revealing the true nature of the origin of the cardiac trouble. As is well known, the younger the subject of rheumatism, the less are the joints affected and the more likely is endocarditis to attack the valves of the heart, and therefore any mention of pains in the limbs of a child, however slight and unimportant they may appear to the parent, should at once excite the suspicion of the medical man and direct his attention to the heart. Frequent auscultatory examination should be made, and probably endocarditis would often be found assailing the valve structures to a decided degree, though not to an extent which would of itself yield visible signs to the observers, and direct attention to the condition of the heart. The recognition of endocarditis at such an early stage of life, followed by prophylactic treatment directed against the crippling of the valves along the lines indicated in the discussions at the Clinical Societies of London and Chelsea, would diminish the severity if it did not ward off altogether the development of the insidious inflammation which leads to the condition of the heart found in later life.

FAILURE OF RESPIRATION DURING ETHER ADMINISTRATION.

By G. P. SHUTER, M.A., M.B., B.C.CANTAB.,

Anæsthetist to the West London Hospital; late Senior Resident Anæsthetist to St. Bartholomew's Hospital.

ETHER has come to be considered so safe an anæsthetic when administered in a Clover inhaler, and accidents during the administration have become so very rare, that facts as to any marked divergence from the normal course of events must be of considerable importance to physiologists and to others interested in the action of the drug on man.

From this point of view the following case is worth recording for comparison with that related by Mr. W. J. McCardie, of Birmingham, in the *BRITISH MEDICAL JOURNAL* of January 20th, page 138.

In the summer of 1892 a strong, healthy woman, aged 40, was admitted to St. Bartholomew's Hospital to undergo a radical operation for the cure of inguinal hernia.

I gave the patient nitrous oxide gas and ether in the ordinary way with a Clover inhaler of the usual pattern to the top angle tube of which I had fitted a smaller tube supplied with a stopcock for the admission of nitrous oxide gas to the bag. The patient took the anæsthetic extremely well, these were no unusual symptoms, no coughing, no sickness, or struggling or rigidity, while the pulse and colour were good. About midway through the operation, however, the respiration began to be less vigorous, and the lips became a little pale. I at once ceased to give the anæsthetic and removed the inhaler. At this time the pulse was still good, and I saw no reason to interrupt the operation. Gradually the respiratory movements became more feeble, until at last they entirely ceased several minutes after I first observed the signs of failure of breathing. The pulse still remained strong and regular, the colour was fairly good, there being very little cyanosis; the pupils were small, there was no corneal reflex, and the patient was sweating freely. I immediately started artificial respiration and injected a minim of *liq. strychnina* into the wall of the thorax, at the same time I satisfied myself that the air passages were free. The head was lowered, the lower limbs were raised, hot towels were placed on the chest, and the battery was applied to the neck synchronously with the movements for artificial respiration. When the artificial respiration was stopped for a moment no signs of any automatic movement of the chest walls could be seen.

Meanwhile, the patient became increasingly cyanosed, so much so that the lips were of a blue-black colour; the heart slowly failed until no pulse could be felt at the wrist, and the pupils became widely dilated. When these serious symptoms occurred I had been performing artificial respiration for about eight minutes, then followed gradual recovery. The patient began to make some efforts to breathe. She would give two or three slight gasps, and then the chest wall would again be motionless. Her colour slowly improved. Artificial respiration was continued until the breathing had returned to its normal automatic regularity. The pulse continued to improve, the patient eventually assuming the appearance of health that she wore before the onset of the alarming symptoms. The operation was resumed, and as the patient began to show signs of returning sensation I commenced to give chloroform on a square of folded lint, and continued to do so to the end of the operation, which was completed without any further difficulty.

The next day I made a thorough examination of the woman. Except for some pain in the back, where the edges of the table had pressed on her spine, and also for some pain in the chest, due to partially ruptured pectoral muscles, she had experienced no ill-effects from her grave condition on the previous day, nor, in fact, did she in any way appreciate her narrow escape. I found the heart and lungs quite sound and healthy. She could not remember suffering from any shortness of breath, palpitation of the heart, or oedema of feet, nor had she ever had any symptoms that might have led me to act more cautiously or to anticipate difficulties in administering ether.

It will be seen that this case had a general agreement with that recorded by Mr. McCardie. But I must confess that the explanation which he offers—that of spasm of the glottis—

did not at that time, or since, ever cross my mind. The sequence of symptoms, indeed, was by no means such as might have been expected on such a hypothesis. They are, for instance, quite different to those of laryngismus stridulus. In Mr. McCardie's case ether had only just replaced nitrous oxide, and hence his explanation that spasm of the glottis occurred as a result of the new stimulus of the ether is perhaps plausible. But in the case which I have just recorded the patient had been under ether for a quarter of an hour or more, and was well under the influence of the drug—so far anæsthetised, in fact, as to make reflex muscular spasm of any sort a very unlikely event.

In cases of this kind it is essential on theoretical grounds to commence artificial respiration at once. If we perform tracheotomy we waste valuable time, and a few moments lost at this period may be literally a matter of life or death. In fact, it may be said that a few moments during which the air remained stagnant in the lungs may be sufficient to place the patient beyond hope of resuscitation; to lose any time between the cessation of respiration and the commencement of artificial respiration is to court disaster. Is not the whole question one of keeping the patient alive until the respiratory centre has had time to recover itself? It appears to me that direct action of ether upon the respiratory centre of the brain, leading to its failure, is the probable explanation of the occurrences in question. Why they happen in a small number of cases of ether inhalation, and do not happen in the vast majority, it is not easy to explain. But it is no more easy to explain the exceptional readiness with which a minority of patients are occasionally found to respond to doses of other drugs which on the majority are almost without effect. Alcohol is an instance in point.

Most anæsthetists will agree with Mr. Barling that serious laryngeal spasm during the administration of anæsthetics is very uncommon, and, indeed, any spasm at all is very unusual after the first few minutes of the operation if the patient is kept deeply enough under. When a patient has taken enough chloroform or ether to abolish his corneal reflex, we should hardly expect the muscles of his glottis to respond readily or vigorously to the delicate stimulus of the fumes of ether or even to the coarser stimulus of the tip of a finger introduced into the larynx. If the patient is not kept deeply enough under the influence of the anæsthetic, any irritation of the glottis may be sufficient to cause spasm; but spasm of the larynx produced under these conditions need not cause the operator any anxiety provided that no foreign body has found its way into the larynx.

ON SOME PRACTICAL POINTS IN CONDUCTING THE ADMINISTRATION OF ANÆSTHETICS.

By H. BELLAMY GARDNER, M.R.C.S.ENG., L.R.C.P.
LOND.,

Anæsthetist to Charing Cross Hospital; Assistant Anæsthetist to the Dental Hospital of London.

THE administration of an anæsthetic must be regarded as an art, in which, as in every branch of surgery and other arts, perfect facility is only attainable by constant, long-continued, careful practice.

Few members of our profession appreciate surgical dexterity more keenly than the practised anæsthetist, and, conversely, the proficient surgeon sets the highest value upon a trained administrator's skill.

A smooth performance is the outcome of very careful forethought and appropriate training, but these factors in the art of the anæsthetist are apt to receive less attention than is due to them. The minutest details of procedure must be considered in order to gain success, and no action should be neglected which will contribute to the finish of the result.

The moving of a patient from his bed to the operating table often requires a little strategy, even when both are close together in one room. Those who lift a patient should never stand on opposite sides of his body for two reasons: (1) Because the lifters take up too much space to easily traverse an ordinary furnished bedroom; and (2) because the lifting power is much greater when the patient's body can be held close up