

life insurance. Worst of all, it may partly by the alarm it may excite, and partly owing to the treatment which such a diagnosis is thought to involve, convert the unhappy victim into a cardiac hypochondriac, and make him a misery to himself and all about him. I recall the case of a young man who presented himself for examination for an insurance on his life prior to his marriage. The doctor looked gravely at him and said, "Young man, *walk* through life." He did not walk through life, but ran at a racing speed. Yet he lived till a good age, and never had a cardiac sign or symptom. Fortunately, the man had too busy a life to act on the suggestion or to dwell on it. Otherwise it might have been disastrous.

If the existence and frequency of these murmurs be kept in mind the diagnosis is, as a rule, not difficult. Mistakes can be avoided by a little more knowledge and caution. The knowledge would suggest caution, and the caution would be justified by the disappearance of the murmurs and the proof that the suggested diagnosis was wrong.

I am, Sir, yours faithfully,

Wimpole-street, W., April 21st, 1917.

SAMUEL WEST.

"MILITARY CARDITIS."

To the Editor of THE LANCET.

SIR,—May I suggest "military carditis" as a useful term for the soldier's cardiac effort syndrome of which so much has been heard recently? We have the authoritative example of Thomas Watson for such a comprehensive term when dealing with a problem that is not easily defined, and as a former pupil of Dr. Frederick Roberts I think there is much to be said for the emphasis he used to lay upon what he called "cardiac apparatus" when discussing problems of the heart. In an organ like the heart where the three parts—endo-, myo-, and peri-cardium—are so intimately associated it is difficult to draw a hard-and-fast line between disease of the one and the others; in fact, in many cases it cannot be done.

So far attention has been devoted almost entirely in "military carditis" to the myocardium, apparently because the peri- and endo-cardia do not show any gross lesions, but neither does the myocardium in many cases. I have drawn attention elsewhere to the importance of the pericardium and its fluid, pointing out that that fluid exists normally under a negative pressure, whereby the fluid is kept at an equal thickness all over the surface of the heart. I have pointed out also that most likely the movements of this peculiarly circumstanced fluid have much to do with the sounds of the heart, a contention that is supported by my rubber balloon experiments. The opinion I have formed after examining many hundreds of men before the furnaces, as well as boys before and after running, is that the increased cardiac dullness is due to an increase of pericardial fluid which is of such physiological importance in connexion with the running of the accelerated heart. Experiments also bear out this statement, for the pericardia of rabbits shot standing contain less fluid than the pericardia of those shot when driven out by ferrets—i.e., under stress and strain. Another interesting fact in this connexion is that the effect of killing cats by chloroform is to cause an increase of pericardial fluid and a sudden variation of the intrapericardial pressure.

Does shell shock produce such a sudden variation of the intrapericardial pressure? and does it thereby cause a disturbance of the regular wave movements of the fluid which are to a great extent responsible for the sounds of the heart? Dr. Lewis, who is quoted as an authority on electrocardiography, states that the curves are due to impulses which have travelled the auriculo-ventricular bundle, although similar curves are obtainable from the lower order of animals in which there are no such bundles! The fact that throughout the vertebrate series we find pericardia and pericardial fluids is evidence of their great importance, and that the latter have much to do, by means of their electrical resistance, with the causation of the so-called electro-cardiograms.

As a result of my experiments I have devised a double-chested stethoscope, which I call the "Cardioscope," whereby I find that in normal hearts the sounds conducted to each ear separately are equal, whereas in abnormal states the sounds are unequal. By this instrument one hears the "murmurs" resolved into other sounds.

I am, Sir, yours faithfully,

Swansea, April 14th, 1917.

G. ARBOUR STEPHENS.

THE TECHNIQUE OF LUMBAR PUNCTURE.

To the Editor of THE LANCET.

SIR,—Surgeon F. A. Williamson's letter in your issue of April 21st refers, as you remark, to a real difficulty occasionally experienced in the technique of lumbar puncture and one to which he does well to draw attention. The failure of a considerable collection of cerebro-spinal fluid to flow freely until the needle is manipulated whilst *in situ* may be due to the fact that a constituent of the cauda equina temporarily blocks the needle at its orifice, or that the needle at first enters only a small loculus of fluid and not the main cisterna. In connexion with the first possibility it may be noted that if the lumbar cisterna is distended by fluid there would be a greater tendency for a nerve root to be pressed against the orifice of the needle than if the normal conditions obtained. In connexion with the second possibility, it must be remembered that the pia-arachnoid system is not a simple cavity but a series of small and large cavities separated by trabeculae. The free intercommunication in health of the loculi so formed is no doubt interfered with in disease by the added factor of plastic lymph deposit. Whatever the cause may be, the moral, as your correspondent points out, is not to be content with a restricted flow in any case, and especially not to be content with this result in a case suspected on clinical grounds to be one of cerebro-spinal fever, until the needle is pushed a little farther in or is slowly withdrawn a little, or is tested as to its patency by passage of the trocar or stylet. I use the term "restricted flow" rather than "at a normal rate" in such a case, because I am always more suspicious that I am dealing with an instance of the difficulty to which your correspondent refers when the fluid flows at less than the normal rate. I think many practitioners underestimate the initial rapidity of the normal rate of flow immediately after the puncture is made.

It may not be out of place to refer to one or two other difficulties that not infrequently present themselves in connexion with lumbar puncture. One of these again has to do with restricted flow of the fluid. Operators sometimes use a long needle for a small patient, and do not notice that the needle is pointing upwards, its delivery end being well above the level of any part of the cerebro-spinal system. This difference of levels may have been increased by raising the hips well on to the edge of the bed for convenience of the procedure, thus leaving the child's trunk and head in the trough of the bed. Should the cerebro-spinal pressure not be much, or at all, raised, very little fluid may flow until the patient's hips are rolled over towards the needle, the delivery end of which is thus brought to a much lower level. This point in technique becomes important when it has been decided to drain a highly purulent exudate as completely as possible.

The admixture of blood with the cerebro-spinal fluid constitutes another difficulty in the technique, as it prevents accurate chemical and histological investigations. If this is seen to occur the first few drops of fluid should be received into a separate vessel (indeed, this is always a sound thing to do), and the needle should be slowly withdrawn a little, because it is very likely that the blood is contributed by the venous plexus lying on the anterior wall of the canal. If the blood is still present, and it is not obvious from the naked-eye examination that the fluid is also purulent—in which case the histological and chemical examination becomes of no great differential value—the needle should be withdrawn and a fresh puncture should be made at a different space.

Finally, a word may be added in regard to so-called "dry punctures." If the points in manipulation referred to above are observed, it may almost certainly be concluded that the meaning of a dry puncture is that the needle has not entered the pia-arachnoid space at all.

I am, Sir, yours faithfully,

Harley-street, W., April 22nd, 1917.

THOMAS J. HORDER.

THE AFTER-TREATMENT OF INFECTED HÆMOTHORAX.

To the Editor of THE LANCET.

SIR,—Since one of the chief dangers of an infected hæmothorax is the secondary infection which almost invariably occurs after resection and drainage, any method of treatment