

of the present case is that patient recovered so quickly. Most of the cases have lasted for months, and many of them have lapsed into confirmed lunatics.

There was a case which came to my out-patients room some months ago in which the patient suffered from the most striking epileptiform seizures as a result of his lead poisoning. He was 45 years old: had had painter's colic for 20 years. For 15 years he has been under treatment at the National Hospital for the Paralysed and Epileptic, for severe epileptiform seizures. His account of them shows that they are indistinguishable from epilepsy. Three times he has been locked up as drunk and incapable, but on each occasion he has only been suffering from his saturnine eclampsia. In order to prevent his being locked up again, he has his name and address stitched inside his coat, together with a statement to certify that he suffers from fits as a result of his lead poisoning. He wears paper collars in order that they may be the more readily loosened and torn when his fits come on. There is a slight amount of albumen, some cardiac hypertrophy, a high-pressure pulse, a slight blue line; and many scars, due to his having hurt himself whilst in his fits, may be seen.*

Some Abnormal Forms of Breathing. By W. JULIUS MICKLE, M.D., M.R.C.P., Grove Hall Asylum, London.

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The first form is pure typical fully-developed Cheyne-Stokes's respiration, examples of which, in the insane, I fully described some years ago.† On the present occasion, therefore, I shall merely mention it as introductory to the consideration of the other forms.

The second form is a subdivision of the first, and consists of cases which are essentially examples of modified Cheyne-Stokes's respiration, that form of respiration existing in them on a dwarfed scale, and shorn of many of the features of the fully-developed typical form.

Examples of the third form were briefly referred to in my paper already cited. Clinically this has the general mould of Cheyne-Stokes's respiration *minus* the period of apnoea.

* For a series of cases of Saturnine Insanity, and their resemblance to the symptoms of General Paralysis, see *Journal*, July, 1880.

† "*British Medical Journal*," Aug. 31, 1878, p. 308.

It consists, therefore, of the successive dyspnoéal periods, which are essentially the same as those found in Cheyne-Stokes's respiration, and the several phases of each such dyspnoéal period jointly constitute a cycle, and the succession of cycles constitutes the phenomenon which I have termed "up and down respiratory rhythm." It is, indeed, the phenomenon for which I claim that to it alone the name of "respiration of ascending and descending rhythm" is accurately applicable; but as this name has been used as synonymous with Cheyne-Stokes's respiration, I hesitate to employ it here, lest confusion should arise. This phenomenon also, I believe, gives to Cheyne-Stokes's respiration its clinical mould, a view which I gathered from watching for hours a typical case described in my paper already referred to. On several occasions I observed it precede or follow typical Cheyne-Stokes's respiration.

The clinical phenomenon is this: respiration, at first light and infrequent, becomes, by an ascending scale, fuller, more forcible, and frequent and exaggerated, until dyspnoea is attained, and then gradually subsides by a descending scale to the condition as at starting; after which a fresh dyspnoéal period begins. In some examples the subsidence is considerably or much more rapid than the rise.

Although I found distinct microscopical change in the elements of the medulla oblongata in one of the cases reported by me,* I felt scarcely justified in absolutely connecting this change with the production of Cheyne-Stokes's respiration. But recently, in one case of that mode of breathing, Tizzoni found chronic inflammatory changes ascending the vagi, with blood extravasation into the lymphatic spaces of the perineurium and endoneurium. The whole length of the right nerve, the periphery only of the left, was affected. In the medulla oblongata itself were small foci, chiefly on the right side, and beneath the ependyma at the longitudinal furrow of the calamus. Similar lesions affected the upper half of the medulla oblongata in another case (uræmic), but the vagi were normal.

SERIES 1.—Examples of Modified Cheyne-Stokes's Respiration.

CASE I.—S.; soldier, died, aged 41, of general paralysis of about two and a half years' duration. At first, the delusions were of a depressed character, subsequently exalted. There was a vague history as to an

* "British Medical Journal," Aug. 31, 1878, pp. 309 and 312.

early right hemiplegic attack. Left othæmatoma supervened. Once he became pale and broke out into a profuse perspiration, which was followed by apparent transitory sleep, after which, with slow and soft pulse, there was muscular flaccidity and motionlessness, apparently with powerlessness of left limbs, and silence was maintained by him under the delusion that he was dead.

Later on, transitory left hemiparesis, at least in the lower limb. Still later, seizure of paresis of right leg, the tongue also being protruded slightly to the right. Left hemiplegia came on eight months before death, and the left arm was somewhat contracted and flexed. After this there was marked muscular twitching.

Seven weeks before death, he had for months been confined to bed with palsied and contracted left limbs, fatuous, noisy, "dirty," and teeth-grinding, and on the morning the note I am quoting from was made he had, since the previous evening, been in an apoplectiform attack, and was lying with the head and eyes turned to the left, the left forearm flexed, rigid and hyper-pronated, the left leg rigid, somewhat flexed, the right resistant to passive motion; knee reflex well-marked, especially in right leg, which showed some ankle-clonus also; ears heated; teeth-grinding; pupils equal, smallish, sluggish, and irregular. There was a recurrent apnoeal pause. Thus, after noisy respirations with guttural sounds, came one or two light respirations, and then respiratory cessation, after which the recommencing respirations were light, but immediately became slightly noisy and guttural. For example, there were seven respirations rising and falling as just described, and occupying the space of 15 seconds, then a pause of five seconds, then five or six respirations lasting 15 seconds, a pause of five seconds; then successive respiratory periods, each consisting of nine respirations, and lasting 20 and 23 seconds, with intervening pauses.

Dysphagia; slight spasmodic jerking of limbs; pulse 84; temperature right axilla, 100.2° ; phthisical changes in lung, tracheal and bronchitic râles; urine thick, sedimentous, urate-loaded, ex-albuminous.

Three days later head and eyes to left, spasmodic twitches of mouth and face to left.

This was essentially a case of Cheyne-Stokes's respiration, but not highly pronounced; a modified form.

CASE II.—M.; soldier, died aged 39, a protracted and unusual case of general paralysis. The question of syphilitic causation arose.

About five months before death, apoplectiform symptoms and right hemiparesis supervened, with some deviation of head and eyes to left. At first the pulse was 78, and the heart irregularly intermittent, as for example, at the 4th, 8th, 20th, 24th, 30th, and 40th pulsations. Afterwards the pulse was 96, and there was an aortic systolic murmur. Temperature, right axilla, 100.3° ; left, 99.6° . The respiration was irregular and of a modified Cheyne-Stokes's character. Thus two or three full respirations occurred in close succession, and then there was

either (*a*) a pause of some seconds' duration followed by a few short jerky respirations, or, again, by respirations made as if effected in several spasmodic attempts; or (*b*) a pause followed by a prolonged expiration, succeeded by occasional short jerky inspirations. Then, for a time, came respiratory cycles varying each from 12 to 18 seconds in duration, consisting of four respirations, increasing in depth, fulness, and loudness, and followed by a complete pause of from five to eight seconds' duration. In nearly every second cycle the respiration terminated with a very prolonged expiration. Next, each of two successive cycles was noticed to occupy 15 seconds; half of this time being occupied in the respiratory period, and half in the apnoeal pause.

Briefly to summarise the course of this case, there were, successively, active mania, great improvement, mental depression, acute nephritis, taciturnity, feeble circulation, erysipelas capitis, aortic bruit, cardiac hypertrophy, bronchitis and pneumonia, mitral bruit, occasional maniacal attacks with exaltation, increased arterial tension and albuminuria, apoplectiform attacks (one of which is described above with the modified Cheyne-Stokes's respiration), left hemiplegia, "cerebral" bed sore on left natis near cleft, rigidity and contraction of palsied left limbs, occasional convulsion, failure of sensibility and reflex action in left limbs, choreiform movements on right side, convulsions, pulmonary gangrene, death.

Short abstract of necropsy.—Slight rusty hæmorrhagic trace on right side of inner surface of cerebral dura mater; meningeal opacity and œdema, mainly in frontal and parietal regions. Adhesion and decortication slight, rather more on right than left side, and affecting the temporo-sphenoidal and orbital surfaces and right marginal convolution. Cortex somewhat wasted anteriorly. Large and granulated lateral ventricles. Right hemisphere one ounce less weight than left. Arteries of circle of Willis and branches atheromatous. Some spinal myelitis (diffuse). Thickening of mitral and aortic valves, slight hypertrophy of left heart, atheroma of coronary arteries and aorta, in the latter semi-transparent nodules, also. Pale, whitish, renal cortices. Old adhesions, and recent gangrene of right lung.

CASE III.—O.; dementia, following chronic mania; died, aged 41 years, having suffered from chronic phthisis with intercurrent bronchitic attacks, and occasional asthma-like symptoms.

Four days before death the pulse became slow. On the day before death the patient was dull, drowsy, and apathetic, and, with dysphagia and some hiccough, there was Cheyne-Stokes's respiration. At times there was merely an ascending and descending respiratory rhythm, at others a distinct apnoeal pause separated the respiratory periods. During the respiratory period of the cycle the pulse was sometimes slower, sometimes not. Temperature, 98°; pulse, varying from 78 to 96; respiration, 26. Feet and left hand œdematous; urine ex-albuminous.

Necropsy.—It need only be said that there were slight general

wasting of the brain, tuberculosis and slight incipient inflammation of the convexity of the cerebral hemispheres, especially of the right. Although there was no tuberculosis or marked inflammatory effusion visible to the naked eye about the brain-base, yet the fornix, corpus callosum and other tissues surrounding the lateral ventricles were extremely softened.

Phthisis pulmonalis, especially of right lung; tuberculosis of bronchial and mesenteric glands, of intestines, and of kidneys; old perisplenic and peri-renal adhesions; small liver and heart; only a trace of aortic atheroma.

CASE IV.—This, having been published in my former paper, will be noticed very briefly. General paralysis; ten weeks before death there was slight pneumonic mischief; several days afterwards, an apoplectiform seizure occurred, and, a few hours later, three severe epileptiform convulsions, beginning in the right upper limb, and followed by right hemiplegia. Next day, the right hemiplegia was much less; the right conjunctiva almost insensitive; the face and ears were flushed. Respiration 25, possessing modified Cheyne-Stokes's characters. The period of apnœa occupied one-third of the cycle; then two-thirds of it were occupied by respirations, which increased in depth, loudness, and frequency, and then diminished; but each period of respiration included, on the average, six respirations only. After a severe paroxysm of coughing there was "up and down respiratory rhythm." Muco-purulent expectoration, scattered pneumonic consolidation, numerous *râles*, especially over right lung. Temperature, 101.2°; pulse, 114, full, soft. Supported by nutritive enemata for five days. The right hemiplegia cleared up, but previous left hemiplegia returned, and persisted until death.

SERIES 2.—Examples of Up and Down Respiratory Rhythm: True Respiration of Ascending and Descending Rhythm.

CASE V.—C. E.; soldier; general paralysis, depressed form; death at age of 34. Syphilitic history: markedly ataxic gait; right hemiparetic seizure, especially affecting lower limb; *tœnia solium*; moderate apoplectiform attacks.

Nine days before death convulsions for hours, mainly of right eyelid, right side of face, and right upper limb. On later days, recurring convulsions, conjugated deviation of head and eyes towards left side. Temperature, right axilla, 99.4°; left, 99°; subsequently, left axilla .5° higher than right. Convulsions, mainly of right face and upper limb. Right hemiplegia. Finally, left ptosis, rapid pulse, and respiration. Two days before death, patient partially unconscious; pulse 135, feeble, thready; respiration 50, at times noisy, but variable, and of a peculiar rising and falling rhythm, in fact, true "respiration of ascending and descending rhythm." Respiration mainly thoracic, crepitation over lower posterior surfaces of lungs; cheeks

flushed; right eye was occasionally opened very widely, and staring; abdomen had gradually been becoming excurvated.

Abstract of necropsy.—Much thickening and opacity of the cerebral pia-arachnoid. Some induration of the cerebral grey cortex, and the left cerebral hemisphere the more diseased of the two.

Adhesion and decortication in left hemisphere, particularly over the posterior third of inferior surface, posterior half of internal (median) surface, external surface of temporo-sphenoidal lobe, and tip of frontal lobe. In right hemisphere, a very similar distribution, but much less extensive and severe. Yellow-white nodule in meninges on cortex of second left frontal gyrus. Fornix soft; spinal cord softened, much chronic spinal meningitis on posterior aspect, with two embedded, flattened, firm, yellowish-white masses in the arachnoid and pia mater.

Pneumonia at bases of lungs, tuberculosis at apex of left lung. Heart $10\frac{1}{2}$ ozs., its muscular substance slightly soft, valves healthy; slight aortic atheroma; kidneys congested.

Many details of this and of the next case are given in my work on general paralysis.

CASE VI.—C. C.; soldier; general paralysis of over four years' duration; death at stated age of 30; early and marked dementia. Towards the last there were pulmonary phthisis, right pleuritic effusion, cough, profuse sweating, teeth-grinding. Later on, left pleurisy with effusion and lobular pneumonia; recurring vomiting, fever, semi-coma, subsultus, marked tremulousness of movements. During the night succeeding this he took fluid food, but at seven next morning was comatose and unable to swallow. At 9.30 a.m. pulse 90, full, quick, compressible; respiration varying from 44 to 54 per minute, irregular in rhythm, depth, and frequency. Thus, perhaps, at first there would be a few audible respirations with guttural sounds; then came a few quiet, easy, noiseless, and less frequent respirations, during which the heart could be heard distinctly, and its action was then of moderate strength, but its sounds were still feeble and short. Surface of body moist, clammy, flabby, relaxed. Temp., right axilla, 95.2° ; left, below 95° . Conjunctivæ suffused, watery, insensitive to touch. Pupils equal, dilated, immobile; slight ocular oscillation. Limbs very flaccid. No distortion of face. Saliva ran from either side of the mouth that was the lower. Slight facial flush. Profound coma. Later in day, mucous bubbling in throat; pulse 96, weaker; respiration 36, and, as before, of irregular rhythm; temp. below 95° ; left pupil rather the larger; head and eyes somewhat to left. All the limbs remained equally flaccid, relaxed, motionless, until death. Inability to swallow. Skin cool, moist.

Abstract of necropsy.—Meningeal opacity, thickening and œdema. Cerebral atrophy, softening and anæmia. Adhesion and decortication widely spread, affecting both the superior, external, internal, and inferior surfaces; particularly on the posterior part of the frontal, and

on the parietal convexity. These changes fairly symmetrical in the two cerebral hemispheres. Fornix much softened; basal ganglia atrophied, softened, pallid. Pons Varolii and medulla oblongata softened and pale; the meninges over the medulla oblongata thickened and somewhat adherent to it.

Tubercular spinal meningitis, and softening and pallor of cord.

Heart small, slightly too friable. Only a few points of aortic atheroma.

Left lung, adhesions, cicatrices, a vomica, caseation, recent pleurisy.

Right lung, adhesions, caseous masses, tubercular granulations.

Possibly some of the symptoms noted above were due to extension of tuberculosis, and inflammatory action to the meninges of the pons Varolii and medulla oblongata, or even to the brain-base or ventricles, and not yet perceptible to the naked eye.

CASE VII.—F. S.; chronic delusions of persecution with hallucinations; died, at age of 40, of pneumonia of eight days' duration, supervening on phthisis pulmonalis.

During the final illness the dyspnoea was at times paroxysmally increased, and the respiration of an ascending and descending rhythm, but without a period of apnoeal pause. On the first day, pulse 106, respiration 44; temperature, left axilla, 102.3°; second day, pulse 86, respiration varying from 32 to 42, temperature 98.4°; third day, pulse 84, respiration varying from 26 to 48; fourth day, pulse 92-100, respiration 31; both pulse and respiration rising on last days of life.

Eyelids and face cedematous, slight ascites; diarrhoea, greenish-yellow stools containing partially unmixed blood; pneumonic sputa.

At the *necropsy* there were, briefly: slight wasting of brain, slight increase of pericardial fluid, segments of aortic semi-lunar valves much thickened and deformed, and two of them coherent, slight atheroma of coronary arteries. Heart-muscle too friable, 8½ ozs. Phthisis, pneumonia, and bronchitis, especially on the right side, where also the bronchial glands were enormously enlarged. Spleen soft, 7½ ozs. Kidneys slightly granular. Inflamed vascular ulcers in small intestine, some of them obviously tubercular.

CASE VIII.—J. S.; before admission latent pulmonary tuberculosis, and older changes. These were followed by meningeal tuberculosis, and incipient inflammation. He became very stupid, somewhat deaf, gave no reply, or answered incoherently, took food badly, scarcely spoke. Respiration became difficult, noisy, and irregular; slow pulse; dysphagia; attempts to swallow gave rise to coughing. Patient restless and fidgety. Congestion of lungs and pneumonia advanced rapidly; the cheeks flapped in respiration, the tongue could not be protruded; the jaws closed tightly when attempts were made to open them; the restlessness; writhing, fingering, pulling movements, and resistance to any form of passive movement or of handling; the

tremulous movements and muttering, and incoherent ejaculations were followed by gradually deepening stupor and coma. The respiration was of the form above-termed "respiration of up and down rhythm," and varied on last two days from 56 to 62; pulse from 90 to 108, and feeble; temp., 100·4°; dry tongue and lips. There appeared to be more or less palsy of seventh and ninth cranial nerves, with retained power of motor branch of fifth.

At the *necropsy*, amongst other morbid parts, there was tuberculosis (with incipient inflammation) of the cerebral pia; especially over the anterior two-thirds of the upper aspect of the cerebral convexity. Some tubercles also existed at the base of the brain, about the interpeduncular space, and on the back part of the orbital surface. The gyri at the upper aspect were somewhat closely packed; the pia contained a little serum; the meninges were congested; the fluid at base was increased. Flabby heart. Slight ordinary cystic change of kidneys.

OCCASIONAL NOTES OF THE QUARTER.

*Lord Bramwell on Crime and Insanity.**

Lord Bramwell deserves our thanks for enunciating his views upon crime and insanity in a way which even the dull medical intellect cannot fail to understand. These views may conveniently be thrown into the form of a creed, thus:—

I believe that medical doctors make furious attacks on the lawyers of a very unbecoming character.

I believe that as it takes two to make a quarrel, and as, happily, the lawyers are not inclined to join in it, a terrible quarrel between the two professions is prevented.

I believe that the law ought to punish all that it threatens—when convicted.

I believe that the law ought to threaten all who would be influenced by threats.

I believe that this is the same thing as saying that all such must understand the law's threats.

I believe that this is the law of the land, and is right to demonstration.

I believe my argument goes to the length of punishing insane people more severely than the sane, cruel as it may seem.

I believe that medical men, especially those who have ex-

* "Nineteenth Century," December, 1885.