duced to one-tenth that of the ventricular before the auricle can exert an equal pressure on its contained blood. When its diameter has become one-fifth or perhaps one-fourth the auricle will probably have thickened sufficiently for its increased muscularity, and the mechanical advantage under which it works, to enable it to contend successfully with the ventricle, and to expel the last portion of its contents into the contracting ventricle.

The left ventricle, on contracting, can never exert a pressure appreciably greater than that in the aorta, because the aortic orifice acts as a safety valve, and blood escapes into the aorta directly the ventricular blood pressure is sufficiently raised. Practically, therefore, the greatest pressure against which the auricle can ever have to contend from the ventricle is measured by that in the aorta. If, therefore, at, or towards, the end of its contraction the auricle can exert a greater pressure on its blood than that in the aorta, it can send it into the ventricle, whatever be the state of the ventricle at the time.

It is not my intention here to prove that the auricle does send blood into the ventricle while their contractions overlap, but merely to point out that it is mechanically able to do so, if its cavity be sufficiently small at the time. I desire also to protest against the generally received assumption that it is physically impossible for the auricle to send blood into the contracting ventricle.

Personally, I strongly believe that the auricle does contend successfully with the ventricle when their contractions overlap, and that it sends blood into the ventricle at that time. This belief I base on the following considerations:

1. That, as I have shown, the overlapping of the systoles occurred at a time when the auricle is favoured by every mechanical advantage.

2. That this action best explains why the auriculo-ventricular valves shut late—that is, at about the time, or but little before, the aortic valves open. The auriculo-ventricular valves are prevented from closing by the support they receive from the contraction of the auricle behind them, and perhaps the necessity of still allowing a small stream of blood to enter the ventricle.

3. That it similarly explains why the contraction of the papillary muscles begins late, as shown by Professors Roy and Adami¹ (and whose conclusions to my mind are quite out of the reach of the attempts which have been made to disprove them), these muscles not being required to contract till the auricle ceases to support the valves.

4. Professor Potain in his article in the *Clinique Médicale de la Charité*, p. 543, wrote: "It is remarkable that the snap (of mitral closure) is as a rule less clear when the præcordial elevation preceding it is more considerable. One willingly attributes the fact to the ventricular hypertrophy which appears capable of stifling in some way or other the vibrations produced." Now Professor Potain attributes the præcordial elevation to the contraction of the auricle. A vigorous præcordial elevation therefore suggests a vigorous auricle. In this case the mitral valves are well supported by the auricle and the residue of its contained blood, and with a strong pressure on each side of them, the resultant pressure to close the valves is but small, and they consequently close quietly. A simpler explanation than Professor Potain's.

5. In mitral stenosis, with incompetent valve and hypertrophied auricle, this theory explains at once the frequent absence of a systolic murmur, and therefore presumably of regurgitation. Regurgitation in fact need not occur, though the stenosed valve be very incompetent. The auricular contraction is admittedly prolonged by the difficulty the auricle experiences in emptying itself forwards. The auricular systole which normally overlaps the first phase of the ventricular contraction now overlaps the second or expulsive phase as well. Regurgitation from the ventricle towards the auricle is therefore prevented by the auricle itself, which remains contracted behind the incompetent mitral orifice, and I have shown that the auricle is mechanically capable of resisting the ventricle under these conditions. It is only when the auricle dilates that regurgitation need occur.

6. In mitral stenosis a "presystolic" murmur is commonly continued into the time of præcordial elevation. From this Dickinson² and others have concluded, in opposition to the generally-received opinion, that the murmur is ventricular-

systolic in origin, and depends on mitral regurgitation. If, however, as I have indicated in this paper, the auricle is also contracting during the earlier portion of the ventricular systole, the blood current from the hypertrophied and nearly emptied (therefore small-chambered) auricle will still pass onwards towards the ventricle, in spite of the latter entering into contraction, and the murmur will continue to be auricular-systolic in origin. There seems no reason why the presystolic murmur should not continue up to, during, and even after the first sound, if the contraction of the hypertrophied auricle be sufficiently prolonged, and its blood be not all previously expelled into the ventricle.

7. There are many other facts in the physics of the circulation the difficulty of explaining which disappears as soon as it is recognised that the auricle can exert a pressure on its contents increasingly great in proportion as the size of its cavity is reduced during its contraction. It would make this paper too long to discuss these here, as well as certain baseless objections, such as the auricle not being valved towards the great veins, which might be raised.

REFERENCES.

¹ Marey, *Circulation du Sang*, p. 692. ² Potain, *Clinique Médicale de la Charité*, p. 543. ³ Roy and Adami, *Heart Beat and Pulse Wave*, *The Practitioner*, vol. xliv. ⁴ Roy and Adami, *Loc. cit.* ⁵ Dr. Dickinson, *Lancet*, 1887.

ON THE PREVALENCE OF ANKYLOSTOMIASIS IN ST. LUCIA AND ITS TREATMENT.

By OTHO GALGEY, M.R.C.P.I.,

Colonial Assistant Surgeon, St. Lucia, West Indies.

ANÆMIA, tropical anæmia or progressive pernicious anæmia, is a disease of such severity, and is so prevalent in this island, especially among the coolies, that the discovery of any means of curing it may be regarded as a decided advance in therapeutics. The number of admissions into Victoria Hospital for anæmia in 1892 was 209; in 1893, 277; and in 1894, 272.

Most of these cases were coolies, but the natives are also very prone to contract the disease. The miserable, dejected, and despondent appearance of the sufferer is characteristic of anæmia. The pale, waxy complexion, the difficulty of breathing, and the slow, laboured walk show that the patient is utterly unfit for work. He has probably remained on the estate, endeavouring to perform even a very moderate task, until dyspnoea on the slightest exertion compels him to seek hospital relief.

Up to the middle of last year we were in the habit of treating these cases with alteratives and tonics, and a generous diet. Among the tonics, iron, in an infinite variety of preparations, was the favourite remedy. Arsenic and its compounds, phosphorus in various forms, chlorate of potash, quinine, strychnine, hypophosphites of lime and soda, cod-liver oil, and other valuable medicines, were given with varying results. Bismuth, dilute hydrochloric acid, and pepsine were administered alternately to assist the failing digestive and assimilative powers. Of the three, pepsine wine undoubtedly occasioned great relief in many cases.

Tabloids of thyroid extract (prepared from the thyroid gland of the sheep) were imported expressly for these cases of profound anæmia, but I cannot say that they afforded any permanent relief. They seemed to allay the urgent symptoms of dyspnoea, and the patient's condition apparently improved for a time, but the change was only temporary. The severe cases generally went from bad to worse, and almost ably ended fatally.

After carefully perusing the researches of Dr. Sandwith on the *Prevalence of Ankylostoma Duodenale in Egypt*, and the valuable article on the same subject in Davidson's *Hygiene and Diseases of Warm Climates*, I determined to make a *post-mortem* examination on the first fatal case of pernicious anæmia that occurred in hospital, and find the parasite if possible. I had not very long to wait. On March 27th, 1895, Kanjania, a female coolie, died in the Victoria Hospital of pernicious anæmia.

Post-mortem Examination.—The usual pathological signs of anæmia were noted. I removed the small intestine and opened it carefully, the contents being preserved in a basin.

I then divided the intestine into segments and examined each separately. Small ecchymosed spots were noticed, but at first no worm could be detected. The duodenum and jejunum and upper part of the ileum were covered with thick mucus. The intestines were carefully washed, and the contents allowed to settle in a basin.

On minutely examining the sediment I was rewarded by finding the parasite. I got hundreds of specimens from this body, which, under the microscope, corresponded exactly with the description of the ankylostoma duodenale of Griesinger. I have preserved many specimens of the nematode in bottles.

My next endeavour was to produce the drug thymol, which was described as a specific for the disease. Early in May a supply arrived from England, and we at once commenced a regular and systematic treatment of ankylostomiasis. After keeping the patient on milk diet for a day or two, a brisk purgative was given, to be followed next morning by two doses of 20 grains each of thymol, given at intervals of two hours. If there be no evacuation for some hours after the second dose, an ounce of castor oil is administered. The excreta are put aside for examination. At first we administered the thymol enclosed in cigarette papers, but as on several occasions I found the paper undissolved and unopened in the stools, this method was abandoned, and we now give it in large capsules specially imported for the purpose. I append short notes of 23 cases, being the first of the series of anæmic patients submitted to the treatment by thymol.

CASE I.—Mahaysh, male, aged 23, indentured coolie of Soucis, face puffy, large flabby tongue, conjunctivæ pale, weighs 105 lbs. Admitted April 22nd, 1895, for anæmia. On May 15th thymol was administered with a negative result. On May 28th, after a second dose, he passed a quantity of ankylostomata (also a lumbricoid). Stools very dark-coloured. Discharged June 4th. Weight, 114 lbs. Much better.

CASE II.—Badal, male, aged 30, Crown lands, admitted April 29th, anæmia; weight, 83 lbs.; thin and delicate appearance, tongue dark and mottled, conjunctivæ pale. On May 15th thymol, two doses, passed a large quantity of ankylostomata; stools very dark. Discharged June 3rd. Weight, 93 lbs. Much better.

CASE III.—Perhoo, free coolie from Crown lands, aged 20, admitted May 6th, with anæmia, face pale, tongue soft and flabby, and indented at margin, ears transparent, eyelids puffy, weighs 101 lbs., treated with ferri et ammon. cit. May 15th, thymol, three doses of 20 g. each, passed a large quantity (specimen preserved). Discharged June 3rd. Weighs 103 lbs. Greatly improved.

CASE IV.—Bhulaie, male, 33 years of age, Mont d'Or. Admitted May 14th with the usual symptoms—shortness of breath ("hampa"), etc. Weight 122 lbs. May 17th, thymol, passed many ankylostomata. May 22nd, thymol, passed many ankylostomata. Discharged May 31st. Weight 127 lbs. Much improved. His tongue from being pale and flabby has assumed a healthy appearance.

CASE V.—Pheru, male, aged 23, Mont d'Or. Admitted May 14th. Anæmia. Weight 107 lbs. Face very sallow, thin pinched appearance, tongue large and flabby, marks of teeth on margin, eyes sunken, lassitude, palpitation, and dyspnoea. May 17th, thymol, passed many ankylostomata. May 21st, thymol, passed many ankylostomata. Discharged July 4th. Weight 109 lbs. Much better.

CASE VI.—Pudal, male, aged 23, Mont d'Or. Admitted May 14th for Anæmia. Face puffy, tongue large, soft, and pigmented, conjunctivæ pale, enlarged spleen. This patient suffered from severe migraine, which is a common symptom in anæmic cases. May 17th, thymol, negative result; May 21st, thymol, passed a few; May 28th, thymol, passed a few. Discharged June 4th much improved.

CASE VII.—Masuma, a female coolie from Crown Lands. Admitted May 20th with anæmia. Suffers from intense frontal headache, cries with pain, tongue pale and mottled, face puffy, eyelids swollen. Weighs 89 lbs. May 21st, thymol, passed a large quantity (specimen preserved). Discharged June 13th. Weight 96 lbs. Much better. Headache has entirely disappeared.

CASE VIII.—Deoghulamsing, male, aged 21, Volga coolie. Very tall and stout for a coolie. Admitted April 15th. General oedema, urine scanty, no albumen, face sallow and swollen, eyelids puffy, feet and legs much swollen, tongue large and flabby, indented by teeth, visible mucous surface extremely pale. May 22nd, thymol, 3 doses, passed a quantity of ankylostomata. Discharged June 4th. Much better. All traces of dropsy have disappeared.

CASE IX.—Madarbukhsh, male, aged 38, Crown Lands. Admitted April 21st. Anæmia; weight 121½ lbs. May 6th contracted influenza, not a very severe attack. Sallow complexion, pale, flabby tongue, eyelids puffy, shortness of breath on the least exertion. May 22nd, thymol, passed many ankylostomata. Discharged June 19th. Weight 125½ lbs. Much better.

CASE X.—Gopaul, male, aged 53, Crown Lands. Admitted May 17th with a slight attack of influenza; face puffy, eyelids swollen, conjunctivæ pale, tongue mottled, palpitation and difficulty of breathing on the slightest exertion. May 2nd, thymol, passed a quantity. Discharged June 21st. Improved in health.

CASE XI.—Joseph Herbert, aged 23, a black man from Nevis, working at Soucis. Three years in St. Lucia. Admitted with malarial fever, May 9th. Weight 127 lbs. Face puffy, tongue pale and flabby, mucous surfaces blanched. May 27th, thymol, passed a few. Discharged June 10th. Weight 138½ lbs. Much better.

CASE XII.—Kishun, male, indentured coolie of Crown Lands, aged 40. Admitted May 20th. Weight 101½ lbs. Face puffy, conjunctivæ pale,

tongue flabby, mottled, large purple spots on surface, complains of shortness of breath, frequently in hospital. May 27th, thymol, three doses passed numerous ankylostomata. Discharged June 13th. Weight 106 lbs. Much improved.

CASE XIII.—Samundri, aged 23, female from Crown Lands. Admitted May 18th, suffering from anæmia. Tongue large and flabby, face puffy, conjunctivæ very pale, frequently in hospital. Weighs 91 lbs. May 27th, thymol, passed a quantity (specimen). Discharged June 5th. Weight 92 lbs. Much better.

CASE XIV.—Punwasi, aged 19, a female coolie from Mont d'Or, admitted May 22nd for anæmia; weight, 82 lbs. Face puffy, tongue pale and indented at edges by the teeth, conjunctivæ blanched. May 29th, thymol, passed a few; stools dark green. Discharged June 6th. Weight, 84 lbs. Very much improved.

CASE XV.—Daiyao, a male coolie from Mont d'Or, admitted May 22nd suffering from anæmia; weight, 119 lbs. Face pale, eyelids puffy, conjunctivæ yellowish white, tongue flabby, marked by teeth, spleen enlarged. May 29th, thymol, dark stools. passed a few. Discharged June 6th. Weight, 125 lbs. Greatly improved.

CASE XVI.—Ramrattan, male, aged 32, Crown lands, admitted May 15th with fever and influenza; weighs 119½ lbs. General appearance anæmic, pale waxy complexion, eyelids puffy, tongue large and pigmented as if stained with ink. May 31st, thymol, passed a few ankylostomata. Discharged June 8th. Weighs 123 lbs. Much better.

CASE XVII.—Bargaxiprasad, male, aged 20, Crown lands. Admitted May 15th. Influenza and anæmia. Weighs 119½ lbs. Face puffy, eyelids swollen, conjunctivæ yellow, tongue large and pale. Male 31st, thymol, passed a few ankylostomata. Discharged June 11th. Weight 124 lbs. Greatly improved in health.

CASE XVIII.—Shadilal, male, aged 34, Mont d'Or, free coolie. Admitted May 25th for anæmia. Tall man, weighs 131 lbs. Face pale, depressed and anxious look, tongue large and flabby and pigmented, conjunctivæ pale and anæmic. June 2nd, thymol, passed a few ankylostomata. Discharged June 15th improved.

CASE XIX.—Chedda, male, aged 45, Mont d'Or, free coolie. Admitted May 16th with influenza. Weight 98 lbs. Face sallow, eyes sunken, conjunctivæ yellow, tongue pale and flabby, teeth marks on edges, very large large spleen, frequently in hospital. June 2nd, thymol, passed a few ankylostomata. Discharged June 6th. Weight 99 lbs. Much improved.

CASE XX.—Baliraj, Volga coolie from Soucis Estate, aged 30. Admitted April 23rd, suffering from anæmia. Weight 100 lbs. Pasty-looking complexion, eyelids puffy, tongue deeply pigmented, mucous surfaces blanched. June 2nd, thymol, passed a quantity. Discharged June 17th. Improved in health.

CASE XXI.—Kalu, indentured coolie, male, aged 30, Crown Lands. Admitted May 20th, with intermittent fever. Weighs 95 lbs. Characteristic appearance—face pale and unhealthy-looking, eyelids swollen, conjunctivæ pale, tongue large, soft, and pigmented. Complains of difficulty of breathing ("hampa" Hindustani). June 4th, thymol, passed many ankylostomata. Discharged June 13th, in good health. Weighs 101 lbs.

CASE XXII.—Zalim, free coolie from Roseau, male, aged 32. Admitted June 3rd, with anæmia. Weighs 107 lbs. Weary, pasty look, tongue large and soft, conjunctivæ dirty-yellow. June 4th, thymol, negative result. June 6th, thymol; passed many ankylostomata. Discharged June 9th. Weight 109½ lbs. Greatly improved.

CASE XXIII.—Dinali, a boy, aged 14, from Peru Estate. Admitted March 30th, for geophagia or pica (earth eating). Weight 60 lbs. Unhealthy, waxy look. Complains of pain at pit of stomach. June 5th, thymol, in 15-grain doses, passed a large quantity. Discharged July 30th, much improved. Weighs 65 lbs.

Since then fully 60 other cases have been undergoing the same treatment with the most successful results. After a few doses of thymol the tongue of the patient, which had been soft, pale, and mottled, becomes red and healthy looking. This change is very remarkable. The appearance of the individual also alters rapidly, and after a short course of tonics and iron, he is sufficiently recovered to be able to resume work on the estate. The fatal effects of thymol on the small parasite in the intestines are unfailing. Thymol imparts to the urine a dark colour, resembling that observed when carbolic acid is absorbed into the system. It also changes the stools to a dark green colour. Giddiness and faintness after taking the drug were complained of by a few of the more debilitated coolies, but these symptoms quickly passed off. For this reason I never administered more than 20 grains at a time, although larger doses are recommended by some authorities. It is worthy of note that there has been only one death from pernicious anæmia in the hospital since May last when the treatment by thymol was commenced, and this case might have been saved had the thymol arrived sooner. Nine deaths from this cause are recorded for the previous five months.

The method of finding the worms is tedious and difficult, and by no means agreeable. The excreta must be submitted to at least six washings, and the deposit allowed to settle between each washing. The final deposit is now carefully examined, and the minute worms, measuring from about half to three quarters of an inch, are discovered at the bottom of the vessel. Thymol is given the credit of being a powerful disinfectant and deodorant, but in my experience it has not proved so.

The habit of eating earth (pica or geophagia) is prevalent among coolies, both children and adults. It is a vitiated and

depraved state of the appetite, and is a frequent symptom of cases of anæmia. According to Cobbold, it is a common symptom of worms of all kinds.

I have at hand an extract from Dr. Livingstone's last *Journals*, Vol. II, p. 83, which I think worth quoting:

"Safura is the name of the disease of clay or earth eating at Zanzibar. It often affects slaves, and the clay is said to have a pleasant odour to the eaters, but it is not confined to slaves, nor do slaves eat in order to kill themselves; it is a diseased appetite, and rich men who have plenty to eat are often subject to it. The feet swell, flesh is lost and the face looks haggard, the patient can scarcely walk for shortness of breath and weakness, and he continues eating till he dies.

Earth eating is one means by which the ankylostoma duodenale is introduced into the system, but unwashed hands in labourers working in contaminated soil is a more frequent cause of infection. Water is probably the principal medium through which the parasite infects man.

Three different modes of action are put forward to explain the pernicious anæmia caused by the action of the ankylostoma upon the system: (1) direct loss of blood, (2) catarrh of the stomach and intestines, causing altered digestion and impeded absorption; and (3) blood poisoning produced by materials originating in the metabolism of the parasite, or in the impaired digestion of the bearer.

I hope from further observation to be able to demonstrate successfully that the pernicious effects of the anæmia of this island, whether occurring in Creoles or coolies, are due to the presence of the ankylostoma duodenale in the intestines.

INHALATION OF FORMALIN IN CATARRH AND OTHER DISEASES OF THE RESPIRATORY TRACT.¹

By J. LARDNER GREEN, M.R.C.S.Eng., L.S.A.,
Salisbury.

THE predisposing cause of ordinary catarrh is most probably a depressed condition of the nervous system; the exciting cause a chill or other constitutional shock paralysing the branches of the first, fifth, and eighth pairs of nerves followed by the introduction of air laden with the ever-present morbid germs. Dr. Davison records a case of a vigorous young girl who breathed air strongly imbued with coal gas; when discovered she was comatose, breathing stertorously, and foaming at the mouth. After partial recovery under the prompt and skilful treatment employed, we are told that there was great danger owing to the exhausted condition of the system; the cells of the respiratory tract were so paralysed that they were incapable of resisting the invasion of the pneumococcus, thus leading to a fatal attack of pleuropneumonia: for the automatic centres lose their inhibitory powers if the higher centres become so disorganised as to be unable to discharge their functions.

According to Fraenkel, a micrococcus is found in the sputum of pneumonic patients, and more recently he believed them to be the cause of pneumonia; they are frequently rod-shaped, being somewhat longer than broad, varying in size and shape, usually found in pairs, sometimes in filaments of three or four elements; when in double pairs they are called micrococcus tetragenes. They stand in some intimate relation to many forms of fevers and inflammations. Their presence in the healthy mucus of the mouth, etc., does not disprove this, for it is necessary that some injury—greater or less—should occur to stir up this ever-present germ to develop the diseases of the respiratory passages. These complaints have several points of resemblance to others acknowledged to arise from microbes; thus catarrh is to some extent contagious. Popular belief confirms this idea, and all admit that catarrh, if often recurrent, is apt to end in laryngeal and pulmonary consumption.

These considerations lead to the conclusion that the most rational treatment is by means of germicidal remedies, the most direct mode being by the careful inhalation of a gas or vapour; the best results have been from the vapour of formalin, one or two drops placed inside a Jeffery's respirator. If the disease be in the acute stage one drop will suffice; if the vapour be too stimulating, the respirator should be temporarily removed from the face to dilute the vapour with air; a feeling of warmth and comfort will follow.

¹ Abstract of a paper read at a meeting of the Southern Branch of the British Medical Association.

I strongly advise a trial of the formalin in the early stages of tuberculous consumption, when usually it will be found under the microscope that the number of both the micrococcus pneumoniae and also of the bacillus tuberculosis, which is constantly to be found in the sputum, will be rapidly lessened. Of course, every subsidiary aid, for example, tonic medicine, careful dieting, every attention to hygienic surroundings, should not be omitted. Formalin is the short name given to a 40 per cent. aqueous solution of formaldehyde gas. For inhalation in acute cases, the formalin should be diluted with water.

A CASE OF ACUTE SEPTICÆMIA TREATED WITH ANTISTREPTOCOCCIC SERUM: DEATH.

BY
A. V. CROSSING, and H. W. WEBBER,
M.R.C.S.Eng., L.R.C.P.Lond., M.D., M.S.Lond.

K. T., aged 15½, a pupil teacher, was first seen on October 31st, 1896. She worked very hard at the school, appeared to have been not too well fed, and lived in an insanitary house. She first felt ill on October 26th, but went to school till October 30th. On October 31st she looked ill, and complained of pain in respiration in the left infrascapular region. The lower lip was swollen, with a small pustule on the left side. This was opened and hot boracic fomentations applied.

November 1st. Temperature 103°, pulse 140, respirations 40. The chin and lower part of the face on the right side were swollen, red, and tender. Fine inspiratory crepitation could be heard over the ninth and tenth ribs in the left mid-axillary line. Calomel (gr. iv) was given and quinine sulphate (gr. ii) every four hours.

November 2nd. The inflamed area on the face had extended somewhat downwards. Crepitations could be heard over the same spot as before. In the evening the temperature was 103°, the pulse 140, and the respirations 46.

November 3rd. The swelling was more prominent over the face, and felt elastic. The temperature was 100.4°, pulse 120, and respirations 34. In the evening, under A.C.E. mixture, an incision was made in the middle line below the chin 2 inches in length, and another over the border of the lower jaw. The incised tissues were very tense and brawny, but no pus was found. Quinine, digitalis, and brandy were ordered to be taken at frequent intervals, and the hot boracic fomentations continued. Several pustules on the lower lip were opened, and pure carbolic acid rubbed into their cavities. The condition of the lip at this time very much resembled that of a carbuncle.

On November 4th there was slight general improvement: the temperature 101° to 103°, the pulse 120 to 130, and the respirations 30 to 40; no crepitations were now audible, and nourishment was well taken.

On November 5th the temperature in the morning and evening was 101.4° and the pulse 120. At 9.30 P.M., 5 c.cm. of antistreptococcic serum prepared at the Pasteur Institute were injected subcutaneously to the left of the umbilicus.

On November 6th there were swelling, redness, and tenderness in the right temple, extending over the eyelid, and causing inability to open the eye; the temperature was 102°. At 9.30 A.M., 5 c.cm. of serum were injected. At 9 P.M. the temperature was 103.8° and pulse 120. Under chloroform an incision down to bone was made into the swelling outside the right orbit; 10 c.cm. of antistreptococcic serum (Burroughs, Wellcome, and Co.) were injected.

November 7th, at 4 A.M., rather severe hæmorrhage came on from the incision over the lower jaw. It was stopped by compression with dry wool and a pint of saline solution injected into the rectum. This was repeated two hours later, the result on the pulse and general condition being good on each occasion. In the evening the temperature was 103° and pulse 150. The patient was evidently becoming much worse, though she took milk freely, and brandy in two-drachm doses every two hours.

On November 8th diarrhœa came on frequently, and the