

give it a place in his little work on "Bazaar medicines." Dr. Dutt has written of it in his very able and valuable work on Hindu Materia Medica, but the dose therein given, viz., 1-dram of the seeds, is insufficient to free a patient from his unwelcome intestinal guest. I would beg to urge a trial of it in the public dispensaries in India both on account of its efficiency and cheapness. The drug is used as a domestic remedy in many parts of India, and it is extolled by writers in some of the so-called Yunani works of medicine as one of the best tapeworm remedies.

Vernacular Names—Bābarang (*Hind.* and *Beng.*), Vaivarang (Bomb.), Vayu - vilangam (Tam.), Birang-i-Kabuli (*Pers.*). Its scientific name is *Embelia ribes*, N. O. Myrsinaceæ.

There are two varieties of Babarang. The reddish small berries are to be preferred for anthelmintic purposes. I give $7\frac{1}{2}$ to 10 drs. for an adult. It may be taken with honey or as a decoction in milk.

[The anthelmintic properties of Bābarang are referred to at some length by Dymock in his *Indian Materia Medica*, p. 389 *et seq.* At p. 390 he says: "Vaivarang is common in the neighbourhood of Bombay, and is in high repute as an anthelmintic among the country people, especially in cases of tapeworm, a disorder common among the native Christians of the Western Coast. The dose is a teaspoonful of the powder twice a day for a child, and a dessert-spoonful for an adult; it can hardly be called a purgative; the taste is rather pleasant, slightly astringent, and faintly aromatic. The worm is expelled dead. A purgative should be given to prepare the patient for the drug." Since our correspondent's article was put in type, a short Therapeutic note by Surgeon G. F. Harris (*Beng.*) on the value of babarang in tapeworm, has reached us. He also employed it in large doses (1 to 2 ounces) and strongly recommends its use.—Ed., *I. M. G.*]

TWO CASES OF GASTRORHEXIS OR SPONTANEOUS RUPTURE OF THE STOMACH.

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CASES of spontaneous rupture of the stomach are of such rare occurrence, and at the same time of such medico-legal interest, as to render their publication always desirable. In Ziemssen's *Cyclopædia of Medicine*, Vol. VII (English Edition) Dr. Leube says, that "*perforation* of the stomach, as is well known, is a not infrequent termination of various gastric diseases, accompanied by erosion of the coats of the organ, such as cancer, ulcer, and in rare cases softening and dilatation of the stomach. Another form of rupture of the stomach, however, still requires special mention, viz., that which occurs in an apparently healthy stomach, and which may be termed *gastrorhexis*, or *rupture* of the stomach in the strict sense. The literature of this subject shows unquestionably that rupture may occur in a perfectly healthy stomach. Still this accident must certainly be regarded as among the rarest of events, and in future

it will be necessary to show, by microscopical examination, that there has been no fatty degeneration of the muscular coat."

In Taylor's *Medical Jurisprudence* (edited by Stevenson), page 672, three cases are recorded. In one the rupture was situated on the posterior surface; one at the cardiac extremity; and in one the anterior surface was found ruptured. In this last case the patient was suffering from intermittent fever at the time of rupture.

The two cases now recorded were instances of rupture of the stomach, and not a mere perforation of the walls of that viscus. The coats of the stomach in Case No. I, were atrophied and thin, but in No. II. were healthy; and in neither case were the coats of the organ, softened or eaten away in irregular patches by the action of the gastric juice. In both cases the stomach was empty at the time of rupture; and in both the gastric juice acted only on the spleen, digesting off its capsule and peritoneal coat, in patches, and thus allowing the escape of blood into the abdominal cavity. I think there can be no doubt but that the rupture in both took place before death, and was not due to *post-mortem* softening; the seat of rupture was on the anterior wall. The mucous membrane and peritoneal covering could be traced up to the margin of the rent, and did not present any marked degree of irregularity; and there was an absence of softening, erosion or rupture on the posterior wall of the stomach.

CASE I.—*Spontaneous Rupture of Empty Stomach—Death after 23 hours—Post-mortem Examination.*

Parragee Ram, Hindu, age 22, sepoy, 3rd Beng. I., of two years' service, was admitted to the 3rd B. I. Hospital, at Nowgong, on 5th August 1882, suffering from a mild attack of ague. He was a strong, well nourished man, had not been in hospital previously, and was in good health up to the day before admission. From the 5th to 12th he had no fever, but complained of pain in back and over the body generally. The pain in the back was relieved by a blister, and on the 12th he seemed to be almost well.

13th.—He had another attack of ague.

14th.—While lying on his bed at 11 A.M., the Hospital Assistant observed, that he became collapsed and partially insensible with slight nausea. I saw him at 12 o'clock. He complained of no pain, no vomiting, but his mind was somewhat cloudy. Pulse 120, temp. 98° 5; took his food well during the day; no vomiting or pain.

15th August—Slept well during the night; temp. at 6 A.M. 99° 8, pulse 112, and he was in the cold stage of an attack of ague. Ordered diaphoretic mixture and a dose of quinine, when the sweating stage came on. The cold stage lasted from 6-30 to 8 A.M., when he complained of headache, and became insensible; the pupils were contracted, breathing irregular, heart's

action excited and irregular, pulse quick, feeble and intermittent. The temperature went up to 101° 2 at 8-30 A.M. Patient remained unconscious up to 10 A.M., the temperature going up to 102° 2, when he died.

Post-mortem examination made five hours after death. Body well nourished.

The vessels of the membranes of the brain were full of blood. On the surface of the pia-mater, along the margins of the superior longitudinal fissure, several patches of lymph were observed. Weight of brain 43 oz. Brain substance congested. Lungs congested. Heart weighed 9¾ oz. Right side of the heart was full of dark blood, soft and flabby, and the seat of well marked fatty degeneration.

Abdominal cavity contained 7 oz. of dark blood.

Stomach contained a small quantity of blood and mucus, and was found ruptured in a line extending from the right of the opening of the œsophagus across the anterior wall as far as the great curvature, at a point corresponding to the junction of its middle with left third. The margins of the rupture were thin and slightly irregular. The vessels of the mucous membrane were full of blood. The mucous membrane was stained with pigment, entire and very thin towards the centre of the organ and in the great cul-de-sac. The coats of the stomach towards the pyloric end were healthy, but in the centre of the organ and in the great cul-de-sac, they were very thin and atrophied. This condition was most marked on the anterior wall, on each side of the rupture, where very little remained but mucous membrane and peritoneal covering. There was no evidence of ulceration of the mucous membrane of the stomach.

Spleen weighed 11¼ oz., and was surrounded with blood. The capsule was found wanting in patches along its inner concave and outer convex surfaces. These patches were irregular in form, and presented an appearance as if the capsule had been eaten away. The organ was much congested, and on pressure blood escaped freely, both from the places where the capsule was wanting and the places where it was entire.

Kidneys and liver were congested. The outer coat of parts of small intestines and portion of transverse colon, which were in contact with the stomach, were found blood-stained and congested.

Remarks.—I believe that the stomach ruptured at 11 A.M. on 14th, when the patient became partially insensible, complained of slight nausea, and suffered from shock, which, however, was not well marked. It seems strange that he did not complain of pain, did not vomit, took milk and sago, and in the evening the temperature went down to normal.

When the stomach ruptured, the gastric juice, coming in contact with the spleen, digested off patches of the peritoneal covering and capsule,

and also acted but to a less extent on the outer coat of the intestines near the seat of rupture.

After a quiet night on the morning of the 15th, an attack of ague came on; blood was driven into the internal organs, which accounts for the congestion observed; the spleen became engorged with blood, which readily escaped from those portions which were devoid of capsule into the peritoneal cavity, increasing the shock, and hastening the fatal termination.

CASE II.—Spontaneous Rupture of Stomach—Removal of patches of capsule of spleen—Extravasation of blood into abdominal cavity—Supposed death from cholera—Post-mortem Examination.

A few days after the above case came under my observation, I met with another, which was very similar as regards the *post-mortem* appearances. I took full notes of the case at the time, but they have, unfortunately, been lost, and I can only give an account from memory, which, however, is pretty accurate, as the first case fixed the second firmly on my mind. In the months of July and August 1882, cholera was prevalent in the Bundelkhand States, as well as at Banda, in the North-West Provinces, about 60 miles distant from Nowgong. Cholera Reports were sent me as the Surgeon to the Bundelkhand Political Agency, and a careful watch was kept over the deaths in the Bazar. *Post-mortem* examinations were made on doubtful cases to find out when cholera occurred, so that precautions might be taken in the interests of the troops, European and Native, stationed at Nowgong. A few days after the first case, I was called to make a *post-mortem* examination on the body of a woman, who had died that morning in the Bazar, and whose death had been attributed to cholera.

The following history was given:—Deceased and her husband had started from their village, which was four days' journey from Nowgong. The day before reaching Nowgong, deceased, who had previously been in good health, felt all at once very ill, was unable to walk, was put on her husband's pony, brought into Nowgong, and died a few hours after reaching the Bazar. She died at 11 o'clock in the morning.

A *post-mortem* examination was made 5 hours after death. All the organs of the body seemed healthy, except the stomach, which was ruptured in a line extending obliquely from the lesser curvature across the anterior surface, reaching almost to the great curvature. The stomach was empty; the margins of the rupture were slightly irregular, but there was no evidence of atrophy or disease of coats of stomach. The spleen was enlarged, surrounded with blood, and the inner concave surface presented irregular patches, devoid of peritoneal covering and capsule. It looked as if the gastric juice, acting on the spleen, had removed patches of its capsule and peritoneal covering,

thus allowing blood to be easily extravasated into the abdominal cavity, which contained a considerable amount of blood. Nothing else was observed in the abdominal cavity, and from this I infer that the stomach was empty at the time of rupture. This case seems to me to have been one of those rare cases of spontaneous rupture of the stomach, when not distended, and without any obvious cause. As far as could be judged, the stomach seemed healthy, but in order to make sure that there was no fatty degeneration or other disease, a microscopic examination of the coats of the stomach should have been made. This was not done, and the case is so far incomplete. The stomach was put in spirit, but, on examination a few days later, was found decomposed, and consequently useless for further examination.

REMARKS ON THE NATURE OF NERVE MOTION OR FORCE.*

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NERVE-motion, nerve-force, and nervous influence are terms in common use, and, in the minds of those who use them, they mean the same thing. From what sources is this force derived? The answer which physiological handbooks of the present time give to this question is—(a) from the oxidization of nerve tissue itself, as fresh arterial blood is circulating through and among its granules, its cells, its fibres, its tubes, and fluids, (b) from the disintegration or degradation of the other tissues of the body in the ordinary tear and wear of life, and (c) from the breaking up of certain ingredients of the food within the body from more complex into less complex chemical combination of ingredients received into the system, but which have never formed a portion of the organized tissues.†

In the elaboration of the crude undigested food into that pabulum which is capable of becoming formed material in the living structures, and in the conveyance of this to those intimate recesses in the various tissues where it is used up by the germinal matter, much force is expended. Much force is also expended by the germinal matter itself in converting the pabulum into formed material and in endowing this with those specific properties which are characteristic of life. The force thus expended becomes, as it were, latent again to reappear when the formed tissues break up and run down during exercise. When set free, thus it is caught up again and returned to the nerve

centres, where it is re-elaborated, and stored for further use. The body has been sometimes compared to a furnace, a boiler, and a steam-engine, where coal is burned, force generated, and work done.* This, however, only expresses a fraction of the truth, for, in the case of the body, fuel is not only burned, force generated, and work done, but new coal is made, and this new coal, moreover, is of much higher quality than the old.

The different nerve centres are to be regarded in a threefold capacity—(1) as portions of the bodily tissues, like the others subject to waste, and so continually incurring the necessity of repair with its consequences, (2) as store-houses, where a very highly elaborated force is conserved and stored for physiological use, (3) as an instrument or apparatus. It is convenient to study each of these functions separately, but in reality the one cannot be exercised separately from the others, and the use of one involves the use of all. Here we have chiefly to consider the nerve centres as an apparatus and as store-houses, where through the channels of the afferent nerves innumerable simple vibrations are received from outside of themselves and elaborated into a force, compounded, as it were, of all other forces,† and possessed of powers which far exceed in magnitude the powers of all the other forces, whether organic or inorganic. This is nerve-force or motion. It is not meant that this statement should make it appear that *all* the vibrations which reach the nerve centres arrive through the medium of the centripetal nerves; for it may be assumed that those arising from the oxidization of the nerve tissues, are secured as they are generated and stored on the spot. The centripetal nerves conveying vibrations towards and into the nerve centres, come from (a) localities within the skin and (b) from localities on or without the skin, and from fossæ or chambers adjacent to the surface of this. Those from *within* may be spoken of collectively as nerves of interior-touch. They come from muscles both striped and unstriped, from free mucous surfaces, from glands, and other tissues, and they convey vibrations derived from the forces evolved through the chemistry of digestion, from the degradation of the tissues through use, and by mechanical friction. The evolution of electricity and heat also attend many of the physiological operations: indeed, every exercise of the will on the muscles generates heat and a current of electricity travelling centripetally. Probably, much of this is re-elaborated in the centres and re-stored for future use. The force derived from the transformation of mechanical force is origi-

* Helmholtz on the Interaction of the Natural Forces, translated by Tyndall.

† This will be more fully explained further on: here I will only remind the reader that solar light or heat is compounded of many simpler elements which by filtration or sifting can be separated from each other.

* This is offered merely as one of a series of efforts to break ground in a field which certainly belongs to Physiology.

† Chapter I in Carpenter's Human Physiology.