which has been described as forming part of the upper boundary of the right ventricle; and the same reasoning would apply to inefficient systole of the left ventricle. On anatomical grounds it may therefore be said that the aortic second sound commands three cavities (the pulmonary artery through its right branch influencing only the left auricle) in addition to holding the high road for vibrations along the septum, and to practically excluding the pulmonary sound

FIG. 4.¹

Same preparation as in Fig. 3, viewed from behind, from above, and from the right. A.: The aorta. P.D.: Section through the right branch of the pulmonary artery. S.: The auricular septum. A.D.: The right auricle. A.S.: The left auricle and the upper surface of the anterior mitral flap. M.P.: The posterior mitral flap. T.: The upper extremity of the upper tricuspid flap, continuous with the membrane (d) of the so-called undented space. V.S.: The left ventricle, separated from the left auricle by the auriculo-ventricular groove. The other letters as in Fig. 3.

from propagation into the right ventricle. For the pulmonary sound there remain only loud and direct conduction to the anterior chest-wall immediately covering the valve, as well as to a limited adjacent district, and inaudible conduction into the depth of the chest along the pulmonary artery and its branches.

DIPHThERIA TREATED BY ANTITOXIN.

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THE present seems to me to be a favourable time to publish in the columns of THE LANCET a few remarks that I consider appropriate on the above subject, more especially as so much has been written in THE LANCET lately showing that cases of diphtheria are on the increase. Your readers doubtless have studied with interest the reports of cases of diphtheria which have been treated in Guy's Hospital by Dr. Goodhart by means of antitoxin. I do not know that cases in private practice so treated have been mentioned in any journal. I was so struck with the results produced, or apparently produced, by this drug that I determined to investigate the matter, and when I had a chance put antitoxin to the test. So I procured from Messrs. Zimmerman and Co. a small quantity of Behring's solutions. It is impossible, I know by sad experience, for the hard-worked general practitioner to be thoroughly versed in the great army of new drugs that we have in the market, and I may therefore be pardoned if I state here for the benefit of my readers one or two facts with regard to the drug in question. Antitoxin, I think, deserves special consideration from us, and I shall have attained my object if others will state in THE LANCET their experience of the drug, and say whether it does or does not bear out what has been said of the new

specific. With regard to Behring's solution, it has been proved that if a mixture of 0.001 c.c. with the same amount of poison is subcutaneously administered to guinea-pigs, not only are no symptoms of disease caused, but also no local symptoms are observable, especially no infiltration at the place of injection. The antitoxin solution contains 2 to 2.5 per cent. egg albumen and a further admixture of 0.4 per cent. trikresol for preservation purposes. For the immunisation of adults and elder children 1 c.c. of the solution is injected subcutaneously by means of a Pravaz syringe, which has been previously sterilised by alcohol and three per cent. carbolic acid or one per cent. trikresol solution. For young children up to two years the dose should be 0.55 c.c. The above quantity of antitoxin thus administered to persons threatened by diphtheria is at least ten times as much as is required to render them immune. The immunity from diphtheria is therefore much more lasting. Before stating the particulars of the case in which I tried antitoxin I should like here to tender my best thanks to my partner, Dr. Crawford, to Dr. Hope, medical officer of Liverpool, and to Dr. Davidson, the hon. physician to the Liverpool Infirmary for Children, who kindly saw the case with me and interested themselves in the treatment of it.

I was called in to see the patient, eight years of age, on July 27th. I was told she had been ill for a day or two. She had passed a very restless night. On the 28th the child seemed more restless, the colour in the face was rather darker in hue, the pulse quicker and the breathing more difficult. The throat presented much the same appearance as on the previous day. On the 29th the child was distinctly worse, especially the breathing. The fauces on the right and left side were covered with membrane. In the evening the respiration was very quick. On the 30th the membrane was well formed, even extending well over the soft palate and hanging down into the mouth. Up to this time the child had been treated with iron and chlorate of potash internally, and the constant use of the lime-water spray. (One patient under my care just previously—a very bad one—did so remarkably well with the lime-water spray that I naturally did not wish to discard this method of treatment in favour of another of which I had little or no experience.) However, it was evident that something more would require to be done if the patient was to improve, for I noticed that in spite of the treatment another patch of membrane had formed in front of the curtain which hung down from the soft palate. I resorted to antitoxin. Eleven minims of antitoxin were then injected into the forearm with strict antiseptic precautions. The temperature at the time of injection was 103° F., and the pulse 140. In four hours after the injection the child was much improved. There was no fever and the pulse was quite quiet. She had a good night and had to be roused by the nurse to receive her nourishment, which throughout consisted of beef tea, chicken soup, brandy and milk, and wine whey. On the 31st I noticed that the same improvement continued, although the membrane was still present. However, it was apparently loosening at the right side. My patient informed me that her temperature was 98.4° F., and I found she was nearly correct, as it was normal. During the day much of the membrane came away. The last patch to form had disappeared. All that was to be seen was on the uvula and on the left side. On Aug. 1st all signs of membrane had disappeared; the temperature was normal and the pulse good. The patient begged to be allowed to have her picture-books in bed. The throat caused her no pain. From that date uninterrupted recovery took place.

I would especially notice in this case that within a few hours the temperature was reduced four degrees and afterwards remained normal. The constitutional disturbance was at once checked, although the membrane still remained on the uvula and left side of the throat. The new patch on the soft palate at once disappeared, and the appearance generally became more normal. The injection in this case, as in other cases where it has been used, was entirely innocuous, being followed by neither local nor general disturbance.

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THE inaugural address of the Abernethian Society of St. Bartholomew's Hospital will be delivered by Sir James Paget on Thursday next, Oct. 11th, at 8 P.M., at the hospital. Sir James Paget's address is entitled "Scientific Study in the Practice of Medicine and Surgery," and the newly joined students at St. Bartholomew's Hospital are especially invited to attend.

¹ All figures kindly sketched by Mr. P. de Vaumas. Fig. 1 and Fig. 2 reproduced from "Cardiac Outlines," Baillière, Tindall, and Cox, 1892.