assists in cooling the body. The powerful influence, which the admittance of air into the lungs has on the regulation of the internal temperature may be inferred from the fact of the land-tortoise of hot countries (7) keeping itself several degrees cooler than the atmosphere. It must be recollected that this animal is covered with a horny shell, almost wholly precluding the possibility of evaporation from the external parts of the body. Still we must not generally regard all the heat acquired by expired air as derived solely from the blood. The whole respiratory apparatus, including the trachea and bronchial tubes, to their minutest ramifications, is provided with elastic tissue for the production of warmth. Throughout the whole course of these tubes, on every inspiration, heat is generated. By these means the air acquires an increase of temperature before it comes into juxtaposition with the blood, and the shock is not so great to the system as it would otherwise be.

The air admitted into the lungs affords an abundant source of latent heat which the elastic tissues may absorb during their relaxation.

37. An objection might be urged against the position I have taken, to the effect that the elastic tissue would absorb as much caloric, on its re-assuming its usual dimensions, as it gave out during its distention. It is probable that it does again absorb heat; but it would appear, in operating with a single artery removed from the body, that on its resumption of its primary form it receives caloric from whatever surrounds it, and thus its own temperature is actually increased. The same thing, on a more extended scale, takes place throughout the body, and the fact cannot be controverted. The extensive admittance given to the air through the internal parts of birds and insects may operate, by supplying a ready source of latent heat, to exalt their temperature so considerably beyond what might have been anticipated.

38. As the distention of the arteries depends on the quantity of blood contained in them, so, when that quantity is decreased by blood-letting, or other means, might it not be expected that the animal heat would be less, from the fact that the elastic coats of the arteries being less exercised, consequently supply a diminished quantity of caloric?

39. If the heat of the body were entirely ruled by the respiratory process, would it not be found that when respiration were quickened the heat of the frame would be increased proportionately? but the contrary is often the fact, and the body and extremities become cold when that process is abnormally increased.

40. The independent heat which trees and plants support above that of the atmosphere may be also referred to the exercise of their

elastic properties when agitated by the winds. Should this be the case, their temperature ought to be greatest in windy weather.

41. Upon an examination of all the circumstances affecting the generation of vital heat, it will, I think, be admitted:—

That the elastic and contractile tissues of the body are a fertile source of its heat, and that they form the main, if not the sole, means of its production.

42. In the course of this investigation I have given the principal facts attendant on the phenomena of animal heat from the authority of scientific examiners. I have not perverted them to meet my own peculiar views on the subject, but have endeavoured to show, as briefly as I possibly could, the close connection which exists between these phenomena and what I imagine to be their principal cause. If there be any merit in this essay, it consists in the assertion of the discovery of a principle in physics, *i. e.*, that the distention of elastic bodies generates heat; and the endeavour to apply that principle to account for the production of the thermal properties of animals.

Guildford, Aug. 12, 1843.

TETANUS.

To the Editor.—Sir: In THE LANCET of July 8, I find an account of the post-mortem appearances in a case of tetanus. As the pathology of the disease does not appear to be understood, I would ask whether, *a priori*, we should not suppose it to depend on an irritable and, in some cases, an inflammatory state of the spinal cord? If this inference be correct, what is the treatment indicated?

1st. Large bleeding, to subdue irritation and control the spasms.

2nd. Blistering along the whole spine.

3rd. Calomel, in large doses, combined with opium, continued until its specific action on the system is induced.

I am aware that each of these means has been tried, severally, and with various results, but I have not met with any case of their conjoint use. I am, Sir, your obedient servant,

H. WHITWORTH.

St. Agnes, Aug. 22, 1843.

RHATANY AND ITS INDICATIONS.—A French practitioner has remarked that rhatany is more efficient as an astringent in arresting hæmorrhages from the mucous membrane than those of any other kind. Rhatany is also most suitable to patients in an anæmic or asthenic state; it is contra-indicated in plethoric subjects, active hæmorrhage, and where much excitement prevails. In all atonic diseases, as chronic diarrhœa, leucorrhœa, and other mucous discharges, it may be used with excellent chances of success. —*Bulletin de la Soc., &c., de Toulouse.*