

forced out, and in one case branches could be distinctly traced from the femoral vein into one of the cysts. The muscular substance round these was injected with blood, and altered in its consistence. Besides these altered parts, others could be seen which retained their natural appearance, but healthy veins always corresponded with portions of healthy muscle, and inflamed veins led always to a purulent cyst. The femoral vein was transformed into a canal filled with pus, from which issued branches filled also with pus, whilst others remained healthy, though without any assignable cause for this marked difference. This, as well as the other experiments, are, according to M. Cruveilhier, altogether conclusive of the truth of his opinions respecting the seat of inflammation. As he promises a continuation of his researches in the following number of the journal from which we have made these extracts, and as he then will probably point out their practical and pathological applications, we shall reserve our comments for some future occasion.

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Researches on Pulmonary Exhalation. By G. BRECHET and H. MILNE EDWARDS.

It is universally admitted that the inner surface of the lungs is the part of the body in which absorption is most actively carried on, and that it moreover performs another most important function, namely, that of giving free exit to certain gaseous and volatile principles which are brought to the lungs in the course of the circulation, and which could no longer be retained without detriment to the system. Hence it is that the breath of those who drink large quantities of ardent spirits, exhales a spirituous odour; and several medicines, such as æther and assafoetida, communicate to the breath their peculiar effluvia. If gaseous substances be injected into the veins in very small quantities, so as not to affect the life of the animal, they will soon manifest their influence on the pulmonary exhalation, as has been fully shown by the experiments of Nysten and Magendie.

The great vascularity of the lungs is evidently a condition indispensably necessary to the carrying on of this very active exhalation; but still it could not be assigned as an adequate explanation of the process, much less enable us to comprehend how two completely opposite actions could be carried on by the same part in the same moment of time, viz. the entrance from without inwards of some gaseous principles, and the exhalation or escape of others in precisely the opposite direction.

The recent researches of Dr. Barry, by elucidating the process of absorption, seem to cast some light on this subject. Absorption may be altogether suspended in any particular part of the body by removing it from the influence of atmospheric pressure, by means of a cupping-glass applied upon it. This evidently proves that pressure acting from without inwards, is a most efficient agent in determining the passage of fluids through surfaces to which they are applied: this process has been commonly ascribed to imbibition. Absorption seems to differ from simple exhalation in nothing else than in the direction in which the fluids pass, that direction being in the one case inwards, in the other outwards. If the former is produced by pressure, so must the latter. Now when the thorax is at rest, the air which it contains counterbalances by its elasticity the pressure of the whole atmosphere; but when the cavity dilates, the equilibrium is lost, and a new quantity of air is forced in to fill up the vacuity that would otherwise be produced. During inspiration, each air-cell performs the part of a sucking pump. It is by virtue of this power that it acts on the external air, through the medium of the trachea inhaling it as it were into it; and this same power it exerts also on the fluids contained in the other vessels, which are in communication with its walls, particularly the pulmonary veins. This may seem rather a mechanical explanation of the process of absorption and exhalation, but the following experiments tend directly to establish its truth:—

A tube was introduced into the trachea of a dog, and the thorax having been completely laid open, artificial respiration was kept up by means of a pair of bellows attached to the tube. When the air was driven in, the bellows were removed, in order to allow the lungs to expel the air by their natural elasticity, and thus the pressure which the air-cells sustained was not diminished either during the entrance or exit of the air. The *circulation went on regularly*, the animal appearing to suffer very little. Six drachms of alcohol, saturated with camphor, were injected into the cavity of the peritoneum, but the expired air gave no indication of either of these substances, even in a quarter of an hour afterwards. The muscles of the abdomen were then laid bare, and a cupping glass, with an exhausting syringe, applied. When the vacuum was established, the odour of the camphor soon became manifest, but not a trace of it or of the alcohol could be perceived in the expired air. These substances must have been carried into the circulation, for on applying a certain quantity of extract of nux vomica to the cellular substance on the abdomen, the animal soon exhibited