Lowland stations.—Stations on low inundated lands are hot-beds of malaria.

Native lines.—Native lines were laid out and huts built without sufficient reference to health. There was no drainage, clearing, or leveling, and little attention to cleanliness or ventilation. Native hospitals were almost altogether wanting in means of cleanliness or bathing, in water-supply and drainage, in everything, in short, except medicine. The medical officer had no control over the patient's diet. There were no trained attendants on the sick. The evidence shows that, by management and conciliation, much might have been done to improve the sanitary condition of native lines, as well as the state of native hospitals.

General Observations.

1. We have in the course of our inquiries endeavoured to ascertain the probable excess of mortality in the Indian army occasioned by the sanitary defects we have described, as well as the reduction of mortality which would follow on the adoption of improvements in existing stations, combined with the use of hill stations, and the abandonment of as many unhealthy localities as may be practicable.

2. The statistical evidence shows that the mortality varies from $11\frac{1}{2}$ per cent. in the most unhealthy to about 2 per cent. in the most healthy places, even in their then unimproved state. It has been estimated that the lowest of these rates, or 2 per cent. (double the rate at home stations since the introduction of sanitary improvements), may be taken as the possible mortality under improved sanitary conditions.

3. The annual death-rate for the whole of India was hitherto, or up to 1856, about 69 per 1000. The proposed European establishment at the date mentioned was 73,000 men, and would, at the then existing rate of mortality, require 5037 recruits per annum to fill up the vacancies caused by death alone.

4. A death-rate of 20 per 1000 would require only 1460 recruits per annum; so that the excess of mortality was 3570 lives per annum.

5. Estimating the cost of recruiting, training, and landing men in India at no more than £100 per man, the excess of mortality was equivalent in cost to a tax of nearly £1000 per diem, irrespective of the cost of the extra sickness indicated by a high death-rate.

6. A careful examination of the causes of disease, and of the character of the diseases prevalent at the more healthy stations, would lead us to hope eventually for a greater saving of life than we have here estimated.

7. Causes of disease, such as exist at these stations, would, even at home, be sufficient to account for one-half of the 20 per 1000; and if the time should ever arrive when, under the influence of improved culture, drainage, and sanitary works, India should be freed from the local malaria which exists everywhere there now, as it once did in some form or other over Europe, we may cherish the hope of realising what statistical inquiries appear to point to—namely, that the natural death-rate in times of peace of men of the soldiers' ages in India will be no more than 10 per 1000 per annum.

8. But a reduction of mortality also indicates increased physical strength and greater fitness for duty in the army generally, as well as a smaller proportion of "constantly sick" in hospital; and hence a greater effective numerical strength.

9. Fewer recruits would be required to supply the losses from disease—a point of very great importance, in regard to which Sir A. Tulloch stated that he very much questioned whether, with the mortality rate of the last forty years, it would be possible to keep up an army of 70,000 men in India. He added that, from what he knew of recruiting, this country would not be able to fill up the gaps occasioned by death, and at the same time supply the vacancies occasioned by invaliding, and by the return of time-expired men.

10. Apart, therefore, from the question of humanity, the introduction of an efficient system of hygiene into India was of essential importance to the interests of the empire.

M. GIGON maintains, in "L'Union Médicale," that iodide of potassium, through the short route of the vena portæ and emulgent veins, passes instantaneously into the urine. He mentions that he found the iodide in his own urine, passing the latter almost immediately after having taken a dose of the iodide. But as M. Gigon has also found that the iodide can be detected in the urine three or four months after its ingestion, it is just possible that, in the experiment alluded to, the iodine so quickly discovered in the urine might be *old* remains.

CLINICAL NOTES.

No. II.

PLEURITIC EFFUSION ON THE LEFT SIDE AS A CAUSE OF FLATULENCE AND DYSPEPSIA.

By S. O. HABERSHON, M.D.,
PHYSICIAN TO GUY'S HOSPITAL, ETC.

THE prominence of *one* symptom of disease frequently leads the patient to form an incorrect opinion as to the nature of his malady, and inadvertently he may misguide his doctor. Pain in the chest, cough, and palpitation of the heart are often due to morbid conditions below the diaphragm; and the question, apparently a most simple one, whether the malady is above or below the diaphragm, is often difficult of solution, whilst of the utmost importance to the speedy recovery of the patient.

I need not comment upon the gastric symptoms produced by tubercular disease of the lungs, chronic affections of the bronchi, and organic diseases of the heart,—they are well known; but instances are far more numerous than is generally supposed of *pleuritic effusion* on the *left side* producing severe dyspepsia; and the predominance of the gastric symptoms has led to incorrect diagnosis in many patients who have consulted me. When pleuritic disease takes place on the left side, and is *subacute* in its character, the pain is often almost forgotten by the patient in the more trying subsequent symptoms; the dyspnoea is less prominent than in the more acute affection. The symptoms may be briefly mentioned: There is failure in the general health, a sense of exhaustion and of weakness, inaptitude for exertion and for the ordinary pursuits of life; the tongue is often furred, there is a sense of weight at the stomach, especially after food, restlessness at night, and the recumbent posture produces dyspnoea; the bowels are generally confined, pain in the left shoulder is often complained of, and the countenance loses its healthy clearness; one of the prominent symptoms is *flatulence*, the appetite is lost, and the patient sometimes states that the food does not pass freely from the stomach; the urine is scanty and high-coloured. With these symptoms, many of which point to functional disturbance of the stomach, hurried and incomplete investigation will effectually misguide; but on examination of the chest the indications of pleuritic effusion are at once evident, as shown by extensive dullness, lessened tactile vibration, bronchial respiration and bronchophony; if the effusion be very great, the respiratory sounds are more distant, or entirely suppressed; the heart is pushed over towards the right side, and the diaphragm is pressed downwards.

The action of the stomach thus becomes mechanically impeded, but the connexion of the pneumogastric and the vasomotor nerve in the chest and abdomen adds to this abnormal peripheral sensibility to morbid action.

Another point associated with the diagnosis of these cases is the fallacy connected with the temperature of the body; some cases of partial pleurisy are not marked by elevation of the thermometric heat. However valuable the thermometer may be in pneumonia, in fevers, and some other diseases, in inflammation of a subacute character of serous membranes, such as pericarditis, peritonitis, and pleurisy, the temperature of the surface cannot be depended upon as a correct guide. A short time ago, a young gentleman suffered from severe pain in the left side after exposure to cold. The pulse was quiet, respiration was accompanied with severe pain, the skin was cool to the hand, the tongue slightly furred; the temperature was taken accurately with the thermometer, but it did not exceed the normal standard. No friction sound was audible, because the costal pleura was not affected, only the diaphragmatic. On the following day the fibrinous effusion had extended round the edge of the lung, and a friction sound was distinctly made out; still there was no elevation of temperature. The disease soon subsided without serous effusion. I advert to this case from among many others, to show that in this form of subacute serous effusion the febrile symptoms of more acute disease are not developed, and the disease is often at first supposed to be rheumatic, or it is called "neuralgia."

A gentleman placed himself under my care some months ago, who had been under treatment for five or six weeks, and who had been informed that his ailment consisted in disorder of the stomach and liver. The left side of the chest, how-

ever, which was half full of fluid, had not been examined. The patient was thin and cachectic, the appetite impaired, the countenance slightly sallow; there was no dyspnoea, but great inaptitude for ordinary exertion and pain at the scrobiculus cordis were complained of. The symptoms of indigestion entirely disappeared with the absorption of the fluid.

In another instance, a gentleman, nearly seventy years of age, was with difficulty persuaded that the cause of his distress was effusion into the pleura; a sense of weight at the stomach, with a feeling of obstruction there, and great flatulence, with failing strength, were his principal symptoms.

I have observed two mistakes in the treatment of these cases. The one is, that the digestion being disordered, the tongue furred, &c., the liver is regarded as being "out of order," and *mercurial medicines* are given to "set it right;" but, unfortunately, with the effect of *increasing* the exhaustion, the cachexia, and the pleuritic effusion. An equally disastrous error is to suppose that, because the patient appears exhausted, he is to take large quantities of alcohol; in other words, "to be kept up by stimulants." By an excess of alcoholic stimulants the healthy reparative action is interfered with, the elimination of effete material is checked, important glands become functionally disordered, and the absorption of the morbid effusion is thereby retarded. I do not wish to be understood that stimulants may not assist, if properly given; but if administered in accordance with the principle that because the patient has a feeble pulse, and seems exhausted, he is "to be kept up," they lead to most unsatisfactory treatment, and prolong the illness of the sufferer.

Brook-street, Feb. 1868.

THE NATURAL HISTORY AND TREATMENT OF LATERAL CURVATURE OF THE SPINE.

By RICHARD BARWELL, F.R.C.S.,

SURGEON TO, AND LECTURER ON ANATOMY AT, CHARING-CROSS HOSPITAL.

No. V.

As by far the larger number of lateral curvatures are primarily dorsal, it behoves us to examine their peculiarities and treatment with more care than was expended, in my last paper, on the lumbar curve. Since, also, ease and rapidity of cure will depend in great measure upon early and accurate diagnosis, it will be desirable to give a few minutes to two sets of considerations: firstly, how to ascertain in the earliest stages that a dorsal curvature has commenced; secondly, how to distinguish that form which I have called "respiratory," from the cases of weight-bearing origin.*

I have discussed at some length the etiology of dorsal curves, and have shown that the *primum mobile*—greater weighting, or larger respiratory action of one serratus magnus—produces first unequal traction backward of the ribs, therefore torsion of the vertebræ, which is succeeded by their lateral deviation. These events, though following each other in the sequence of causes, are simultaneous, or nearly so, in point of time. We cannot say that the one precedes the other. For instance, the ribs are so placed on the dorsal spine that any unilateral act of pectoral breathing must immediately, however temporarily, rotate the vertebræ. It may be that lateral deviation of the bones does not so instantaneously follow this torsion, since there is a probability that a certain number of one-sided respirations must take place before the mechanical and muscular forces would so act on this new posture as to cause curvature. I have, however, collected a great quantity of evidence (with which I will not now occupy space), proving that the deviation takes place very rapidly. It is, then, I submit, very conclusively shown that, of all bony parts, the ribs are primarily in fault; and, fortunately for us, their length and position cause them, when they thus recede from their proper station, to move in a long arc round their axes at the vertebræ. They thus act for the spinal torsion like the long finger of an index—passing through a large space, while the axis itself moves through but little.

The first observable sign therefore of a dorsal curve is, on one side of the spine a greater backward bulging of the ribs

than on the other; and in a certain time this retrocession of those parts pushes out the blade-bone, producing enlargement and thickening of the shoulder—usually the first part of the deformity which attracts attention. Nevertheless, this accident of the malady is in reality a late occurrence: a careful examination early in the case, and under good auspices of lighting, will give evidence of the vertebral torsion (the ribs being used as indices) long before malposition of the scapula is perceptible.

Some stress has been laid upon the direction of light, because it is to be remarked that a greater or less fulness horizontally can with difficulty be detected by a horizontal light. I have the advantage of possessing two consulting rooms, the one with an ordinary window or horizontal, the other with a perpendicular light; and have found that an amount of torsion, not at all or doubtfully perceptible in the former room, is unmistakably evident in the latter by the long shadow which the backward-projecting ribs throw upon the lower dorsal and lumbar regions. This is shown in the engraving annexed, although in the photograph from which the drawing is taken a strong reflected light was purposely thrown upwards on the right side. The patient had a far advanced respiratory curve; for which she had patiently worn instruments of considerable weight for some years. Note the absence of any projection of lumbar muscles on the left side; the line of light running from the ilium is simply the edge of the body and of the hollow from sinking forward of the ribs; it springs from the ilium far outside the erector spinæ.

Examination by sight is absolutely necessary; but we must also use touch, feeling not only for the backward bulge of the ribs on the right side and their depression on the left, but also for the line of the spinous processes. It is hardly necessary, in this stage of our investigation, to point out that, since the axis of vertebral rotation lies just at the posterior edge of their bodies, the tips of the spinous processes are twisted to the left; hence their line may be quite straight, although the spine has in reality curved to the right. Therefore the surgeon must not consider, if he find unevenness of the posterior pectoral walls with a straight line of the spinous process, that there is no lateral curvature. Here, too, I must remark upon a peculiarity which, as far as I know, has not been pointed out: there is in the skin of the back a mesial line—a broad sort of raphé,—very plainly marked by absence of hair follicles and gland ducts; while on each side of it these structures run in different directions. This line, while the back is straight, lies over the tips of the spinous processes; but when these latter

* The diagnosis of lumbar curvatures given in the former lecture suffices for the distinction between that curve and the one now under consideration.