parison of the wet and dry bulb thermometers to indicate the degree of saturation, we can easily calculate the exact quantity of medicine in each cubic inch of air inspired. If we could determine the reduction of temperature and increase of pressure which takes place in the respiratory tract we would possess all the elements for an accurate computation of the amount of medicine deposited in the lungs. It remains for future investigation to complete these data if it be possible; but in the meantime, I believe that our knowledge of physical and physiological laws warrants the belief that in this direction lies the highest measure of success in typical medication of the lungs.

The idea of combining topical medication with pneumatic treatment is not of recent date. It is only necessary, however, to refer to the older methods to show their inefficiency. Crow caused compressed air to pass through one or two Wolff's bottles filled with hot aqueous solution of sal-ammoniac before inhalation. As sal-ammoniac sublimates only with dry heat it is needless to say that his patients only received hot aqueous vapor, with a few particles of solution mechanically carried over (Oertel). The quantity introduced must have been entirely problematical and accidental. This method with volatile agents was followed by Waldenburg, Cube, and Domansky. Dr. Crabbe's method was to fill the Waldenburg condenser with air charged with vapor and then compress it. A large proportion was lost in the water by compression and absorption, and only a small and indefinite quantity reached the lungs. The results were so unsatisfactory and the methods so unscientific that Oertel declared the number of medicines which could be used in this way almost limited to a few ethereal oils, and advised abandonment of further efforts to combine topical medication and pneumatic treatment. The persistent efforts which these pioneer investigators made for the simultaneous accomplishment of these two objects clearly shows their opinion of its desirability.

There are various anatomical and physiological reasons why medication of the alveolar walls can better be accomplished during increased pulmonary pressure. The increased air-space present is produced almost entirely by the distension of the elastic alveolar walls. This increases the area of absorption; and not only so, but it renders medication possible in certain areas, such as the apices, or partially collapsed lobules, where expansion is ordinarily imperfect. The increase of the tidal volume of air which spirometric tests have demonstrated, increases the movement of the lung structure, and quickens the flow of lymph in the spaces having their origin in the alveolar walls. The direction of this flow is of course from the alveolar septa, and to accelerate it is to promote absorption. Thus the conditions of increased intra-pulmonary pressure are the best possible for topical medication of the alveolar walls; besides which we get the combined results of the two processes.

With the older pneumatic apparatus simultaneous topical medication was manifestly impossible. With the Ketchum Cabinet, however, the conditions are

under complete control, and we can distend the alveolar passages to any allowable extent, and introduce medicinal agents with the same facility as before expansion. I believe that this combination of mechanical and medicinal therapeutics offers the most favorable outlook for the treatment of that class of pulmonary diseases in which increased intra-pulmonary pressure and topical medication is indicated. This includes more particularly bronchitis and phthisis; while in the more purely mechanical treatment of emphysema, unresolved pneumonia, and pleuritic exudations, it will occasionally be found useful for the treatment of concomitant conditions.

In conclusion, it affords me pleasure to acknowledge my indebtedness to Dr. H. F. Williams, of Brooklyn, and Mr. Joseph Ketchum, of New York, for valuable suggestions.

GLANDERS IN THE HUMAN SUBJECT—WITH A CASE.

Read before the Section of Practice of Medicine, Materia Medica and Physiology, at the Thirty-Eighth Annual Meeting of the American Medical Association, June, 1887.

BY C. N. COOPER, M.D.,
OF CLEVELAND, TENN.

Glanders is essentially an equine disease, and found among horses, asses and mules the world over. The names *equinia* and *farcy* are also given to this malady. Aristotle described a disease identical with this, among the horses of his time. Its prevalence in any country is said to increase from 50 to 100 per cent. during and after a war. As to its spontaneity veterinarians do not agree. Some aver that every case is to be traced to some other case, as in measles or small-pox in man; others deny this, claiming that, under favoring circumstances, it originates *de novo*. All agree that there is a glanders bacillus, but do not agree as to whether it is the cause or concomitant of the disease.

It is not in the province of this paper to discuss this point at length; but I cannot let it pass without calling attention to the fact that horses that have been apparently in perfect health all their lives have been known to become glanderous when crowded together on shipboard upon long voyages. This is often the case when, on account of storms, the hatches are closed much of the time, so that the air becomes stifling and impure. Horses subjected to great privation and those kept in damp, ill-ventilated stables, seem sometimes to develop this disease spontaneously. It does not seem to me probable that the bacilli of glanders could exist, latent, in the animal for an indefinite period, waiting for favoring circumstances to present themselves for their development. The virus exists in all the fluids of the affected animal, even the semen. It is an important fact, to be remembered, that a glandered horse may be fat and sleek, and, because of his healthful appearance, become a ready source of contamination to other horses or to man. All are agreed that this disease

never originates in the human race. I am confident, though this is a disputed point, that its virus is a fixed poison like that of vaccinia or syphilis, and cannot be conveyed except by some form of inoculation. From my own experience and observation, as well as from the meagre literature there is upon this subject, I conclude that there must be some solution of continuity where the virus finds ingress. This may be upon the skin, or upon some mucous membrane, as the mouth, nose, air passages, or possibly the vagina.

Very little has been written upon this topic. Two centuries ago Helmont ventured the suggestion that glanders might have been the original source of syphilis. Later, Ricord revived the idea, but Virchow concludes that it is impossible. So far as I can find, the first case reported was by Lorin, in 1812. The next was by Muscroft, of Edinburgh, in 1821. Cope-land, of London, also reported a case about the same time. In 1828 Prof. Coleman wrote a paper on the subject, and not long after Rayer gathered all that had been written, up to that time, into an elaborate paper published in vol. vi of "*Mémoires de l'Académie Royale de Médecine*." Ziemssen's work contains a lengthy article on the subject, as also Pepper's "*System of Medicine*." In Quain's Medical Dictionary a fair mention is made of this disease; yet I imagine that the busy practitioner who is called to a suspected case may read all that is written upon the subject, then turn away feeling that he is thrown upon his own resources for both diagnosis and treatment; and however well-read he may be, he may be pardoned for failing in his diagnosis when called to his first case, acute, subacute, or chronic.

The incubation of glanders occupies from three to five days. The attack is ushered in by a chill of greater or less severity, acute pain like that of rheumatism, yet without local inflammation, and an indescribable feeling of languor. The temperature soon becomes high, the pulse quick, weak, and unsteady, the tongue heavily coated, soon becoming dry and brown. There is constipation, and scanty urine. The teeth and lips early take on sordes. The pain continues, now here, now there, but is prone to be cephalalgic, and often intense. Nodules appear promiscuously about the face and body, and often break down into bullæ. Deep abscesses form, involving both cellular and muscular tissue; these are painful, and mature very slowly, discharging, when opened, a thin, dirty, sanious pus. At the point where the abscess is opened, a deep ulcer soon forms, which seems to be a sort of sloughing of the integument and immediately underlying tissue. These heal very slowly, if at all. A papular rash also appears here and there upon the body, but seems to be insignificant. The mucous membranes early become dry, then form ulcerated spots, from which a fetid muco pus discharges. The integument becomes earthy and cadaverous, and the whole body exhales an offensive odor. Day by day the trouble advances, baffling all efforts to check it, and the patient usually dies, in from one to three weeks, in a loathsome condition.

If the attack is subacute, the duration is longer, but is only a prolonging of the agony, until death

comes to the rescue. Some cases, however, linger for months, or even years, in their misery, and finally die from exhaustion; unless, indeed, the patient becomes wearied out with what seems to be a hopeless contest, and ends his suffering by suicide. A few cases of recovery, however, have been reported. After detailing a case which was under my care for nearly two years, I will consider somewhat the differential diagnosis between this disease and several others with which it may be most easily confounded.

Mrs. Lorenson, native of Germany, a widow, æt. 23, came under my care on June 24, 1884, with the following history: In September, 1883, her husband, living near Elgin, Ill., bought a fine-looking horse, said to be suffering with an ordinary distemper, for which he at once began to treat him. Very soon after, Mr. L. was taken sick. He had a well-marked chill, severe pain in different parts of his body, and extreme languor. His physician diagnosticated some form of blood-poisoning, but could not determine its exact nature. He was seen by several competent physicians, who were all in doubt about the case, until he told them of the horse he had been treating. An examination of the horse led to the belief that its trouble was glanders. Dr. Paaren, then State veterinarian of Illinois, was called, and pronounced it a true case of glanders. There was now no doubt as to the nature of the trouble. Nodules formed here and there, and broke down into bullæ. Deep-seated, painful abscesses also appeared, and failed to heal. After about three weeks of suffering, he died in a most loathsome condition, but not until his wife had become contaminated. Her attack was similar to his, but less severe, and by prompt, energetic treatment she was so far restored as to be able to perform some domestic duties, until the following June, when she suffered a relapse and was brought to the "Poor Farm." She was placed in a small isolated house, to be cared for by a "sister" from a convent in Chicago. I now copy from my notes, taken during the progress of the case:

Mrs. L. is suffering severely from a hemicrania. She has a purulent vaginal discharge, a small ulcer on the right thigh, nearly healed, and a large one in the roof of the mouth, with angry, ragged edges, and a patch of denuded bone about 5 lines in diameter just back of the right canine tooth. Small patches of ulceration extend into and down the throat as far as can be seen. Her face is swollen, and her eyes expressionless. The tongue is heavily coated and the skin is of a dirty gray color. Her pulse is 110, very weak and unsteady. She has no appetite, is much emaciated, and a sickly odor emanates from the body. The urine is scant and thick, and bowels constipated. She has been informed that she can live but a short time, and cares not how short the time may be. Gave a brisk cathartic, to be followed by syr. iod. of iron in full doses every four hours, to be alternated with a capsule of quin. sul., ac. salicyl., and morph. sul. She is to have all the milk, beef and eggs she can take. All ulcers are to be thoroughly cleansed three times a day, and dusted with a powder of soda, sulphur and iodoform, equal parts. All her underclothing, and everything about her at

all soiled, are to be burned, and strict attention given to cleanliness, disinfection and ventilation. Frequent alkaline baths and changes of clothing ordered, and every soiled cloth or garment is to be burned as soon as removed.

July 1. Patient suffers less, and is less despondent; takes milk and eggs fairly well. Substituted pot. iod., ammon. mur., and hydrarg. bichlor. for the iodide of iron, but continue the capsules four times a day.

July 4. The iodide mixture is not well borne, give citrate of iron and quinine instead, and the capsules are to be used only for relief of pain, which is not very troublesome. A swelling under the left eye threatens an abscess, and both eyes are red and swollen. Thinking the iodoform may be the cause of some of this disturbance, this is to be used only on the leg ulcer, and the mouth ulcer is to be treated with a saturated solution of boracic acid in glycerine.

July 10. The eye trouble has disappeared, except the abscess forming under the left eye, which is now being poulticed. The vaginal discharge is much diminished, the appetite is good, and she is quite cheerful. Treatment continued.

July 12. Dr. Hard, of Aurora, visited the patient with me to-day, but declined to give any advice, except to wash ulcers in a sulphurous acid solution. A thin piece of bone, as large as the finger-nail, has exfoliated from the roof of the mouth, and the ulcer is reduced to the size of a quarter of a dollar, while those of back part of the mouth and throat have disappeared, leaving the membrane thickened and granulated. The fetor of the body is gone, but the breath is still offensive. She is gaining in flesh, and the skin has improved in color. The leg ulcer gives no further trouble. She suffers considerable pain in her back, indicating a return of her menses, which have been absent since February.

July 16. The abscess under left eye has matured and been lanced; another one appears to be forming under the right eye. There are numerous small, hard nodules about the face, and a deep, painful swelling in the calf of the left leg. An abscess has discharged spontaneously in the right labium, but gives very little trouble. Poultices are ordered for the leg, and tinct. iodine for the swelling and the nodules upon the face, and tr. of iron and cod-liver oil internally.

August 1. The abscess under right eye is discharging quite freely. The nodules are all gone, and the leg is less painful, but an abscess is unavoidable. The ulcer in the mouth is slowly healing, but an ugly one under the upper lip is very obstinate, probably because not well cleansed. I have ordered it syringed three times a day, and packed with absorbent cotton wet with boracic acid and glycerine. Her appetite remains good, and she goes about the yard, spending much of the time out of doors, when the weather permits.

August 15. The mouth ulcer has healed, leaving the root of the canine tooth exposed almost to its point. That under the lip is improving. The abscess on the leg is now discharging, and giving very little trouble. A small ulcer marks the spot of the abscess under the left eye, and a large one that under

the right eye, where the integument and underlying tissue sloughed, leaving an excavation $2\frac{1}{2}$ inches long by 1 inch wide, extending to the periosteum, which seems healthy. The vaginal discharge has entirely ceased, but she suffers a good deal of pain in her back, for which a chloroform liniment is ordered. She is fleshy, eats very heartily, and is very hopeful.

September 1. The liniment affords but temporary relief to the pain in the back, and she is ordered to take a hip bath before retiring. The face ulcer refuses to heal, and I have cauterized it thoroughly with solid nitrate of silver. She is now taking cit. iron and quinine in maltine.

September 5. Was called in haste to-day to see my patient, and found her suffering intense pain all over her. She had had a severe chill, and now the face was very red and swollen, the pulse 120, hard and cordy, and the temperature 104° . I found that she did not take the hip bath until this morning, after which she went directly out of doors into a chilly air, and sat down for a half hour, when the chill occurred. I gave her liberal doses of quinine and aconite.

September 6. Temperature normal, pulse 90 and weak; the face still swollen and erysipelatous. The iron and quinine in maltine is resumed.

September 15. Face ulcer looks as though it would enter the eye, in spite of iodoform and argent. nitras. In all other respects she is doing well again. The ulcer which formed at the opening of the leg abscess has healed. For one week she is to take Fowler's solution, and the iodides of lime and soda in sarsaparilla, then a tonic of iron, quinine, and strychnia.

October 1. The face ulcer is at a standstill. The menses have appeared, and she says she feels well. She walks a mile without tiring, and spends all the pleasant hours in the open air.

November 1. Patient is doing well in every way, except that there is no improvement in the ulcer, which I am cauterizing every three or four days.

November 10. The ulcer has burrowed under the lid and entered the eye, lighting up a most fearful inflammation. The injected cornea is seen in a depression of the thickened conjunctiva, which has the appearance of a piece of raw beef. The aqueous humor is cloudy, and there is simply a perception of light. The pain, of course, is intense, and she utterly refuses food. Hot fomentations are to be constantly applied to the eye, and sufficient anodynes given to relieve pain.

November 15. Patient is emaciating perceptibly. She takes no food except a little milk. There is no change in the appearance of the eye, but she gets a little more sleep, by the use of the anodynes. The right side of the face is paralyzed. The extremity of the infra orbital nerve is doubtless destroyed. The appearance of the face is brutish, and she is greatly depressed mentally. It is scarcely possible to properly cleanse the eye.

December 1. She has lost all the flesh she had gained and takes no food but milk with lime-water. No medicine is retained except tablets of morphine and atropia. A preparation of morphine and atro-

pia in a saturated solution of borax in rose-water is applied freely to the eye. She now consents to enucleation, but the operation would be unwarranted in her condition. The pulse is 140, small and very irregular, and death seems inevitable and imminent.

December 5. Patient has rallied; pulse 100 and more regular, and the intensity of the conjunctivitis has somewhat subsided. She takes more milk and a little broth, but no medicine except the tablets.

December 15. Considerable improvement. She takes one quart of milk and one or two eggs every day, besides occasionally a little broth or gruel. Her menses have again appeared. The cornea and aqueous humor are clearing slightly, and there is a corresponding improvement in the sight. There is much less pain and swelling about the eye. Local treatment continued, and tonics resumed.

January 1, 1885. Eye trouble is gradually subsiding, and a diet of milk, eggs, meat and coffee is relished. Urine scant and thick. Right knee painful, without swelling or redness. Chloroform liniment ordered for the knee, which is to be wrapped in hot cotton batting. Pot. brom., acot. rad., and spts æther nitr. in lemon syrup internally.

February 1. Destructive process in the eye has reached its height. The conjunctiva is so far destroyed that the eye seems to have no attachment except the muscles, which are visible, and the vessels and nerves; yet there are slight indications of repair. Ordered a fine powder of boracic acid and iodoform to be dusted into the eye night and morning, after thorough cleansing, and the eye to be kept covered. The kidneys are more active, and menstruation has again occurred, delayed but one week. There is a discharge of watery pus from the right ear, which is to be kept cleansed and the iodoform powder applied as to the eye. Pain continues in the knee, where an abscess is forming. The flexor tendons are quite contracted. Internal treatment, syr. iod. of iron, and quinine.

February 15. Blister applied to knee, which is still quite painful, with no progress toward suppuration. The ear gives no further trouble. Iodoform powder discontinued, and morphine and atropia solution freely applied to the eye. She eats and sleeps well and is taking on flesh again.

March 1. Gradual improvement in all respects except the knee, which remains the same in appearance, but is less painful. All sensations normal, and she would be about the house and yard but for the knee. She can see the bars in the window sash across the room with the affected eye. As an experiment am now giving her McDade's prescription instead of the tonic. The eye-wash is continued. Drs. Robbins and Milbacher, of Aurora, visited the patient with me, and advised enucleation if acute symptoms should recur so as to threaten the well eye.

March 10. Fluctuation seemed evident in the affected knee, but the exploring needle shows only blood. Blister renewed.

March 20. Patient weakens under McDade's prescription, and I have added iron and quinine for internal treatment. Poultices are resumed on knee.

April 1. Abscess lanced, discharging about 3 oz. of

thin sanious pus. Poultices continued. The small ulcer under left eye is healed, and the one under right eye is nearly healed, there being only a deep spot at the right inner angle of the eye, where the lid lost its continuity with the nose. There is marked improvement in her general appearance.

April 15. A deep ulcer marks the spot where the knee abscess was opened, but there is no pain. The knee is flexed to nearly a right angle. There is a suspicious puffiness about the left ankle, with a good deal of pain. After painting the whole ankle with tinct. iodine I have applied a thick layer of cotton batting, and over this a rubber bandage, from the toes, as tight as she can bear. This is to be repeated every other day.

May 1. Right knee has healed, but is very tender and quite swollen. It is dressed simply with cotton batting, held in place by a firm roller bandage. Left ankle and foot are somewhat painful and considerably swollen. Cotton and bandages continued. She failed to menstruate in April, and feels heavy dragging pains in her back and hips; otherwise she feels well, and is gaining in flesh.

May 15. Severe pain in the left shoulder, without swelling or redness. No pain in foot or ankle. Chloroform liniment and hot cotton applied to shoulder, and sod. iod., sod. brom., and salicyl. internally, alternating with iron and strychnia. Eye trouble improves slowly.

June 1. Shoulder somewhat better, treatment continued. Under the influence of oil, rubbing and stretching, the flexion of the knee is yielding, and patient gets about the room by the aid of a chair. Deep ulcer at the inner angle of the eye is slowly filling. I apply solid argent. nitr. about once a week and the eye-wash night and morning.

June 15. Pain has passed into the right shoulder, leaving the left perfectly free, but it is not very severe. Patient is cheerful and hopeful.

July 1. Pain in shoulder is not constant, but when absent there, is felt in right thigh, but not so severe as to prevent her getting out of doors with the help of crutches. Menses appeared in May and June without pain. She can distinguish large letters with the affected eye, and knits or sews most of the time. Is now taking syr. iod. of iron in an elixir of bark and iron.

August 1. Another abscess has appeared and matured rapidly below the right knee, two inches from the site of the former. It is quite superficial, and but slightly painful. I attribute this one largely to excessive eating with too little exercise. She is very fleshy. Am varying treatment somewhat, but adhering to alteratives and tonics.

September 1. A small ulcer formed when the last abscess was opened, but filled and healed very quickly. For two weeks there has been some ulceration in the throat, which I have thoroughly cauterized every three or four days, while she has applied a powder of sulphur and soda t. i. d. Powder is to be continued. Her condition is very hopeful, though the blood is still lacking in red corpuscles.

January 1, 1886. The case has progressed well, though slowly, since last note. Menses seem fairly

reëstablished, not having missed since April. Will advise that she be moved to the Poor House, as a matter of economy to the county and of comfort to the patient. I have strong hope that in the spring she may go out into the world again, and support herself.

February 1. Patient has been removed to Poor House. Is suffering from a "cold" with some hoarseness and sore throat. The mucous membrane is rough and thickened. I cauterize it occasionally, and she applies the sulphur and soda powder. Otherwise she is doing well.

March 1. I took patient to Chicago to be operated upon for the ectropion, which, with the drooping of the angle of the mouth, is all that prevents her presenting a picture of health. The wound is healing well, but there will be but little improvement in her deformity, owing, doubtless, to the paralysis of the cheek muscles.

April 28. No appearance of a return of the disease, and I feel quite confident that, if she follows directions, she will remain free from it. For some weeks she has been taking a mixture containing tincture of iron and ammon. muriate. Upon her promise to continue this every alternate week for at least three months, I have consented to her leaving the "House," and she has gone to-day to do housework upon a farm. I will endeavor to ascertain her condition from time to time, hoping, however, that she is at last free from her malady.

As to the differential diagnosis and treatment, something remains to be said. In the onset of the disease I think we may exclude rheumatism, for though the pain is similar, we would not expect so severe an attack of rheumatism without inflammation of some of the joints. We may exclude idiopathic neuralgia, for the constitutional disturbance is too great. A severe attack of erysipelas may be suspected, but in erysipelas we do not find so much pain and depression, and the headache is general, and of a dull, perhaps throbbing character, while that of glanders is decidedly neuralgic. The initial pain, fever, and languor of diphtheria often precede the throat lesion, and are not unlike those of glanders, but if no membrane appears within 24 or 36 hours we may be warranted in excluding diphtheria. In typhoid fever we usually have premonitory symptoms. Then, too, the pain is mostly confined to the back and head. In glanders the attack is abrupt, and the pain general. One may well be pardoned for thinking he has a case of acute blood-poisoning, in which he is not able to trace the source, for glanders is emphatically a hæmotoxic affection, and both victim and physician may be entirely unsuspecting, until, perhaps, some chance remark leads to an investigation which reveals the history of glanders in connection with the case.

Between chronic glanders and secondary or tertiary syphilis there is a similarity, yet with care I think there need be no mistake. A marked characteristic in glanders is great loss of red blood corpuscles, even though the patient is well nourished otherwise. Such is not the case in syphilis. The persistent periosteal tenderness of chronic syphilis is

not found in glanders, nor the copper-colored erythematous patches; syphilitic ulcers tend to spread and to deepen, and have a special affinity for the periosteum and bone. Those of glanders neither spread nor burrow, except occasionally in loose areolar tissue, and it is very rare for the periosteum or the bone to be implicated. The body factor of glanderous patients is peculiar, almost cadaverous, and not like that of syphilis. The discharges from glanderous abscesses are peculiarly ichorous, not unlike the fluid which drains from extensive gangrene. With these distinctive points in view, the careful observer should be able to distinguish between these affections.

I am of the opinion that the virus is somewhat weakened by passing through the human system, and that the disease contracted from man is more likely to be subacute, and more amenable to treatment than when contracted directly from the horse.

As to treatment, very little instruction is given in the books. Gross says: "Bleeding, both local and general, purgatives, tonics and stimulants have proved alike useless." He advises irrigation and cauterization of the wound, or excise it. This is certainly sound advice if we can see the patient before the virus has entered the system; but, unfortunately, this is seldom the case. When bitten by a venomous or rabid animal, the victim knows at once that he is injured, and seeks instant relief. The victim of glanders is unsuspecting, and almost invariably ignorant of the fact that he has been inoculated, until the incubative stage is complete, when it is too late. A few hours even will suffice to fill the system with the poison, which we must endeavor to antidote or eliminate if we think to benefit the patient. In the nature of the case all depletion must be avoided, and the system sustained by every possible means. The treatment must be prompt and heroic. After a careful study of the subject from all the sources at my command, I conclude that quinine in large doses, often repeated, so as to bring on cinchonism as quickly as possible, supplemented with tincture of iron, freely administered, either with the quinine or alternating with it, will give the best results that we can look for in this terrible disease. At the same time we must nourish the patient in every possible way. If in this way, or indeed in any way, we succeed in changing an acute into a subacute attack, we shall have increased the chances of recovery tenfold. I have a strong hope that when we shall have learned more of the true nature of this malady we shall be able to treat it with a reasonable degree of success.

I am glad to be able to add the information, just received by letter, that Mrs. Lorensen is strong and vigorous, and earning good wages as a housemaid. Cleveland, Tenn., October 1, 1886.

DISCUSSION.

DR. SMITH, of Iowa, had had a patient similarly affected from a glanderous horse.

DR. H. W. HITZERAT, of Pennsylvania, had had a case like Dr. Cooper's first. Patient had neuralgic pains, with a fatal result in nineteen days.

DR. STAPLES, of Minnesota, had a case which occurred in Readville last fall. The patient died after a short illness, with symptoms similar to those mentioned by Dr. Cooper.

MEDICAL PROGRESS.

CANNABIS INDICA IN DIARRHŒA.—DR. FREDERICK F. BOND and MR. B. E. EDWARDS, of Rastrick, say: Dr. S. J. Rennie, of Cawnpore, in the *Indian Medical Gazette*, for December, 1886, calls attention to the value of cannabis indica in the treatment of dysentery. We wish to draw attention to its value in a similar condition, namely: diarrhœa; especially in the type known as summer diarrhœa or English cholera. Attention was drawn to it in this connection by Dr. Turner, in the *Lancet* (vol. ii, 1886, p. 536). He says: "In ordinary diarrhœa (referring to summer diarrhœa presumably) the formula

R. Tincturæ cannabis indicæ.....	℥x.
Spiritus chloroformi.....	℥x.
Tincturæ kino.....	℥j.
Aquam menthæ piperitæ ad.....	℥j.

in a modified dose, will be found very serviceable. Being connected with a dispensary where thirty to forty cases of diarrhœa presented themselves daily for treatment during the months of August and September, and where a great variety of remedies were tried, so great was the superiority of Indian hemp above the others, that the patients themselves got to know it, and invariably asked for the green medicine."

We have been in the habit of prescribing it in nearly all forms of diarrhœa with marked benefit, combined with medium doses of morphine. In summer diarrhœa the effects are very striking. There is no necessity to record cases, they are all very much alike; the great depression, the frequent watery stools, the vomiting, and the cramp-like pains are very quickly relieved, the appetite speedily returns, and by the following or third day the cases are practically well, except for some weakness and debility. The formula we generally use for an ordinary adult is:

R. Tincturæ cannabis indicæ.....	℥x.
Liquoris morphinæ.....	℥v vel ℥x.
Spiritus ammoniæ aromatici.....	℥xx.
Spiritus chloroformi.....	℥xx.
Aquam ad.....	℥j.

To be repeated every one, two, or three hours according to circumstances. Directions: *No food for several hours, but a little brandy and water.* We have not seen one case run on to a fatal issue under this treatment.

It appears to act by increasing the astringent and anodyne properties of the morphine (the dose of morphine would have very little effect alone), by its stimulant effect on the nervous system, improving the tone, and by improving the appetite; thus enabling the system to quickly overcome the marked depression and exhaustion. Most remedies in this disease rather retard the return of the digestive function, but from our experience Indian hemp markedly

accelerates it. Indian hemp seems, also, frequently to counteract the bilious action of morphine, as well as the loss of appetite, and allows it to be given where it otherwise would not be tolerated.

In other forms of gastro intestinal disturbance it is also valuable, probably for the same reasons. It was of marked use in a case of subacute gastro-enteritis, which had existed for a few weeks before it came under our care, in a girl aged 13 years, showing the following symptoms: marked anæmia, which had gradually come on after the other symptoms; constant pain over the abdomen, especially in the epigastric region, increased on pressure and after food; tongue covered with yellowish-white fur; loss of appetite; vomiting at variable times after food of partly digested material; diarrhœa, six or eight stools in the day, which were watery and green, containing partly digested food material; some rise in temperature—a little over 100° F. She was first treated with bismuth, then with effervescing mixtures, with no benefit; then with the cannabis mixture (modified to suit her age), and the symptoms very quickly subsided, the vomiting and diarrhœa were checked, the pain ceased, and the appetite returned. By the end of the week all the symptoms had disappeared except the anæmia, which persisted for a short time longer.

In cases of tuberculous diarrhœa we have not seen much benefit, beyond a slight relief of symptoms for a short time, though we have not had sufficient experience in this type; nor in the excessive diarrhœa in typhoid fever.—*The Practitioner*, July, 1887.

NAPHTHALIN IN INTESTINAL CATARRHS AND DYSENTERY.—Following the recommendation of Professor Rossbach, Dr. N. M. DOLGOPOLOFF, of Kursk, administered (*Proceedings of the Medical Conference at the Kursk Zensky Hospital*, January–June, 1886, page 137), naphthalin in about 140 cases of acute and chronic dysentery and acute and chronic catarrh of the large bowel in children and adults. The drug was given in the dose, varying from 1 to 5 grains, five times a day, either alone, or simultaneously with an emulsion containing castor-oil and opium. Only in two cases naphthalin caused vomiting, and was discontinued; and only in four it remained inactive. In the remaining case (as far as their subsequent course was known to the author) the remedy gave excellent results, and that even in patients who had been previously vainly treated by various ordinary means. Already, after a few first days of the treatment, diarrhœa subsided to rapidly cease altogether, tenesmus diminished, stools lost their offensive odor, etc. The author details the case of a boy, aged 9, with chronic dysentery of two years' standing, where recovery ensued from the use of 60 1-grain pills (taken four or five times a day). In another child, aged 2, with dysentery of eighteen months' duration, the same result was obtained from giving 1-grain doses three times daily for twenty days. In acute cases diarrhœa sometimes ceased after a three-days' treatment by naphthalin. Dr. V. I. Doljenkoff, of Kursk, also adduces two cases of follicular enteritis where diarrhœa ceased after 3 and