lithotripsy, unless his urgent symptoms were allayed. He had a capacious urethra, with enlarged prostate; a greatly dilated and rugous bladder. One symptom in his case strongly indicated the existence of stone; viz. that of being able to feel the stone move from side to side as he turned in bed.

This case has been brought prominently before the profession, with a view of advocating more strongly the administration of chloroform; for without its aid the operation could not have been repeated so as to complete the cure. The great point in its favour is, that it is only required to be exhibited to the extent of producing "partial" anæsthesia; and, to the best of my belief, chloroform may be administered thus far without the least fear of fatal consequences. (This is an invaluable point in the reduction of dislocations in certain constitutions.) In this case nine operations were performed. The composition of the stone was triple phosphate of ammonia and magnesia; its weight was three drachms and a half.

The carbonate of soda relieved very much. It is a very valuable remedy in cases of stone; and is extensively used in such cases by the surgeons at the London Hospital.

Great Grimsby, Lincolnshire, November 12. 1853.

CASES OF CHOLERA, WITHOUT COMMENTS.

By JOHN GROVE, Esq.

CASE I. Edwin D., aged 14 years, went to bed in perfect health and spirits on the night of October 31st. At 4 A.M. November 1st, he was seized with an attack of diarrhœa. His first evacuation was so copious that (according to his own statement) it nearly filled the chamber utensil. He is errand boy to a druggist. He complained of bellyache and relaxation in the morning on going to shop. His master gave him a warm dose of rhubarb: after this a teaspoonful of paregoric. Being no better from these remedies, he gave him one ounce of Board of Health mixture; half to be taken immediately, and to be repeated at 2 P.M. if necessary. At 4½ P.M. the boy's mother applied at my surgery, saying that her son had been purging and vomiting all day, and was very bad. The evacuations, she said, were like water, only with white flakes; and he was suffering severe pains in his belly and legs.

I ordered that he should be kept warm by means of hot bottles to the body and extremities, and administered the sulphur mixture, with a small quantity of liquor opii sedativus.

At 6½ P.M. a messenger came to say he seemed somewhat better. Up to this time I had not seen the lad, in consequence of being required urgently in another direction.

At 8½ P.M. a messenger arrived to say that the lad was not so well. I went immediately to see him. He was perfectly pulseless; his countenance was sunken and livid; his lips were blue; he had dark areolæ around the eyes; his hands and feet were purple, and the skin shrunken. There was no sweat. The voice was peculiar, resembling the falsetto. He had vomited and was purged just before my arrival; both of these evacuations were like arrowroot or rice-water. He complained of cramps, and required his legs to be constantly rubbed. Thirst was urgent. He passed no urine. I administered the sulphur mixture, with two minims of liquor opii, and waited half an hour; I then gave him another dose at 9 P.M. These were both retained; but he was moved twice before I left, at 9¼. Evacuations were the same.

At 10 P.M. a messenger came to say he had not vomited since I first saw him, but the bowels had been moved twice. I now allowed a small quantity of soda water; as he begged incessantly for cold water to drink.

11½ P.M. There had been no sickness since 8½ P.M. The bowels continued loose, the stools being the same in character. The mother had substituted a bed-pan instead of getting him out of bed, because the cramps were so severe when he was moved off the bed. The surface was now

much warmer; the pulse was perceptible at the wrist. The voice was slightly improved. The eyes were still as sunken, and the dark areolæ as pronounced as before. The spasms of the abdomen were not nearly so severe. He complained bitterly of thirst. I directed him to take sulphur mixture without opium every two hours. Soda water and arrowroot water cold, in limited quantities, were allowed as drink. The warm applications to the surface were continued.

Nov. 2, 6½ A.M. He had had a restless night, but slept at intervals. The bowels had been open four times. He was sick at 2 A.M., 4 A.M., and 6 A.M. I visited him at 8 o'clock. The countenance was somewhat improved. The dark areolæ remained. The cheeks were sunken, and the face pinched; still there was a more healthy hue on the skin. Pulse 80, weak. The skin was warm. He had continual sighing. The cramps were much less severe, and only occasional. The evacuations remained the same. The medicine was continued. During the night the medicine had not been administered as frequently nor in the doses ordered.

12½ noon. He had had no sickness since 9 A.M. The bowels continued relaxed. He had had short sleeps at intervals, the eyelids only half closed. His countenance was better. The surface was warm. He was restless; and had not passed any urine. He evacuated the bowels in his bed. His pulse was 108. Thirst continued.

3 P.M. He had been sick half an hour previously, rejecting the medicine. In other respects, he remained the same. Pulse 100.

7½ P.M. He had not been sick again; the bowels were still relaxed. His lips were now florid; yesterday at this time they were quite blue. Pulse 96. I ordered a table-spoonful of beef-tea to be taken occasionally.

10 P.M. The bowels had not been moved since 7½ P.M.; nor had he been sick. No urine had yet passed. He had taken beef-tea twice, and liked it much. He had dosed for short intervals more tranquilly, with the eyes closed. When awake, he tossed his arms about, and sighed very much. He was directed to continue the medicine every two hours.

Nov. 3, 6½ A.M. The father came to my house, bringing with him the first urine (3ijj) which had been passed since Tuesday midday. An interval of thirty-six hours had elapsed; for this occurred at 12¼ on Wednesday night. The bowels were still loose; there had been slight sickness once; and he had taken half a pint of beef-tea during the night.

9½ A.M. He lay on his side in a tranquil sleep, and had been so for three-quarters of an hour. The countenance was rather flushed. The dark areolæ of the eyes were subsiding. He had had one motion of the same character since 7 o'clock. Urine had been passed several times. Pulse 90. He was not roused by the manipulation. I left him asleep, after waiting thirty minutes, ordering a continuance of the medicine and beef-tea as before, with alum-whey *ad libitum*.

2 P.M. He continued much the same, but was very delirious two hours since, and could not be kept in bed.

9 P.M. The face was very flushed. The tongue, which had never presented any remarkable appearance, was now florid and dryish. He had slept two hours, with the exception of a few minutes, when he turned in bed. He had passed urine abundantly, and had but two motions since 2 P.M.: the last, though but slightly stained, had for the first time a feculent odour. Pulse 80, of moderate strength. He complained of great exhaustion, and extreme soreness and weariness of extremities; also more or less of pain in the region of the stomach, of which he had complained at every visit I paid him. He vomited once, after too large a draught of whey. The medicine was ordered to be taken every four hours.

Nov. 4. The following is the history of the night of the 3rd, from the father's notes. He had a slight motion at 9¼ P.M.; went to sleep at half past; awoke at 11, and had some whey. There was then slight wandering. He went to sleep at quarter to 12; and awoke at 1 A.M., and took medicine. He had a motion, much improved, at 1½ A.M.; he took some beef-tea; at 2¼ A.M. he had a little soda water, then fell asleep, and slept till 4 A.M. He took a wineglass-

ful of beef-tea, fell asleep immediately, and slept till 5½ A.M. The bowels were moved; he took medicine; then dosed, and moved again at a quarter to 7 A.M. He did not ask for drink above once during the whole night.

11½ A.M. The countenance was improving. There were blotches on the cheeks like ecchymoses. Pulse 72. There was slight thirst and headache. The bowels were still loose. Urine was abundant. The pupils were natural.

9 P.M. He continued much the same. Pulse 72. The skin was not particularly hot; the tongue was clean. He complained of great soreness all over the body, and slight headache. He had slept at intervals during the day. He had had six motions since 11½ A.M. He had eaten a piece of biscuit, and a little toast scalded in beef-tea. The medicine, whey, beef-tea, etc., were continued.

Nov. 5, 9½ A.M. He had passed a very tolerable night, and had no wandering. He had had six motions since nine last night; they were now unequivocally tinged with bile. He complained of intense soreness and headache. The pupils were natural. The urine was abundant. Pulse 72. Tongue clean. Thirst moderate. A drachm of compound tincture of cinchona was ordered to be taken three times a day in water.

8 P.M. He had had six motions since my last visit. The pulse was still 72. The tongue was clean. The skin and head were cool. He had had some disposition to eat. He amused himself this afternoon by looking over some favourite books. Half a drachm of compound tincture of camphor was added to each dose of the bark.

Nov. 6. There was nothing worthy of remark, except that the evacuations had assumed a perfectly bilious appearance.

Nov. 7. He had a perfectly healthy stool to-day, and took a light nourishing diet with relish.

Nov. 12. He was gradually gaining strength.

On the 9th, a rose-coloured eruption made its appearance, which extended pretty generally all over the body, and declined on the fourth day. It had the appearance of typhoid fever eruption, as was also remarked by Dr. Cormack, who saw the case.*

CASE II. Charles D., aged 7, brother to preceding, had relaxed bowels all day on the 5th November, which the parents did not know until evening, when the child appeared very ill, and he told them he had been many times in the day. Having medicine in the house, his mother gave him a dose of sulphur mixture, and he went to bed at 9 P.M. He slept till three, when he had a call from the bowels, and was sick. He then took another dose of the sulphur mixture. In half an hour he fell asleep, and slept till 8 A.M. He was then again relaxed and sick.

At 10 A.M., Nov. 6, I was requested to visit him. His mother had dressed him; the little fellow was sitting in a chair, with his head reclining against its back. His lips and hands were livid and cold. The dark areolæ around his eyes were very pronounced. He had had a motion, and was sick just before I arrived. These evacuations were characteristic of the disease. He passed no urine.

I saw him at 1 P.M., and at 7 P.M. His urgent symptoms had abated. He was neither so sick nor so relaxed, but the evacuations were the same. He had severe pain in the abdominal region, but no cramps of the legs.

10 P.M. There was more general warmth of surface. The countenance was better; his bowels were now nearly quiet. He said he felt better, and that the pain in his belly was gone.

Nov. 7th. 9 A.M. He had had a very restless night, with delirium, constantly getting out of bed, and wanting to put on his clothes. He had rejected everything that he had taken during the night. At 5 A.M., he fell asleep, and slept till eight o'clock. He then had a dose of medicine, which he retained. His bowels had not been moved after my visit last night, until this morning. In this evacuation

there was a little colour. The first urine was passed this morning at 4 A.M.: he had not previously passed any for twenty hours. It amounted to about an ounce and a half, of sweet odour, and pale yellow colour.

5 P.M. He had been asleep nearly all day, and had no sickness. One feculent evacuation had passed.

Nov. 8th. He was nearly convalescent.

The father of these children was attacked suddenly with sickness and diarrhoea. He took a full dose of the medicine, and went immediately to bed. In a few hours, he rose perfectly well.

CASE III. Sarah C., aged 27, was perfectly well on Nov. 6th. At 3½ A.M., on Nov. 7th, she was seized with bowel complaint. She described her sensations as "a boiling in her inside". The bowels were relaxed a great many times on this morning. She went out for a walk, thinking it might do her good; and was out an hour and a half. When she returned, she was very giddy and relaxed. She went to bed at 7 P.M., and slept till eleven, when she was roused with pain and relaxation, and did not sleep after this. The bowels were relaxed all the night, without pain.

Nov. 8th. She continued relaxed all the day.

Nov. 9th. She could scarcely rise from her bed in the morning to attend to her children, as she felt so exhausted. At 9 A.M., she sent to a druggist for medicine. Before the messenger returned, she was very sick. The Board of Health mixture was sent. Every dose was rejected, and the bowels continued relaxed all day. The evacuations, as described, were quite characteristic.

At 3 P.M., she had severe pains in the shoulders, back, and chest, which came on like cramps. She had slight cramps in the legs.

The above is the history of the case before application was made to me, in part obtained subsequently from the woman herself, and in part from the messenger who came to my house at a quarter past five. This person said she was now very dark about her eyes; her lips were blue; she was cold; her feet and hands were blue and cold. She vomited and was purged at short intervals, and had cramps in her legs. I gave the sulphur mixture, and ordered a dose every quarter of an hour. In three hours and a half, the messenger returned, saying that the bowels had not been moved since the first dose of the medicine was taken, but the sickness continued. Her appearance was much improved; and, under the use of bottles of hot water, warmth had returned to the surface. I continued the medicine. I ordered the female attendant to report to me at half-past ten. She did not come.

Nov. 10th. 9 A.M. The attendant arrived, saying that the bowels had not been moved all night, but that the sickness was still distressing. In all other respects, the patient was better. I ordered a neutral effervescing mixture to be taken every quarter of an hour, and medicine to be continued every two hours.

I first visited her at 12½. She was lying in a very exhausted state, with a feeble pulse and sunken countenance. She had been sick but once since half-past nine, and said she felt considerably better. She had not passed any urine since 4 P.M. yesterday.

7 P.M. The sickness and diarrhoea had returned. She had passed about an ounce of urine. The evacuations from the bowels were faintly tinged.

9½ P.M. The messenger said that she was better. Ordered to continue the medicine.

Nov. 11th. 10 A.M. The sickness did not entirely leave her till eleven o'clock last night, when she fell asleep, and slept till 1 A.M. The bowels had been relaxed four times during the night, without pain. She was not so thirsty. The motions were improving. The urine was very small in quantity, and not more than an ounce during the night. She was now passing the most of her time in short snatches of sleep.

Nov. 12th. Noon. She was dosing comfortably. Her pulse was feeble, 90. Thirst was moderate; there was no sickness; the bowels had been moved; the evacuations were nearly natural in colour.

* Was not this a case of typhoid fever with the choleraic type? The designation of the case is, however, of little importance, as its history is so well and so fully given by Mr. Grove.—EDITOR.

Nov. 13th. She was in a very feeble state, but had no unfavourable symptoms.

Nov. 14th. She was taking bark, and getting on well.

NOTE. Many cases of diarrhoea, with and without vomiting, have occurred during the last six weeks, all of which have been treated by sulphur; in some few cases, a small quantity of opium has been administered in conjunction with the sulphur; but I am inclined to think, from a more extended experience, that it might be omitted altogether.

Some persons have doubted whether the cases reported as successfully treated by sulphur were true cases of cholera: the above histories, however, may possibly remove this doubt.

Wandsworth, Nov. 16th, 1853.

BIBLIOGRAPHICAL NOTICES.

ESSAI SUR L'EMPLOI MÉDICALE DE L'AIR COMPRIMÉ. Par le Docteur CH. G. PRAVAZ. pp. 377. Paris: 1850.

[MEDICAL USE OF COMPRESSED AIR. By Dr. C. G. PRAVAZ.]

IN the ASSOCIATION JOURNAL for September 9th, we inserted an interesting article by Mr. POYSER on the treatment of chronic and other diseases by baths of compressed air. We have now before us a work by the late Dr. PRAVAZ of Lyons, in which the subject is more fully discussed.

The first chapter contains some preliminary observations on the mechanism of respiration in relation to atmospheric pressure. From his own observations, and those of other writers, the author concludes—

1. That the extent of forced inspiration or the development of the lung increases with the pressure of the atmosphere, up to a certain limit, which in general seems to be determined by the vigour of the individual.

2. Atmospheric pressure ceases to favour the expansion of the respiratory organs, when it begins to exceed the constantly decreasing difference which exists between the efforts of the inspiratory muscles and the elasticity of the walls of the thorax.

In the second and third chapters, the influence of atmospheric pressure on the chemical and physiological phenomena of respiration, and on the circulation, are examined.

In chapter fourth, the author examines the nature of the physiological phenomena observed in the ascent of high mountains, and in balloon ascents. Dr. Pravaz passes in review the observations of Dacosta (who, in the fifteenth century, was the first to apply the name of *mal des montagnes* to the affection under consideration), Bouguer, Saussure, Sherwill, Clarke, Rey, Pidwell, Mlle. d'Angeville, MM. Bravais, Martins, and Lepileur, Humboldt and Bonpland, Boussingault and Colonel Hall, Gérard, Blanchard, etc. We translate from this chapter the author's conclusions as to the cause of the affection. They may be compared with those of Dr. Speer, given in his paper on "Mountain Sickness", published in this Journal for January 21st and 28th.

"Dr. Brachet has very well explained the breathlessness and absolute exhaustion which are experienced after the least effort in a highly rarefied atmosphere. . . . According to the view of Liebig, an immediate consequence of the production of muscular action is, that a part of the muscular substance loses its vital properties, and is detached from the organ. At the same time that it undergoes this change, it fixes oxygen, and is then eliminated from the system in the form of carbonised or azotised compounds. The condition necessary for the continuance of the muscular efforts is then the introduction of a sufficient quantity of oxygen into the system. If this element is deficient through rarefaction of the atmosphere, the oxidation of the metamorphosed tissues is impeded, and the metamorphosis itself is arrested; rest alone, by accumulating in the organism, notwithstanding the imperfect respiration, a proper quantity of the eliminative gas, can re-establish the essential condition for the exhibition of the muscular force. This is what is observed in the ascent of high mountains, where it is sufficient to rest for some minutes to recover the power of proceeding, when this power has seemed entirely lost.

"Sometimes the necessity of furnishing to the system a sufficient quantity of oxygen, in order to maintain voluntary and involuntary motion, and the cerebral functions, is not satisfied by rest. Sleep then seizes on individuals who are plunged in a very rarefied atmosphere; and it may be considered as a resource of the conservative power of life, to reserve the small quantity of oxygen absorbed, for the production exclusively of the movements of the heart and chest, without which life would soon cease.

"There is a symptom of mountain-sickness which, under all latitudes and at different temperatures, appears more constant than others, and increases in tolerably exact proportion with the altitude which is arrived at. It is the congestion of the mucous membrane of the mouth, nostrils, and eyes, and of the brain.

"This will be understood when we reflect that one of the exciting forces of the circulation in the veins, and therefore in the capillaries, decreases in proportion as we are elevated above the level of the sea. The higher the altitude we reach, the less actively the blood will be attracted towards the right cavities of the heart, and the more will this fluid tend to engorge parts where the respiratory act is most commonly felt most powerfully. . . .

"The force of impulsion of the left ventricle, and the greater calibre of the arteries ascending to the head, are the only individual circumstances which may cause, at equal altitudes, a variation in the tendency to hemorrhages and to apoplexy, which is produced in high mountains by the weakening of one of the powers which concur in bringing back the venous blood to the central organ of circulation.

"Mountain sickness presents another symptom whose frequency appears to be also in proportion to the altitude; for it is especially in the ascent of the Cordilleras and Himalaya that it is observed. This symptom, which no one has hitherto attempted to explain on physiological grounds, is manifestly produced by an impediment to the circulation in the portal venous system: it is characterised, in fact, like congestion of the liver and abdominal viscera, by vomiting, cramps of the stomach, and intestinal pains." (pp. 80-3.)

In chapter fifth, we find a consideration of the physiological effects produced by the condensation of the atmosphere. The construction of the diving-bell is intimately connected with this subject; and we hence find reference to the diving-bells of Sturmius, Halley, and Spalding, and a copy of a letter addressed by Dr. Hamel to Professor Pictet of Geneva, giving an account of a descent in a diving-machine near Dublin.

The results of condensed air in mines and in the diving-bell have so far been considered only as accidental results; but, in 1783, the Society of Sciences at Haarlem proposed the following questions:—

"1. Describe the apparatus most fitted for making experiments on condensed air in the most convenient and certain manner.

"2. Examine, by means of this apparatus, the action of condensed air in different cases; for example, on animal life, on the growth of plants, and on the inflammability of different kinds of air."

Dr. Pravaz observes that no practical answer had for many years been given to these questions:

"It is only in late years that the solution of the questions proposed more than sixty years ago, has been perseveringly followed out; and it is to Dr. Junod that we are indebted for taking the true initiative in these researches."

In a memoir on the effects of the condensation of the air on a healthy man, presented to the Academy of Sciences in 1834, Dr. Junod wrote:

"When the natural pressure of the atmosphere is increased by one-half, the following phenomena are observed. The membrana tympani being pressed towards the internal ear, becomes the seat of an uncomfortable sense of pressure, which is however gradually dissipated as the equilibrium is re-established, probably by the introduction of the condensed air into the cavity of the tympanum through the Eustachian tube. The respiratory act is performed with new facility, the capacity of the lungs for air seems to be increased, and the inspirations are deeper and less frequent than ordinary. At the end of a quarter of an hour, an agreeable heat is felt in the interior of the chest. The circulation appears to be modified; the pulse is frequent and full, and is compressed with difficulty; the calibre of the super-