chromium, to which vanadium was at one time supposed to be chemically related, exerts a very different action from that of vanadium.

Dr. Gamgee then gave the account of a series of experiments made at his suggestion, and under his direction, by H. G. Brooke, B.A. Lond., and E. O. Hopwood, B.A. Christ Church, Oxford, Platt Exhibitioners in the Physiological Laboratory of Owens College, on the changes in the circulation which are observed when blood is expelled from the limbs by Esmarch's method. It occurred to Dr. Gamgee shortly after Esmarch's method had come into use in England, that it would be interesting to study the changes in the pulse of individuals whose limbs are compressed by Esmarch's method. He seized the opportunity of the presence in Manchester of Dr. Paul Albrecht, Professor Esmarch's former assistant, to commence the experiments, which have been continued by Messrs. Brooke and Hopwood. The experiments were performed on a number of perfectly healthy young men. In each experiment, the individual under operation being stripped and reclining in bed, sphygmographic tracings of the radial pulse were taken. Then Esmarch's elastic bandage was applied to one lower extremity, the pulse being carefully observed the whole time, and after the limb had been completely bandaged, another set of sphygmographic tracings was taken. The other limb was then bandaged, and a third set of tracings taken. At a given moment the blood was allowed to return into the limbs and careful observations made. All the observations have led to the same results. It appears that the expulsion of blood from the lower extremities is always accompanied by a quickening of the pulse; the heart, however, does not continue to beat quickly for any length of time, for it soon returns to its normal rate. The sudden loosening of the bandages also always leads to a quickening of the heart, which, however, very rapidly becomes as slow as normal. This quickening is most marked in the fifteen seconds which immediately follow the removal of the impediments to the circulation, less marked in the succeeding fifteen seconds, whilst it may be no longer perceptible a minute after. How can the initial quickening of the heart, when the limbs are first compressed by Esmarch's bandage, be explained? Before attempting an explanation, Dr. Gamgee analysed the changes which must be produced in the limb. Esmarch's method will, he maintained, expel more venous than arterial blood from the limb, because the area of the veins is greater than that of the arteries; it will, no doubt, expel from the compressed tissues much of their capillary blood; it will, too, expel a considerable quantity of lymph. It was pointed out that the blood sent out from the arteries of the compressed limb, and added to that contained in the arterial system, would affect the pressure of the blood throughout the whole arterial system, and, therefore, the rise of pressure in it would not be as great as in the venous system; in the case of the latter the blood expelled from, say one lower limb, would affect the pressure of the blood contained, not in the whole venous system, but in that portion unprovided with valves. For this reason, then, as well as because the quantity of blood contained in the veins is greater than that contained in the arteries, and because the contents of the venous system have the lymph of the compressed lower extremity added to them, the authors maintain that the result of the application of Esmarch's bandage will be to increase temporarily the blood pressure in the right side of the heart more than that of the left side—i.e., to diminish the normal difference which exists between the pressure of the right and left sides; they believe that the effect of such an increase of pressure in the right side will be, in this, as in some other cases, to cause the heart to beat more quickly; as soon as the normal difference in pressure has, however, become re-established, the heart will return to its normal rate. The quickening when the limbs are suddenly unbandaged is more easy to explain. Whilst the effects of increased vascular pressure on the heart are more variable, we know that a sudden fall of arterial pressure does lead to the heart beating more quickly. According to Dr. Gamgee and the authors of this paper, both the initial and final quickening of the heart observed in their experiments are due to the same cause—viz., to a temporary diminution of the normal difference which exists between the arterial and venous pressures.

Professor Kroenecker, of Leipzig, who took part in the debate, expressed his sense of the value of these new expe-

riments, which would probably throw considerable light on a subject which is far from being elucidated. He thought the influence of the lymph expelled from the compressed limbs upon the composition of the blood on the right side of the heart ought not to be lost sight of, as very slight variations in the quality of the blood might influence in a remarkable manner the character of the heart-beats.

Correspondence.

"Audi alteram partem."

DISEASED BONES IN THE INSANE.

To the Editor of THE LANCET.

SIR,—In an annotation in your last number on the recent "Death in a Lunatic Asylum," you conclude by stating that the condition of the bones in the insane requires further investigation, and that you intend to return to the subject on a future occasion. I therefore venture, as a contribution to the point under discussion, to remind you that the late Dr. Ormerod, F.R.S., and myself went into the question about six years ago; that Dr. Ormerod published a paper in the St. Bartholomew's Hospital Reports (vol. vi.); that I recorded two cases in THE LANCET for Sept. 3rd, 1870; and that at the quarterly meeting of the Medico-Psychological Association, held on January 22nd, 1873,* I read a paper "On the Softening of the Bones in the Insane," exhibiting specimens of the same, which led to a very interesting discussion. The morbid specimens I showed were all ribs, and were ten in number, taken from ten different patients who had died in this asylum during the previous four months. This led me to infer that *nearly half the chronic insane have bones more or less diseased*, and I went on to state that I presumed this was due to feeble health and exhausting bodily disease rather than to the mental symptoms. A rough analysis of some of these bones showed that in most instances, contrary to the normal state, the animal matter much exceeded the earthy, and the walls of many were so brittle that they could be crushed in between the finger and thumb. Indeed, the marvel appeared to be, not so much that the ribs of the insane were occasionally fractured, as that violent excited cases should ever escape without injury more or less severe.

To all interested in this subject I would strongly recommend the paper of Dr. Ormerod already referred to.

I am, Sir, yours faithfully,

S. W. D. WILLIAMS, M.D.,

Medical Superintendent, Sussex Lunatic Asylum,
Haywards Heath.

Sept. 25th, 1876.

CHLORIDE OF LEAD AS A DEODORISER.

To the Editor of THE LANCET.

SIR,—On the 11th of December last I was allowed to ventilate the subject of the use of lead chloride as a deodoriser, with directions for its practical use, and I am pleased to find that it has been extensively tried, and found as satisfactory as I had stated that it would be.

I expected that it would meet with criticism and objections, though I find none from anyone who has tried it, and I should be only too glad to hear any reasonable objection by anyone capable of throwing any light upon the subject, as I have no wish to establish a theory, but to call the attention of my medical brethren to a fact which, if true, must be universally accepted, and will be of great value to them in particular, and universally to the public; for what can be more desirable, in a sanitary point of view, than to be able, at will, to establish a pure atmosphere with little trouble, no expense, and perfect safety? All other objections but the last may be easily tried by experiments, but the safety has been a matter of so much anxiety to me that it was not till after many years of anxious observation and experiment that I ventured to propose it for general use, though I think the problem was pretty fairly worked out on scientific as well as practical grounds. The

* See Journal of Mental Science, vol. xix., p. 160.