only complication noted during the eight weeks indoors. Following this the patient's recovery was uninterrupted and at present almost complete. Daily dressings of wounds witnessed rapid healing. The man was kept in bed for five weeks and then allowed to sit in a reclining chair. At the end of six weeks he was put on his feet. At present he is going about his farm free from pain or inconvenience save a slight weakness of the right side from which he is daily recovering. A small sinus still remains at the seat of incision in the lumbar region, but is rapidly healing. The abdominal wound is well. Now, eight weeks after the injury, the patient presents a most gratifying appearance, his mode of life being little changed from that preceding the fall, save the inability, of course, to perform manual labor.

I want especially to invite attention to the following points in this case:

1. The severity of the lesion found, there being no adjacent structures involved.
2. The apparent absolute indication for operation at once under the handicap of rural surroundings, it being considered impossible to transport the patient alive to the nearest hospital.
3. The absence of infection (although the perinephritic space and peritoneal cavity were both contaminated with urine) to be explained, perhaps, by the early establishment of drainage.
4. The marked albuminuria which developed early after operation, only to gradually disappear as the compensatory action of the sound kidney was established.

Finally I wish to acknowledge my indebtedness to Dr. A. C. Hoyt of Waycross, and to Drs. D. H. Meek and S. L. Vinson of Nicholls, Ga., for most valuable assistance, without whose cooperation in this emergency little worthy of note could have been accomplished.

Prolapse of the Urethral Mucosa in Women.—A. Bertino has found an unexpectedly large number of cases of urethral prolapse on record, with eight from his own experience. The complete form is encountered generally in infants and in climacteric women. He recommends in his study of the subject, in *Gynecologia*, Aug. 15, 1908, excision of the prolapsed mucosa as the best treatment.