

cicatrix of the second incision commenced at the anterior part of the neck, and soon terminated at the same opening. It appears then, that this opening was formed by the junction of the superior parts of the two first incisions. The third incision had occasioned a fresh wound,  $3\frac{1}{2}$  inches long, and 13 lines wide in its middle part, extending from the edge of the broad ligament on the right side, to within two inches of the opposite ligament, forming a semicircular line on the anterior surface of this viscus.

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### ON THE ACTION OF VOMITING.

[From the New Medical and Physical Journal for July, 1813.]

**A**n interesting memoir on this subject, has been presented by Dr. Magendie to the Imperial Institute of France, who appointed Commissioners to give an opinion thereon, of whose report we shall present a short account, together with a few extracts. M. Magendie was desirous of ascertaining, if possible, the manner in which vomiting was performed, and for this purpose instituted several experiments in the presence of the Commissioners. All the experiments, say they, which we witnessed were made upon dogs, because they are the animals most subject to vomiting; tartar emetic was almost always employed to produce vomiting, not by way of injection or deglutition, but by introducing it into the jugular vein. And it is worthy of remark, that tartar emetic, when swallowed by the animal, often does not occasion vomiting in half an hour; but when introduced directly into the circulation, it produces vomiting in one or two minutes. We have reason, they add, to be astonished at this constant and irresistible tendency of tartar emetic to produce vomiting, so that wheresoever it is applied, it always produces this effect. During this first experiment, repeated several times upon large dogs, in the abdomen of which, an incision had been made large enough to admit two fingers, it was observed, that at each strain of the animal the fingers were pressed upon from above by the liver, pushed down by the diaphragm, and from below by the intestines, which the abdominal muscles pressed; while the stomach, emptying itself without any sensible motion, did not appear to

diminish in volume. This last singularity is occasioned by the presence of air, which takes the place of the food as it is thrown out of the stomach, and which being introduced through the œsophagus during the long inspirations which precede vomiting, keeps the stomach always sufficiently distended not to escape the compressing action of the surrounding parts. In a second experiment, made upon the same dogs, which had served for the preceding, the incision of the belly being increased, and the stomach drawn out of the body, it was still easier to be convinced of its want of motion. In this state the stomach, filled with air, which had been drawn in some moments before the act of vomiting, was distended like a balloon; but no further vomiting took place, nothing but ineffectual nausea, because the stomach being out of its place could no longer be acted upon by the surrounding organs. By pressing upon the stomach, thus removed out of the body, with the two hands, so as to imitate in some measure the action of the diaphragm and abdominal muscles, vomiting was always produced; but though the dog subjected to this experiment, vomited without having taken any emetic, and exhibited the nausea and other symptoms which characterise vomiting, the column of air did not enter and take the place of the ejected food. This shows that other conditions besides the mere pressure of the stomach are necessary to produce vomiting. Having removed the abdominal muscles from a dog, and injected an emetic, M. M. found that he vomited apparently with as much facility as if the muscles had been in their natural situation; this proves that it is the diaphragm which acts with the greatest efficacy in vomiting, and that the abdominal muscles serve scarcely any other purpose than to confine the viscera, floating in the abdomen, and to oblige them to react in a contrary direction.

The experiments hitherto undertaken, prove sufficiently that the stomach is entirely passive in the act of vomiting, and that the principal effect is produced by the diaphragm. Subsequent experiments demonstrated that vomiting may take place without the stomach. These experiments were repeated three times in presence of the Commissioners, always with the same result. M. Magendie having cautiously (in order to avoid hæmorrhage) made a ligature, on each of the orifices of the stomach, removed that viscus altogether, and after having sewed up the wound in

the belly, administered an emetic. In less than two minutes the dog exhibited all the symptoms which precede vomiting; it may even be said that he actually vomited, for he threw out with effort and violent nausea, the mucus of the œsophagus. But the most extraordinary and decisive experiment is the following. In the place of the stomach, which had been cut out of several dogs, M. Magendie substituted a small hog's bladder, almost of equal capacity, to the neck of which a canula of caoutchouc had been adapted, which was thrust into the œsophagus below the diaphragm, and kept in its place by a thread. These dogs were made to swallow water tinged yellow, with which the bladder was filled according as deglutition took place. The opening of the belly having been sewed up, an emetic was introduced into the jugulars. Nausea took place in a short time, and the animals vomited the yellow water, precisely as if it had come from a real and living stomach. The wound in the belly being laid open, the air was observed at each time of straining, descending in a current into the bladder, and distending it as if it had been a real stomach.

From these experiments it is deduced, that the principle, the prime mover of all those movements which produce vomiting, has its source in the seat of the nervous energy itself; that an emetic can only produce its effect by reacting from the stomach upon that place of the seat of the nervous energy, where the principle of the contraction of the diaphragm and abdominal muscles resides; that it is the affection of that part which is the immediate cause of vomiting. These facts appear to be an illustration of M. le Gallois's doctrine, that the seat of the nervous energy (the brain and spinal marrow) is the sole source of all the motions which take place in a living animal, and that no part can move without a particular and anterior modification of that part of the nervous energy by which it is animated. What is the precise part of the brain or spinal marrow on which the efforts of vomiting depend, has not yet been demonstrated by experiment. The following conjecture is thrown out by the Commissioners. M. le Gallois has proved, that the principle of the movement of inspiration is seated in that portion of medulla oblongata, which gives origin to the eighth pair of nerves. If we consider that the efforts of vomiting are executed by the

muscles of respiration, that the nerves of the eighth pair supply the stomach as well as lungs, and that the disorder of the medulla oblongata in apoplexy occasions vomiting, it will be rendered very probable that the efforts of vomiting are situated not far from those of respiration, if they have not the very same position.

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## CHEVALIER ON GUN-SHOT WOUNDS.

In a former number we have given a translation from a distinguished French writer on this subject. It will be useful to compare the opinions in that publication with those of the author, whom we here introduce. Mr. Chevalier is an English surgeon, of the highest reputation. His book has been received in the most favourable manner, three editions having been published in no long space of time. The following may be considered as an epitome of the most important practical parts of his work.

**A GUN-SHOT** wound is a wound made by a blunt instrument impelled with great velocity into the living solid.

A wound of this description must therefore necessarily produce more or less of contusion and laceration of the wounded parts; will often be accompanied with hæmorrhage, the fracture of a bone, and in many instances with the lodgment of extraneous substances.

By contusion the texture of some fibres will be weakened, that of others will be broken through, and some portions will be absolutely killed. Those which are dead must be separated; and to effect this will be the first operation of nature. The portion removed is called the eschar or slough. This is not always confined to what is evidently destroyed, but often extends to portions, which have been very much weakened, or whose source of nourishment has been cut off.

A large artery may be so injured by contusion as to slough, and a violent and even fatal hæmorrhage may take place at the formation of the eschar.

If the contusion has been slight, and there is no external wound, the dead particles may be absorbed and the part restored without an eschar.