fect. The skin is cool. He is using the iodide of potassium, with a dose of Dover's powder at bedtime. The renal secretion is increased; and he says he feels much improvement in his power of moving his legs, though only in the hospital ten days; and it may be hoped he will be speedily restored to health and strength.*

There is another somewhat similar, but more severe, case in the hospital now under my care, that of a man who had been engaged for many years at the lead-mines in North Wales. He has paralysis of motion of the lower extremities, but the sensibility is increased. He speaks slowly, but is intelligent. His pupils, especially the left, are rather sluggish on the approach of a lighted taper. He has no blue line on the gums. He complains of constriction of the abdominal muscles, and is obliged to attend speedily to the desire to evacuate the contents of the bladder and bowels. The presence of lead in the system was made manifest by the reaction of the urine with the sulphuret of potassium test. The man is progressing favourably under the use of purgatives, iodide of potassium, and strychnia, with occasional friction to the lower extremities, and the application of galvanism and acupuncture.

A much graver form of lead contamination came under my notice in the out-department a short time past. A stout woman, aged 35 years, applied for relief from general debility and oppressive breathing and pain in her side. She had been engaged in the lead-works for many—I believe over twenty—years. Her health failed her of late, and she became much troubled with dyspnoea—in part, probably, from spasm of the respiratory muscles. Her aspect was anxious; the conjunctiva pearly white; and the skin slightly tinged yellow. Her pulse was frequent, small, and feeble; bowels constipated, with occasional abdominal griping; urine turbid; appetite indifferent; tongue pale and flabby. In fact, her general state was that of modified anæmia. The woman suffered from palpitation; and there was a well marked systolic *bruit* audible over the base of the heart, and to the right of the sternum. Severe paroxysms of angina were occasionally experienced. This poor woman has been treated for the present more with reference to her immediate sufferings, than with the view of removing, as in the preceding cases, the saturnine contamination from the body, which has evidently been deeply impressed with the baneful effects of lead compounds.

Anatomical research has revealed no characteristic or special change in those who have died from saturnine influence; but the above, and other cases which I might cite, pretty clearly indicate the nervous system to be the primary seat of disorder, whether evinced through lesion of the sympathetic or cerebro-spinal division of that system. We may suppose that the metal or some of its compounds permeates the nervous tissues, interfering with the due performance of their functions, and selecting certain functions in preference to others, for reasons which we can only surmise. M. Piorry suggests that perhaps lead, being an indifferent conductor of electricity, opposes the free transmission and play of its analogue, the nervous fluid or influence. However this may be, the disturbance of nervous function is chiefly manifested through the muscular system, and in the form of paralysis of motion, whether attacking the voluntary or involuntary muscles. Neuralgic affections are, however, not uncommonly observed, though not usually so prominently witnessed in these cases as a lesion of motor function. The flexor muscles of the extremities, being the more powerful, longer resist the saturnine action than do the extensors, which first give way under its influence. No doubt, ultimately, the blood becomes im-

poverished, and the muscular nutrition is defective. This condition is very apparent when the muscles of the forearm lose power in the so-called wrist-drop.

The precise nature of the disease consequent upon the saturnine contamination it may be difficult to determine; but, as far as one may infer this from the symptoms and course of the affection, it may, I think, be deemed non-inflammatory, and essentially one of defective innervation. I have not met with any epileptiform seizures in connexion with lead-taint, although their having been elsewhere observed further goes to show nervous lesion to be at the root of the disorder. But we require more precise and closer attention to be given to the subject, and the aid of modern appliances, before we can with any certainty determine the intricate questions arising in connexion with this and allied morbid phenomena. Meantime, I trust that these fragmentary remarks may not prove without interest or utility.

Original Communications.

ON A CASE OF DISEASED RIGHT HEART; AND ON "CARDIAC APNŒA."

By JOHN K. SPENDER, Esq., Surgeon to the Eastern Dispensary, Bath.

IN the number of the BRITISH MEDICAL JOURNAL for November 15th, 1862, there appeared a practically useful paper, by Dr. Stephen Monckton, on Incompetence of the Right Heart. Some years ago, I laid upon the table of the (then) Bath Pathological Society a specimen of diseased heart, which illustrated a common cause of apnœa in children, and the symptoms arising from which during life derive new interest when collated with other varieties of cardiac difficulty.

CASE. A female child, about 11 years old, in rather poor circumstances, and of lymphatic temperament, came first under my care on account of difficulty of breathing and palpitation of the heart. The essential point in her history was that, four years previously, she had had whooping-cough in a severe and protracted form. The cough left her tardily, and when at last it did go away, she found herself unable to move about in the agile manner natural to a child, and unable to play at school or to run upstairs. Disordered function probably soon passed into organic lesion; and when I saw the patient, there was abundant physical evidence of dilatation of the heart, with hypertrophy of at least some of its chambers.

But the heart-disease was merely the sequel of pathological changes in the air-tubes and lungs. What those changes are, and how they are brought about, have been aptly described in a clinical lecture delivered by the late Dr. Todd, when I was a student at King's College Hospital. Referring to a case not unlike the one I am now relating, he remarked that "After the cough has lasted for some time, changes occur affecting the lungs and general appearance of the patient. The countenance becomes full and bloated, and the capillaries distended, especially of the conjunctivæ, which look watery and swollen; and some of these minute vessels often burst, giving rise to some chemosis. All these changes result from the circulation in the capillaries being retarded, in consequence of the violence of the cough. The pulmonary circulation becomes similarly affected; the secretion of the bronchial tubes is altered; the lungs become congested and cedematous, and more or less crepitation is heard in different parts of those organs. Percussion elicits a duller note than usual, as the obstructed

* This case was discharged "cured" since the above report was written.

bronchial tubes impede, more or less, the ingress of air."

Now, all this morbid anatomy of pulmonary and bronchial apparatus produces a greater or less departure from sound function. And when the duties of the lungs are badly performed, the heart always responds, sometimes by way of sympathy, generally as a measure of compensation. An extra force is required to get the blood to permeate the partially blocked air-cells, and to circulate it through a less aerating area of lung tissue.

In the case of the little girl whose history has been given, an autopsy disclosed a heart, the wall of whose right ventricle was at least twice as thick as the wall of the left. The right cavities were full of blood; the left were nearly empty. The cubic capacity of the right chambers was augmented, and so was the calibre of the veins entering those chambers. And all this was just what might have been expected. The right side of the heart was over-worked, the left side was under-worked; owing entirely to a portion of the capillary system existing between the two, being in a state of blockade.

Concerning this case, there were two points of special interest:—(a.) the etiology; and (b.) the therapeutics.

(a.) The cause of the hypertrophy and dilatation of the right heart was the functional uselessness of a portion of the lungs, and the cause of this was the severe and protracted whooping-cough. Not that there is anything peculiar in whooping-cough as a causative agent, for a similar result may be produced by any other cough in which the spasmodic element predominates, and which is characterised by long "fits" of coughing at irregular intervals. The cough attending influenza in children is very much like whooping-cough; and any ordinary "cold" in a scrofulous child may be accompanied by spasmodic cough, owing probably to the irritation of enlarged bronchial glands.

(b.) What is the correct treatment of a case of this kind? A portion of the lungs is virtually in a state of atelectasis; the right heart is over-burdened with blood, which it struggles to get rid of; the abdominal viscera, and venous system generally, are similarly overloaded; and normal respiration is changed into habitual dyspnoea, aggravated always by anything which makes a demand upon cardiac and pulmonary functions. On one occasion, I was called to my patient on account of very sudden and alarming orthopnoea; and, drawing a rapid conclusion that the right ventricle was most likely temporarily paralysed from engorgement with blood, I took away ten ounces of blood from the arm. The relief was very striking; the heart's beats became regular, and the breathing tranquil. Another time an attack of terrible dyspnoea came on while I was in the room; and before I had time to put a lancet into a vein, the girl was dead.

Now, venesection did good here in a very simple mechanical fashion. The child had no fever, and no inflammation; and therefore, in any other sense than a purely static one, she did not require to lose blood at all. Indeed, in a dynamic point of view, loss of blood could have done only harm, since the remaining blood in the body must have been, to that extent, quantitatively and qualitatively degraded. The success of the practice must be the best apology for its correctness. There was no time for theorising—there seldom is in vital emergencies; but, if we have a knowledge of right principles, we shall almost always find them a key to right action. In other respects, the therapeutical management of this case was for several years a very simple affair. Wholesome nutritious food, warm clothing, and daily out of door exercise, were the hygienic facts rigidly carried out. And, if a perpetual supply of mild dry air could be secured in this climate, this child would probably not have perished in the way that she did. She died on a bleak rainy day in winter—on a day when respiration

would be tasked beyond its normal rate, and when a compensative cutaneous function would be checked, if not altogether impeded. She had a small measured quantity of alcohol daily, in the form of good beer; but, beyond an occasional aperient, little in the shape of drugs was either taken or required.

In the clinical study of heart-disease, it is of great moment accurately to discriminate those forms which are likely to cause sudden death. We should welcome every scrap of information which we can get during life, about the state of the *cardiac walls*—and the degree, if any, in which they are invaded by atrophy, hypertrophy, or degeneration. Mischief is latent in all these. The first two conditions are the recognised "sequele" of diseases of the valves of the heart, and of certain diseases of the lung and of the kidney. A degenerated state of the fibrillæ of the heart-muscle is generally a local expression of a general dyscrasia, like the "arcus senilis;" but, whatever its origin, it is an element of physiological weakness, perhaps of sudden and mortal failure.

The symptom which appears to point most distinctly to the existence of degeneration of the cardiac walls, either wholly or in part, is what Dr. Richardson has so elaborately described as *cardiac apnoea*, and Dr. H. Hyde Salter as *cardiac dyspnoea*. So far as I can judge, the groups of symptoms expressed by these titles respectively are identical, or nearly so; and if differing at all, solely in the fact that the first denominates a more transient condition, like the so-called "angina pectoris," and the latter an abiding difficulty of the respiratory act.

I offer short sketches of two cases which I watched with care for some time, and these will be probably better than an abstract description of a state of heart which it is very important to diagnose and to treat rightly.

1. A retired tradesman, aged 67, a man of active and temperate habits, has suffered for two years from slight dyspnoea. This winter, the dyspnoea has been more severe, and has been characterised chiefly by inability to move, and inability to sleep. The air-tubes and lungs are healthy; the heart's action is feeble, and the rhythm irregular. Physical examination tells us nothing else, and so the case appears to be a typical one of cardiac weakness, the apnoea, or the feeling of *want of breath*, being caused by the languid pulmonary circulation. The patient has received great benefit by the long administration of sulphate of iron.

2. The wife of an innkeeper, was under my care for erysipelas of the face, and constant dyspnoea. She was 55 years old, and I suspect had been not always very temperate. Examining the region of her heart one day, I discovered a pretty loud aortic regurgitant murmur. She had numerous purpuric spots on the skin, and appeared a most unhealthy person. I supported her by good food and good physic, but she got scarcely any better. One evening, when I was visiting her, she fell off her chair and died; and when her huge body was picked up from the floor, we found that her face, which during life was suffused with a deep erysipelatoid blush, was now as white as marble.

There was an insuperable hindrance to my making an autopsy of this woman. But my reading of the case was as follows:—Aortic incompetency, causing a compensative hypertrophy of the left ventricle; but this over-nourished muscle being *bad* muscle, degenerated and partly worthless, was of no permanent service to the heart, and so the organ stopped one day, and caused sudden death.

Note the sudden blanching of the surface in these cases. Dr. Richardson lays stress on this as a posthumous element of diagnosis. It may be assumed to arise from a stoppage of the supply of blood to the capillary vessels, which, in the moment before death, have emptied their contents into the veins. And this phenomenon

affords a clue to the proximate cause of death during the inhalation of chloroform. The first symptom denoting danger is, generally, a sudden paleness of the face; and this may be accepted as a certain index of approaching paralysis of the heart, involving an absolute arrest of function, if immediate means be not taken to avert it. (See a case, taken at random, recorded in the *Lancet*, November 15th, 1862, p. 533.)

There is a condition of the heart, anatomic and congenital, which furnishes another intrinsic cause of cardiac apnoea. A girl, aged about 18, suffers from constant palpitation; the pulse is normally 120, and very weak; her skin, and especially that of the face, is always dusky; she cannot ascend a hill without much difficulty. Physical examination detects no murmur, and no dilatation of the heart. My friend Dr. Coates, (formerly Physician to the Eastern Dispensary) kindly investigated this case. The only explanation I can give of it is, that the fetal communication between the auricles did not become quite obliterated, and that a little venous blood perpetually filters through the septum, irritating the endocardiac surface of the left heart, and exciting, by reflex sympathy, hyper-action of its walls. This overaction takes a rhythmic form, and is never irregular.

Pure pathology awakens little—far too little—interest, unless it bears upon practice. And patients care for correct diagnosis usually only so far as it is a guide to correct prognosis and treatment. From these two stand-points—prognosis and treatment—it seems that the more common diseases of the heart may roughly be divided into three groups.

(a.) *Disease, Degenerative or otherwise, of the Muscular Wall of the Heart.* Death often sudden; scarcely ever can it be hoped that the heart will regain its healthy tone and power. Unless contraindicated by any complication or intercurrent malady, iron must be given perseveringly, and in good doses. Trust not to those transient props, ether and ammonia; they may weather a patient through half-an-hour's distress, but they have no further value whatever. Iron is the one and only element endowed with the property of regenerating blood, flesh-making food and pure air being, of course, allowed at the same time. Some form of alcohol is almost always advisable. By the use of these means much benefit may often be obtained, and apnoea lessened in severity.

(b.) *Disease of the Aortic Valves.* Death not often sudden. Dr. Stokes remarks that a general morbid state accompanies incompetency of the aortic valves; "a state of deficient hæmatisis, apparently that which favours the deposition of fatty, atheromatous, and tubercular matter." This points to the same principles of treatment as in the last case; the details being varied to meet individual exigencies. Iron is the unailing medicinal remedy; its good effect being exercised in sustaining the compensative hypertrophy of the left ventricle, and in nourishing the overworked heart itself with good blood.

(c.) *Disease of the Mitral Valves.* Death sometimes sudden, and seldom long delayed. Tonics, especially of the ferruginous kind, are rarely well borne. The chief indication appears to be to unload the over-full venous system, especially that of the abdominal viscera, by saline purgatives (especially the potassio-tartrate of soda, usefully combined with senna or aloes), aided now and then by small doses of mercury. Elimination from the intestinal and renal mucous membranes should be favoured in order to discourage dropsy. A selection of digestible food, taken in small quantities at frequent intervals, is essential; and in this as in all other diseases of the heart, repose of the organ should be promoted by abstinence from unnecessary bodily exertion.

THE LARYNGOSCOPE AND ITS CLINICAL APPLICATION.

By THOMAS JAMES WALKER, M.D. (Lond.), etc., Surgeon to the Peterborough Infirmary and Dispensary.

II.—INSTRUMENTS EMPLOYED IN LARYNGOSCOPY.

[Concluded from page 269.]

ALL the instruments I have described are available alike for the examination of the larynx, and the upper part of the pharynx and the nares; the face of the laryngoscope in the examination of the latter being, of course, turned upwards instead of downwards. As, however, the uvula and soft palate would prevent our seeing the mirror, unless they were artificially held out of their natural position, the little instrument figured in the margin (Fig. 4) becomes neces-

Fig. 4.—Spatula for raising the uvula and palate.
Fig. 5.—Caustic-holder.

sary. This consists of a broad leaf-like portion turned up at the end, and a stalk, both of metal; the stalk being fixed in a wooden handle. Its use is to raise the uvula and soft palate; and no better example can be given of the difficulties which must be encountered, in their attempts to apply the instruments practically, than those who derive all their knowledge of the laryngoscope from the instrument-makers, than the fact that the traveller from one of the principal London instrument-makers carried this palate-spatula about with him, exhibiting it as an instrument for depressing the tongue. When we are examining the nares, this little instrument is held in the left hand, while the right is occupied with the mirror. Consequently we are not able, when using these instruments, to apply caustics, or adopt any operative procedure, in the regions disclosed to us. I have seen several models of instruments combining the palate-spatula and the mirror in such a manner that both may be worked with one hand, leaving the other at liberty for whatever manipulations may be requisite in the treatment of the diseased conditions revealed by the rhinoscope, as an instrument combining the mirror and palate-spatula is called. The best rhinoscope which I have yet seen is that of Stoerk; and I am at present