

(4) Eucalyptus oil—when a volatile antiseptic is necessary.

The dressings consist almost entirely of sawdust, sponges, and rags, purified by saturation with a solution of corrosive sublimate (1—1,000) and dried.

Lastly, splints cut out of chinks were introduced into the hospital at the beginning of the session by my colleague Dr. Perry. They cost nothing, can be adapted to any limb, and increased rigidity can be obtained doubling or trebling their folds.

It might be objected that some of the antiseptics I have mentioned are too expensive for ordinary use. But if pure Listerism is carried out, the dressings are seldom or never changed, and the first cost is spread over the whole treatment of the case. In the excision of the knee-joint above recorded, where only one dressing was required, the total cost of everything employed in the case, including carbolic acid and spirit for the spray, iodoform, dressings, splints and bandages, was exactly two rupees and three pie. On the other hand, in cases where putrefaction has taken place before the patient comes under treatment, expensive antiseptics are not often required. For instance, a case of diffuse cellulitis of the lower extremity was admitted into my wards in January 1884. There was a septic wound in the leg, and incisions were made all over the limb, which discharged pus and sloughs for nearly a month. The limb was laid in common sawdust, which was changed as it caked with the discharges, and the total cost of the dressings from first to last did not exceed four annas.

THE ACTIVE PRINCIPLE OF INDIAN HEMP.

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One of the most serious drawbacks to the medicinal use of this powerful drug (*Cannabis Indica*) is that we cannot depend upon its preparations being possessed of activity; moreover, the large amount of resin in each dose is often productive of gastric disturbance. These objections would at once be overcome were we able to extract from the resin its active principle.

Since 1839, when Sir W. O'Shaughnessy of Calcutta brought the peculiar properties of Indian Hemp prominently to the notice of the medical world(1), several attempts have been made to isolate the

active principle of the plant with remarkably conflicting results.

In 1846 Smith(2) separated a resin which he called '*Cannabin*', and which he believed to be the active principle; and said that it possessed much narcotic activity. No subsequent observers, however, have been able to obtain, by the process employed by Smith, any body which fully answers to the description of Smith's '*Cannabin*.'

In 1857 Personne(3) resolved the volatile oil, obtained by distillation of the plant, with water, into *Cannabene* ($C_{18} H_{20}$) a light hydrocarbon, and a solid crystalline hydride of cannabene ($C_{18} H_{22}$). He states that inhalation of the vapour of cannabene produces a powerful physiological effect, and he claims it as being the sole active principle of Indian hemp.

In 1876 Preobraschensky(4), operating on '*hashish*' got from Turkestan, asserted that the active principle was not a resin, but an alkaloidal body, which he recognised as *Nicotine*, the volatile liquid alkaloid of tobacco. It has been suggested that the presence of nicotine might be due to the hemp having been mixed, as it sometimes is in the bazaars, with tobacco, but Preobraschensky states that he obtained this nicotine from the flowering tops of the plants as well as from the commercial resin.

Merck of Darmstadt applies the term *Cannabin tannin* to a glucoside contained in Indian hemp which he has combined with tannin. This preparation is not possessed of powerful activity, and frequently is inactive. By treating this tannin compound with zinc oxide, Herr Bombelon obtained a substance which he named *Cannabinum*, as a greenish brown powder not agglutinating upon exposure to the air and volatilizing without residue on platinum foil (5).

In 1881 Siebold and Bradbury reported to the British Pharmaceutical Conference that Indian hemp does contain a volatile alkaloid which, however, does not possess the characters of nicotine. They called it *Cannabinine*, and obtained only 2 grains from 10 pounds of hemp. They do not appear to have tested its action physiologically, and so have left it undetermined whether this volatile alkaloid be really the narcotic principle of hemp.

The above chemists thus obtained widely different bodies, yet each individually believed that the sub-

(1) On Indian Hemp or Gunjah, Calcutta, 1839; also *Bengal Dispensary*, Calcutta 1842, pages 579-604.

(2) *Pharm. Journal*, vol. vi, page 171.

(3) *Journal de Pharm.*, xxxix, 48.

(4) *Pharm. Zeitsch. f. Russland*, page 705.

(5) *Pharm. Zeit.* May 10th 1884.

stance which he isolated represented the active principle of the drug. With the subject thus involved, and having at hand a supply of fresh and active hemp, we undertook an examination of the plant in the endeavour to isolate its active principle. Since commencing our observations. Dr. Matthew Hay has reported(6) that he has isolated an alkaloid in the form of colorless needlelike crystals, which, however, did not possess the narcotic properties of the plant, but produced tetanus in frogs in exactly the same manner as strychnine--though not chemically identical with it. Dr. Hay therefore called this alkaloid *tetano-cannabin*. It must exist in the plant in exceedingly minute traces, for only a few grains were obtained from 1 kilogramme of hemp. He considers it a secondary alkaloid of the plant, and not the chief active principle. We have specially investigated this point as to whether the plant contains an alkaloid with tetanizing properties.

The following is a preliminary note of some of our results. One thousand grammes of the flowering tops and leaves of Indian hemp of ascertained activity were roughly powdered and then moistened with 1 litre of a 5 per cent. solution of sulphuric acid and allowed to digest at a temperature of 68° F. This mixture was then packed in a percolator and percolated with about 1 litre of distilled water till the fluid which passed through was colorless.

This fluid after filtration measured 1½ litres, and was of a dark sherry color, smelling very strongly of the characteristic odour of the plant. Carbonate of lime was added to neutralize the free acid, and carbonate of soda solution to render it alkaline. On the addition of the soda a copious precipitate fell down. The unfiltered mixture was then well agitated with ether; and this ethereal layer, which ought to contain any alkaloidal body soluble in ether, was afterwards drawn off and allowed to evaporate spontaneously.

The subjacent liquid which remained after removal of the ethereal layer was evaporated on the water-bath to dryness and then boiled with absolute alcohol and filtered, and the filtrate evaporated on the water-bath. This ought to contain Hay's tetano-cannabin which is freely soluble in alcohol, but sparingly so in ether.

(To be continued.)

(6) *Pharm. Journal*, 1883, page 998.

THE MEDICO-LEGAL ASPECTS OF STONE IN THE BLADDER, IN THE JOREHAUT DISTRICT, UPPER ASSAM.

BY CHARLES FORBES, M.B., C.M.,

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Stone in the bladder is not a common affection in this district, and its treatment is rarer still.

During the past seven years lithotomy has been performed only seven times, *viz.*, by Dr. Elliot at Noakacharee five times, by myself once at Cinnemara, and once by Dr. Strange at Rungajaun. It is to the two latter cases that my remarks particularly refer.

In my own case (æ. 40, lateral lithotomy) the fragments of the calculus weighed 1,200 grains, and the patient died some three weeks after the operation from pyelitis.

I took little note at the time of the fact that the stone was in pieces, when operated on, though I thought it curious that the pieces fitted accurately together after removal.

In Dr. Strange's case,—at which I assisted—the bladder examined *per rectum* felt like a bag of pebbles, and by the suprapubic operation some twenty sharp fragments were removed. This case did well ultimately.

What was the cause of the fracture?

In surgical text-books it is asserted that fracture of a calculus sometimes occurs spontaneously in the bladder; and in the first case (my own) I was compelled against my better judgment to accept this explanation for want of a better. In the *Indian Medical Gazette* for March 1881 a letter by Dr. Cran gives the clue. Dr. Cran writes,—“Of late several Assamese have died of this disease, one of them after a most peculiar operation, which I shall describe, as showing the advanced stage of surgery to which they have attained. The priest having placed the patient on his back, raised well the anterior wall of the abdomen, placed a stone on one side of it, and belaboured the other with a second stone, desisting when the calculus was supposed to be crushed. The patient died a few days after the operation.”

Should I meet with a similar case again, I should prefer the suprapubic operation, for one wound more to the bladder can hardly make matters much worse. In the second case the mucous membrane was literally in tatters and the colour of raw beef. It shows what serious surgical injuries children may sustain, and