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CLINICAL LECTURES

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THE CLINICAL LECTURES DELIVERED IN THE MEDICAL
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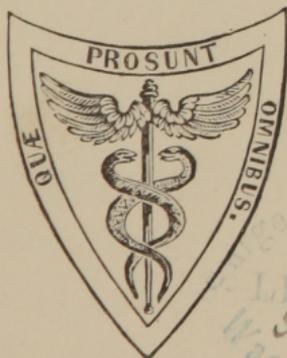
BY

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want of uniformity that may be observed in the manner of writing the prescriptions, or in the naming of medicines. With no pretension to completeness, as a course of Clinical Lectures on practical medicine, it is nevertheless hoped that the contents of this volume will be found of real value, especially by the younger class of practitioners.

F. H. D.

CHICAGO, 792 WABASH AVE., }
March 17th, 1873. }

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LECTURE I.

CONTINUED FEVER.—CASES OF TYPHUS AND TYPHOID FEVER.

—BAD EFFECTS OF CATHARTICS.—VALUE OF STRYCHNIA IN CERTAIN STAGES.—A CASE OF TYPHO-MALARIAL FEVER.

Gentlemen:—The case before you is a female, aged about twenty years, a native of Ireland, and a resident of this country only a few weeks. Some ten days since she came to my office complaining of pain in her head, with some pain also in the back and limbs; a sense of oppression or tightness across the chest; looseness of the bowels; loss of appetite, and lightness or dizziness of the head. She presented an anxious expression of countenance; dryness of the lips; a thick, dirty white coat on the middle and posterior part of the tongue; some tremulousness of both tongue and lips; skin dry, harsh and congested; pulse soft, weak, and about 110 per minute. She had been complaining about one week, during which time she had taken two doses of salts and senna, each operating freely as physic, and during the two days that had intervened since the second dose, she had continued to have four or five copious, thin, intestinal discharges each day. I advised the patient to go home, keep quiet, take bland nourishment, and effi-

cient anodynes to control the intestinal evacuations. About one week after, she was brought to the hospital, and she is consequently now near the end of the second week of her fever.

The symptoms that I wish you to notice carefully, at present, are the following: The whole cutaneous surface is dry, harsh, and warmer than natural; eyes suffused, and expression dull; respiration short, accelerated, and accompanied by strongly-marked dry bronchial rales all over the chest, and occasional rough cough; dullness, on percussion, over the lower and posterior part of the chest; but very little expectoration; pulse 115 per minute, small and weak; abdomen tumid, inelastic, but only moderately tympanitic; three or four thin, brown intestinal evacuations each day; tongue and lips dry, dark red, and tremulous; slight subsultus; and hearing dull.

Such are the more important symptoms presented by the patient. What are the pathological conditions indicated by them? The somnolency, the dullness of hearing, the subsultus, and the frequent mental wanderings, point directly to a strongly depressed condition of the nervous functions. The dryness of the skin, the lips, the mouth, and the mucous surface of the bronchial tubes, and the scantiness of urine, equally indicate a depressed or retarded condition of the secretory functions. The moderately congested and livid hue of the skin, the congested condition of the lower and posterior portions of the lungs, as indicated by dullness on percussion, and the soft, weak pulse, indicate general feebleness of capillary circulation.

Thus the three great functions of innervation, circulation, and secretion, are much impaired, producing all the phenomena of a low type of fever, while the enfeebled capillary circulation has led to a serious degree of infiltration of the pulmonary tissue, and in the mucous membrane of the

lower half of the intestinal tube, to a scarcely less dangerous degree of effusion, constituting the liquid stools, and a tendency to softening and ulceration of Peyer's glands.

A further inquiry now arises, of great interest, but less easily answered, namely: What causes the well-marked depression of all the functions just named? Is it some morbid agent or fever poison acting primarily on the nervous centers, depressing nerve force, and through this influencing the vascular and secretory functions? This was essentially the doctrine of Cullen, and of a majority of writers on practical medicine, from his day to the present time. A more modern, and somewhat more popular doctrine, at the present time, alleges that the supposed fever-poison acts primarily upon the constituents of the blood by a zymotic or septic influence, and that all the important functional disturbances are consequent on the deteriorated condition of that fluid.

A few, like Virchow and Addison, who make all the phenomena of life depend on cell action, would make the phenomena of fever depend on the primary modifying influence of the fever-poison on the functions of the cells, both in the blood and in the tissues. Careful study and extensive clinical observation will show you, however, that all these theories are defective and unsatisfactory.

My own opinion has often been expressed, both here and in the lecture-room. It is, that the initial steps of morbid action constituting fever, are neither in the nervous, secretory, or vascular structures or functions separately, but in the elementary properties common to all the tissues. But it is no part of my purpose, at this clinic-hour, to dilate upon the essential pathology of fevers. The symptoms of the patient lying before us are of the most serious import. The universal depression of vital properties, with the extensively engorged condition of the lungs, rendering respiration imperfect, and the continuance of the frequent intestinal evac-

uations, renders the prognosis extremely unfavorable. The deteriorated condition of the blood always existing in typhus, is here increased by the diminished interchange of carbonic acid gas for oxygen, through the lungs, and there is danger of a suspension of life before any change can be effected, by which a more healthful impression of the blood upon the capillary and secretory structures can be made.

Still, the rational indications for treatment are plain. They are to repress the intestinal evacuations; to arrest the further engorgement of the pulmonary tissues, and to sustain the functions of the nervous and vascular systems. To accomplish the first, there is probably no remedy more efficacious than oil of turpentine combined with a certain proportion of tincture of opium. It not only exerts a peculiar action on the mucous surface of the intestines, by which the tone or contractility of the capillaries is increased and the accumulation of blood consequently diminished, but it also increases the activity of the whole capillary vascular system. Hence it not only fulfills the local indication, but aids materially in accomplishing the third object named. To devise remedies that will relieve the extreme congestion in the lungs, and promote re-absorption of the dark blood infiltrated into the posterior and lower parts of these organs, is no easy task.

The immediate cause of this condition of the lungs is a failure in the susceptibility of the capillaries and their consequent dilation. When this state of bronchial and pulmonary congestion commences early in the progress of the fever, I have found no remedy for its relief so reliable as small doses of tartrate of antimony and potassa, given in combination with opium sufficient to prevent any danger of acting on the bowels. Given in the early stage, it lessens the general febrile action, promotes perspiration, and renders respiration and expectoration much more free. But when

the patient, as in this case, has already advanced to that state when the pulse is small and weak, the skin relaxed, the abdomen tympanitic, and bowels very loose, with much dullness on percussion over the middle and lower part of the lungs, and somnolency, you can expect no benefit from so direct a sedative as antimony. The principal reliance must then be placed on such remedies as tend to sustain the sensibility and action of the nervous and vascular systems, and prevent the further deterioration of the blood. We will give the patient ten drops each, of oil of turpentine and tincture of opium, in the form of an emulsion, every four hours, and the sixteenth of a grain of strychnia, with four drops of nitric acid dissolved in sweetened water, between. We will also dissolve two drachms each, of chlorate of potassa and gum arabic, in a tumblerful of cold water, and have the patient take a tablespoonful every three hours. She must also be fed regularly every two hours with two or three tablespoonfuls of a porridge made of sweet milk and wheat-flour or oatmeal. Seeing the subsultus, the weak pulse, the oppressed breathing, the dingy or leaden hue of the skin, and the mental dullness exhibited by the patient, you may ask why I do not order brandy or other alcoholic stimulants? I answer, that nearly thirty years of careful observation at the bedside of the sick, has satisfied me that, under such circumstances, strychnia is a far more reliable remedy for sustaining the nervous functions than alcohol; while the effects of the latter, in diminishing the decarbonization of the blood, makes it positively detrimental to the already seriously embarrassed condition of the lungs.

Before leaving the subject suggested by this patient, I must add a few words of caution in regard to the use of harsh evacuants in the early stage of these continued fevers. Since the epidemic of erysipelas, in the fall and winter of 1863, a large proportion of our attacks of continued fever

have presented, prominently, the symptoms of typhus rather than those of enteric typhoid fever. That is, the first stage has been accompanied by more intense headache; more restlessness; more frequent pulse and respiration; often a semblance of constipation; a thick whitish coat on the tongue, with less tendency to change to red and dry; and the much more frequent appearance of a mulberry or flea-bite-rash early in the second stage. The apparent torpor of the bowels, coupled with the coated tongue and intense headache, in the early stage, has often led the patient—and sometimes under the direction of his physician—to use active cathartics, and, in a few instances, emetics. I have known of no instance in which such a course has not been productive of very bad consequences. It often induces an early and excessive prostration, coupled with a fixed congestion of the intestinal mucous membrane, greatly favoring softening of the membrane and intestinal hemorrhage in the more advanced stage of the fever. Several cases have come under my observation illustrating this tendency.

A few weeks since I was called to see a young man, in consultation with his physician, who had been attacked severely with typhus fever. The bowels not being loose in the early stage, the physician gave him several compound cathartic pills, which did not seem to operate harshly; but soon after a pitcher of lemonade was prepared, with half an ounce of chlorate of potassa dissolved in it, intending to have the patient use it sparingly as a drink. The nurse, however, allowed the patient free access to the pitcher, and he drank its contents all in one night. This was immediately followed by such copious intestinal evacuations, some of them tinged with blood, that the patient was almost hopelessly prostrated in a few hours, and died during the succeeding week.

Another case was that of a man aged about twenty-five

years, who had recently come to this city. He first called to consult me at my office. I noticed, at once, an unusually haggard expression of countenance; tremulousness of the lips and tongue; a very soft and frequent pulse; with unsteadiness of gait in walking. I learned that he had been laboring under all the symptoms of the first stage of continued fever for ten days, during which time he had taken repeated doses of active physic, to remove what he called "biliousness." I explained to him the nature of his sickness, prescribed some anodyne and astringent medicine to check the excessive intestinal discharges, and urged him to keep quiet in bed. He persisted, however, in keeping up three or four days longer, at the end of which time I found him in bed, with the same tremulous lips and tongue; the same haggard countenance; a still weaker pulse, and a peculiar tawny hue of the skin, as though the hematine of the red corpuscles had become diffused in the serum of the blood and stained all the tissues. His mind was dull; hearing impaired; urine scanty and turbid, and bowels still moderately loose. In a few days petechial spots appeared over the chest and abdomen; and in about ten days from the time he took his bed he passed, at once, a chamber-vessel half-full of dark, offensive, and partially-coagulated blood. The discharge was repeated three or four times within thirty-six hours, producing collapse and death.

The last case I shall mention, was a young man aged twenty-three years, sanguine temperament, and usually in good health. While on a business tour in the country, during the latter part of August and first part of September, he was taken with the usual symptoms of the forming-stage of continued fever, viz.: severe pain in the head, back, and limbs; loss of appetite; furred tongue; dryness of the skin and mouth, etc. On arriving at one of the towns on the Mississippi river, he felt so unwell that he was induced

to take a warm foot-bath, accompanied by an emetic, and followed by an active cathartic. The remedies produced excessive vomiting and purging, but in no degree diminished the headache and fever. With some assistance on the way, he reached his home in this city on the third day after he took the evacuants. His face was flushed; eyes watery and dull; skin dry and moderately hot; tongue covered with a white fur, and red at the edges; lips and mouth dry; pulse 110 per minute, small and weak. He complained of a general sense of heaviness and oppression; constant thirst, and severe, dull pain, with a sense of dizziness through the whole head, but more severe in the cerebellum and base of the brain. Since he took the emetic and cathartic, three days previously, he had retained nothing on his stomach, more than a very few minutes. A single spoonful of cold water would be promptly ejected by vomiting. I endeavored to overcome the irritability of the stomach by giving a solution of bicarbonate of soda, one drachm, and sulphate of morphia, one grain, in two ounces of water, in doses of a teaspoonful every hour. Sinapisms were also applied to the epigastrium, and cold applications to the head. On the second day, finding the irritability of the stomach only partially allayed, while all the other symptoms were unchanged, I gave, in addition to the soda and morphia, a powder of calomel, two grains every four hours, until it should induce a movement of the bowels. I did this because the continued intense suffering in the head, with fullness of the temporal and carotid arteries, and heat above the rest of the body, caused a fear that a low grade of meningeal inflammation might complicate the case. After four powders had been given the bowels moved, and the irritability of the stomach was so far relieved that liquids were retained, if taken in small quantities; but the pain and sense of confusion in the head continued unabated, and

there was much mental wandering. The pulse was frequent, small, and weak; respiration hurried; some subsultus. I ordered a solution of permanganate of potassa, one grain to the ounce of water, to be taken in doses of a tablespoonful every three hours, and a tablespoonful of thin milk-porridge every hour. On the following day, finding less heat in the head, but more subsultus and mental wandering, I gave one grain of valerianate of quinine in sugar-coated pill, between each of the doses of the permanganate, and doubled the quantity of milk-porridge for nourishment. He continued this treatment three days, during which the general symptoms underwent but little change, except that the pulse became a little less frequent, the fever less active, and a characteristic typhus eruption appeared quite copiously over the trunk of the body. The hearing also became dull, and a large bullæ or vesicle, filled with purple or bloody serum, appeared on the outside of the right thigh, and another on the scrotum, while the bowels became slightly relaxed. Owing to these symptoms, an emulsion of oil of turpentine and tincture of opium was given in the place of the solution of permanganate of potassa; and the doses of valerianate of quinine were increased to two grains. Under these remedies, with as much simple nourishment as his stomach could bear, he continued to progress favorably, though changing but slowly, for three days longer, when there occurred one pretty copious discharge of dark blood from the bowels. I immediately gave him a powder containing tannate of quinine, two grains, pulverized geranium root, five grains, and pulverized opium, one grain, and repeated it every two hours, with a teaspoonful of the turpentine emulsion between. After three doses had been given, and no movement of the bowels occurring, the interval between the doses of medicine was lengthened to two hours. When twenty-four hours had elapsed without further evacuations, the powders were

discontinued, and the valerianate of quinine again given in their place. From this time the patient began slowly to convalesce, and has since fully recovered.

These cases strongly illustrate the evil effects of active purging in the early stage of continued fever. Such practice not merely prostrates the patient, but it directly increases the irritability of the mucous membrane, with the aggregate glands of Peyer, which so generally constitute an important pathological condition in all varieties of continued fever. I think I have never known a case of typhoid or typhus fever, in which active emetics or purgatives were used in the early stage, that did not run a protracted and dangerous course.

The next patient to which I shall direct your attention is this young man, who was admitted to the hospital October 17th. He was then reported to have been sick in bed one week, but we could learn nothing reliable concerning either his symptoms or treatment during that time. At the time of admission, his expression of countenance was dull; the surface, especially of the face, hands, and neck, was dry, and suffused with a dark, dingy redness; temperature moderately increased; pulse 120 per minute, quick and weak; lips and mouth dry; tongue covered with a thick coat, dry and brown along the middle of the dorsal surface; abdomen moderately distended, tympanitic, and presenting a few small red papules on its surface. He was reported to have had five or six thin intestinal evacuations per day, for two or three days past. The chest was resonant and natural, except dry bronchial rales over both sides; the mental faculties dull, drowsy, and wandering—so much so as to render him incapable of giving any reliable intelligence. His muscular movements were unsteady and tremulous.

He was directed to have two or three tablespoonfuls of sweet milk and wheat-flour porridge every two or three hours, for nourishment, with whey, bread-water, or milk-and-water

for drink, and an emulsion of turpentine and laudanum, of the same strength, and in the same doses, as was directed for our last patient. He continued this treatment two days, during which time his bowels remained quiet; but his urine passed involuntarily, and he continued to exhibit all the symptoms of a strongly marked typhus condition. The abdomen was full and tense, the pulse very soft and frequent, and the mind somewhat wandering.

On the evening of the 19th an enema of warm water was administered, which was followed by a moderate evacuation of fæcal matter, and some flatus. During the latter part of the night he had another large evacuation in bed, which was thin, and freely intermixed with blood, and the urine continued to pass, without his notice. On the 20th, we found the whole cutaneous surface dingy, with slowness of capillary circulation; the mouth and tongue very dry, with constant tendency to gather dark sordes on the lips and teeth; mind very somnolent; respiration slow and irregular, with sharp, dry, bronchial rales; pulse 128 per minute, and weak; but less distention of the abdomen than previously. It was evident that the depression of the excito-motory nervous centers—as indicated by the slow and irregular respiration, feeble circulation and relaxation of the sphincters—was directly threatening the life of the patient; while the copious intestinal discharges, largely intermixed with dark blood, indicated a condition of the mucous membranes scarcely less critical.

To counteract, as far as possible, the first of these pathological conditions, the patient was directed to have a teaspoonful of the following mixture every four hours:

	R.—	Strychniæ.....	gr. i.
		Acid. nitric.....	ʒ i.
		Tinct. opii.....	ʒ iii.
		Syrupi simpl. } aa.....	ʒ iss.
M.		Aquæ, }.....	ʒ ii.
			2*

To aid the mineral acid and opium in restraining the further intestinal discharges, the emulsion was continued between each of the doses of this solution. Nourishment was continued the same, only giving the porridge somewhat oftener, and occasionally substituting in its place the same quantity of beef-tea, well salted. No further intestinal evacuations occurred, and after about thirty-six hours he ceased to dribble his urine in bed, and voided it regularly.

After following this treatment punctually for three days, he became less somnolent, and exhibited less muttering and subsultus, but his skin remained dry; pulse soft, frequent, and weak; tongue dry, with dark sordes on the lips and teeth; bronchial rhonchi over both sides of the chest, with dullness over the lower and posterior parts; and abdomen tympanitic.

The same treatment was continued, with the addition of a warm water enema, which procured a slight movement of the bowels, until the 27th of October. During the 25th, 26th, and 27th, the patient gradually passed from his state of somnolency and muttering to that of morbid vigilance, or constant wakefulness, with less subsultus, and a slight improvement in the condition of the mouth and tongue; but the mind still wandering; pulse soft, weak, and frequent; and commencing bed-sores over the sacrum and trochanters. Thinking that the change from mental drowsiness to constant wakefulness might be the result of the continued action of the strychnia on the nervous centers, directions were given to have the interval between the doses extended to six hours, and fifteen grains of bromide of ammonium to be given at bed-time; all other directions the same as before.

On the 28th, it was found that the bromide had failed to procure sleep, although the dose was repeated a second time, and the patient appeared in all respects more exhausted

and unfavorable than on the day previous. The emulsion and the strychnia solution were again given, at intervals of four hours—or two hours apart—and instead of trying further the bromide, to overcome the morbid vigilance, fifteen drops of chloroform were added to each dose of the emulsion, the nourishment to be continued as before. This treatment was continued until November 1st, with a very gradual but marked improvement in the condition of the patient. The febrile heat had diminished; the skin was better color; sordes gathered less rapidly on his lips and teeth; the edges of the tongue were moist—though the middle was still dry and fissured—the mind less wandering, with intervals of quiet sleep. The bowels had not moved, except when excited to action by enemas, which had been given about once in three or four days. The last enema was followed by an evacuation of firmly-consistent, healthy-looking fæces. The strychnia solution was still continued every four hours; but six grains of Dover's powder, and four of pulverized gum camphor, were given instead of the emulsion of turpentine.

Two days later, it was found that the symptoms of convalescence had vacillated, being much more prominent every alternate day, and two grains of sulphate of quinia were given between the doses of the strychnia solution, while the Dover's powder and camphor were limited to a single dose at night.

I have passed thus in review the prominent features of this case, because I consider it a rather unusually instructive one; and, although the patient has been here for a considerable time, your attention has not before been called to him. At present—November 9th—convalescence seems to be fully established. The bed-sores over the sacrum and trochanters have been treated by an application of the tincture of the chloride of iron, daily, and are improving. The patient

still remains very feeble, however. The solution containing strychnia and nitric acid will be continued every six hours, with the quinia between.

This patient has been in the hospital about ten days. Six days previous to his entrance he was attacked with a chill, so decided as to make him think he had the commencement of an intermittent fever. He had felt unwell during the preceding three or four days. When the chill occurred, he called a physician, who gave him some powders, and followed them by a cathartic. The latter operated freely, and during the succeeding three days he had from twelve to fifteen intestinal discharges per day. It was at the end of these three days that he was brought to the hospital. On examination, we found him laboring under all the symptoms of continued fever, with great exhaustion.

He was first given the turpentine emulsion every three hours, until the intestinal discharges should be stopped, with milk-and-flour porridge for nourishment. The following day his bowels had become quiet, but he presented every symptom of profound typhus; countenance dull; color of skin brown, or dingy; capillary circulation feeble; pulse 124 per minute, soft and weak; abdomen slightly tympanitic, and bowels quiet; some subsultus, and constant delirium; and once, hæmorrhage from the nose. A slight papular eruption was discernible over his chest and abdomen. The emulsion was continued three times a day, and, in addition, a teaspoonful of the solution of strychnia, nitric acid, and tincture of opium, given every four hours—same proportions as already given in previous cases; and the same strict attention enjoined to the giving of bland nourishment.

The further increase of prostration was arrested in twenty-four hours; but the same treatment has been continued for the past week, during which time a slow but steady

improvement has taken place. The emulsion will now be discontinued, and the strychnia solution given only every six hours, with two grain doses of quinia alternated with it.

The patient lying in this next bed is a native of Ireland; aged twenty-seven years; a laborer; had been sick four weeks previous to admission here on yesterday. He now presents a dull expression of countenance; skin dry, congested, and above the natural temperature; lips thin, retracted, and teeth covered with dark sordes; tongue covered with a dark brown dry coat, fissured; mouth dry; mind dull and wandering; much subsultus; the hands trembling constantly, and the tongue so tremulous that he can neither run it out nor speak plainly. His urine dribbles in bed; and a somewhat extensive superficial bed-sore has formed over the sacrum. The abdomen is neither distended nor tympanitic; but he has from one to three fæcal evacuations daily. Pulse 130 per minute, soft, and weak; respiration accelerated, but no thoracic dullness, or bronchial rales.

In this case, impairment of the functions of the nervous centers, and the general exhaustion, are so prominent, that we shall order, at once, the same strychnia and acid solution, to be given in doses of a teaspoonful every four hours; and five grains each of pulv. Doveri and pulv. gum camph. at night; also the prompt attention to nourishment.

On the third day this patient had so much improved that he could speak plain, protrude his tongue readily; and there was but little tremor of the extremities. The strychnia solution was then diminished to once in six hours, and a powder consisting of sulph. quinia, two grains; pulv. Doveri, five grains; pulv. gum camph., three grains, was ordered to be given alternately with it. He continued steadily to improve, and in eight days after his admission into the hospital (five weeks from the commencement of his fever), his convalescence was fully established.

We have here another patient, aged twenty-seven years; native of Ireland; laborer; who was admitted into the hospital eight days since, with all the symptoms of a severe form of enteric typhoid fever, then in the middle of the second week of its progress. The tongue was dry and brown, with redness of the tip and edges; the abdomen tympanitic; face suffused with redness; pulse 120 per minute; skin moderately hot and dry; intestinal evacuations eight or ten times in the twenty-four hours, thin, and dark brown; urine less than natural; respirations short, and twenty per minute, with some cough, and harsh respiratory murmur in the upper and anterior part of the chest, and deficient murmur with dullness in the lower part of the left side. Mind dull, but not much wandering.

To arrest the progress of the abdominal lesions, and also aid in giving tone to the capillary circulation generally, he was put upon moderate doses of oil of turpentine and tincture of opium, in the form of an emulsion, every three hours; and to counteract the tendency to pulmonary congestion, he was ordered one teaspoonful of the following prescription three times a day:

℞.—Ammon. hydrochl.	3 iiii.
Antim. et potass. tart.	grs. ij.
Morphiæ sulph.	grs. iiij.
M. Syr. glycyrrhiz.	℥ iv.

His nourishment, administered regularly, consisted of sweet milk and wheat-flour porridge, alternated with beef-tea. During the first five days of this treatment, all the important symptoms improved. The temperature diminished; the cough ceased; the pulse gradually fell to 100; abdominal tympanites diminished; and the intestinal discharges were reduced in frequency to two in twenty-four hours. But the tongue remained dry, and the mental faculties dull. On account of the diminished frequency of discharges, the

emulsion was given only every four hours; otherwise the treatment was not altered. During the sixth and seventh days after admission, which would be about the middle of the third week after the patient had taken to the bed, the symptoms rapidly assumed a more unfavorable aspect. The pulse increased to 130 per minute, and was quick, soft, and weak; the mind more wandering; and the intestinal evacuations more frequent and partially involuntary.

This state of the pulse, and intestinal discharges, indicated a dangerous degree of depression of the functions of the nervous system, especially that part of it denominated excito-motory, by Marshall Hall. As before stated, we know of no remedy as direct and efficient for sustaining the nervous functions of organic and animal life as strychnia. When the muscular contractions of the heart become weak, and the sphincter muscles give indications of relaxation, in the advanced stage of typhoid fever, we always resort to its use in the combination before mentioned.*

This patient was admitted to the hospital some four or five days ago. He had had several paroxysms of intermittent fever during the latter part of August and the month of September, in consequence of which he had become pale and somewhat debilitated, but was recovering until about two weeks since. He was then attacked with a chill, followed by a paroxysm of fever, which abated after a few hours, but has not since entirely disappeared. He says that he took some quinia and other medicines, but instead of having the progress of the fever interrupted, it was only modified in its severity. There has been no distinct repetition of the chill, but a paleness and sense of weakness each

* About five days later the attention of the class was again called to this patient, and he then presented all the symptoms of commencing convalescence. The treatment had been continued without change, except to lengthen the intervals between the doses of the medicines.

day during the morning hours, with increased heat, quickness of pulse, headache, restlessness, and general febrile symptoms during the afternoon and evening; and in all parts of the day and night, a swimming, unsteady feeling in the head when in the upright condition; dryness of the lips and mouth; tongue covered with a dirty, white coat; pulse 100 per minute; abdomen moderately full and tympanitic; bowels relaxed; and the mind dull. He has no appetite, and only moderate thirst. The patient is now evidently affected by a mixed grade of fever. The early history of the case, together with the existing paleness of skin, and exacerbating character of the febrile phenomena, show the existence of a malarious influence; while the dullness of mind, dryness of lips and mouth, sense of giddiness in the head, together with symptoms of diarrhoea and abdominal tympanites, clearly indicate a typhoid condition and tendency. In other words, the case has become one of typho-malarial fever, of moderate severity. This mixed grade of fever had been very prevalent in the city from the early part of August to the present time (November, 1872), while in the surrounding country districts, purely malarious or periodical fevers have been unusually prevalent. Many of the typho-malarial cases in the city have commenced with such distinct chills and exacerbations of fever, as to lead the patient and practitioner both to regard them as simple malarious cases, and to confidently expect their full interruption by anti-periodics. In a few, the deception has been increased by an interruption of the paroxysms for two or three days after the first induction of the effects of quinia, so fully that the patients have gotten up, and supposed themselves convalescent. Yet there has remained with them a dull, unnatural feeling in the head; a dry or gummy feeling in the mouth; obscure aching in the back and limbs, especially in the afternoon,

with indifference to food; and after a period ranging from three to five days, the face would become suffused with redness; the lips dry; the tongue coated; more dullness, swimming and pain in the head; and more general derangement of secretions. The pulse from 100 to 110, and temperature from 100° to 103° in the afternoon, but so much less as to constitute a remission in the morning. From this time on, every day generally adds to the predominance of the typhoid symptoms, and some of the cases run a protracted course of from four to six weeks. If, when the fever returns, after the first apparent interruption by quinia, that remedy be again resorted to, and the doses increased, with the expectation of again arresting, at once, the further progress of the case, it generally produces no other effect than to stupefy the sensibility of the patient, and add to the giddiness and confusion in the head. The method of treatment which we have found most beneficial in these cases, when called to them in the early stage, has been rest; a bland, simple diet; milk-whey for drink; sponging the surface with luke-warm water, when hot and dry in the afternoon; and the exhibition of a mixture of carbolic acid, gelsemium, and camphorated tincture of opium, in moderate doses, to counteract the typhoid elements, and moderate anti-periodic doses of quinia in the morning remission to destroy malarious influence. Four or five days since, when the present patient was admitted to the hospital, he was ordered the following prescriptions:

℞.—Acid. carbol. cryst.	grs. vj.
Glycerinæ (puræ).....	℥ ss.
Tinct. gelsemii.....	℥ iii.
Tinct. opii camph.....	℥ iss.
Aquæ.....	℥ iss.

M. Give one teaspoonful every four hours.

℞.—Quiniæ sulph.	grs. xxiv.
Hydrarg. chlor. mit.	grs. iij.
Glycyrrhiz. rad. pulv.	grs. vj.
M. Fiant pulv. vi. Give one at six and ten o'clock each morning	

He has continued these medicines steadily until the present time, and with a gradual improvement in all the febrile symptoms. He will now continue the carbolic acid solution every six hours, and take only one powder of the quinia, etc., each morning.

This case will probably require **no** other treatment except the gradual withdrawal of his present medicines, as convalescence becomes established, and the allowance of a more liberal diet.

When cases of this mixed fever assume greater severity, and, after the second week, present more prominent typhoid symptoms, the treatment must be more fully that which is adapted to the advanced stage of idiopathic typhoid fever.

LECTURE II.

CONTINUED FEVER. — CASES COMPLICATED WITH EMBOLI,
BRONCHITIS, BRONCHO-PNEUMONIA, HYPOSTATIC INFILTRATION, IN-
TESTINAL ULCERATION, ETC.

Gentlemen :—The patient before you is a laboring man, aged about thirty-six years, a native of Canada, and a resident of this city only a few months. About one week since he called at my office for advice. His expression of countenance was dull; face moderately flushed; skin dry and warmer than natural; pulse about ninety per minute and soft; respiration natural; tongue covered with a dirty, white fur, thicker along the median line; mouth moist; thirst moderate; no appetite; bowels slightly relaxed; and complained of dull pain in the head, back and limbs, with swimming or giddiness in walking, and a great sense of muscular weakness. These symptoms had been gradually developing for three or four days, and clearly indicated the forming stage of typhoid fever. He was directed to go home and keep quiet, take only light food, and for medicine, ten grains of sulphite of soda with eight drops of tincture of gelsemium, every four hours, and a pill containing three grains of quinia and one of blue mass

every morning. Two days later a message was left at the office, and Dr. F. H. Davis visited him at his boarding-house in Charles street. He found the patient presenting all the ordinary symptoms of typhoid fever, except in relation to the skin, which, instead of being dry, was thoroughly wet with perspiration. Owing to the relaxation of the skin, and some looseness of the bowels, he directed the quinia without the blue mass to be given three times a day; and instead of the sulphite of soda solution, gave an emulsion containing oil of turpentine and tincture of opium. About forty-eight hours later, I saw him in consultation. His skin was still wet with perspiration; his countenance dull, with dryness of the lips and mouth, as in ordinary typhoid fever; mind dull, but not wandering; pulse small, weak, and 120 per minute; respiration nearly natural; urine scanty, and passed with some pain; three or four thin evacuations from the bowels had occurred during the preceding twelve hours; and he was complaining of extreme pain in the region of the lower end of the fibula of the right leg. There was no swelling, no redness, no visible change in the appearance of the leg, except it was paler, or more bloodless, and entirely cold. The coldness was as perfect as though the limb was dead. We could find no pulsation either in the femoral or posterior tibial arteries. All the extremities were cool; and the patient looked very depressed. He was living in a very damp, badly ventilated place, entirely below the level of the street. He was directed powders of sulphate of quinia and morphia, both, to relieve the severity of his pains and prevent further intestinal discharges; and dry warmth to the extremities.

In looking at the patient, as he lay in his low, damp room, with feeble pulse, cool extremities, relaxed skin, and copious intestinal discharges, the question came up in the mind, whether we had a case of pernicious chill, or, as it is more

generally termed, congestive intermittent. But the quiet, dull expression of countenance, the absence of paroxysms of restlessness and tossing, the quiet respiration, and the marked disparity in the temperature of the lower extremities, served to negative the idea of a chill of any kind; and the conviction was forced upon me that some serious mechanical obstruction existed in the arteries supplying the right leg. The cardiac sounds were natural in rhythm, but weak. This fact, with the quiet breathing, led to the conclusion that the obstruction was in the iliac or femoral artery, rather than in the heart or lungs; and as there was no tumor discernible in the abdomen or groin, it was presumed that the obstruction was from emboli or fibrinous clots. The next day the attending physician, finding him no better, advised his removal to the hospital, which was done yesterday.

If you examine the present condition of the patient, you will see a dull, typhoid expression of countenance; the upper lip is retracted; the exposed parts of the teeth are dry; the tongue coated; the skin dry, but not hot; respiration natural; pulse soft, weak and 115 per minute; abdomen soft; bowels moved three or four times in the twenty-four hours; urine scanty; and both lower extremities cold; the left retains some warmth in the upper part of the thigh, but all below the knee is cold and pale. The right leg is cold throughout, and mottled with purple spots from the foot to the knee, showing commencing gangrene. But there is no swelling and no paralysis, as he moves both limbs at will. This is a very unusual case. A laboring man, in the early period of vigorous manhood, residing in the city only a few months, and boarding in a low, badly ventilated place, is attacked with the ordinary symptoms of typhoid fever, and in four or five days suddenly loses all circulation in the right extremity, which progresses to the development of dry

gangrene; and in two or three days more the same state of things takes place in the left. It would seem from the progress of the coldness and arrest of circulation, that complete obstruction occurred first, in either the external or common iliac artery of the right side, and gradually extended upward to the abdominal aorta, and to the common iliac of the left side; thus completely interrupting the circulation to both lower extremities.

That the obstruction is in the arterial trunks is evident from the fact that there is no swelling or œdema of the limbs. If the venous trunks were obstructed, the blood would continue to flow into the limbs through the arteries; but not returning through the obstructed veins, its accumulation would necessarily be speedily followed by swelling, and more or less serous infiltration into the tissues. You see, however, the reverse of all this in the present case. But what is the nature of the obstruction in the arteries? The absence of all signs of cardiac and pulmonary disease, and also the entire freedom from any abdominal tumor, leaves us only the emboli or fibrinous clots as the probable cause of interrupting the flow of blood to the lower extremities. That the fibrine, and perhaps more or less of the albumen of the blood, does sometimes spontaneously solidify, forming masses or emboli of greater or less size, which are capable of lodging either in the cavities of the heart or in the blood-vessels, and thereby mechanically obstructing the circulation, is a fact familiar to the profession. The exact pathological condition of the blood, which favors or gives rise to such solidification, however, is not well understood. The subject is one that needs an additional amount of careful study, more especially by adding microscopic and chemical analysis to our clinical observations. The latter, so far as my experience goes, appears to show that the formation of emboli occurs chiefly in patients with impaired

vital activity or molecular change, with accompanying circumstances such as would favor deficiency of free salts in the blood. It is generally conceded that the albumen, and probably also the fibrine of the blood, is held in solution in the living body by the free alkaline salts, more especially of soda and ammonia. Let us see whether these views will aid us in unraveling the pathology of the case before us. The patient is a laboring man who, at work in the heat of summer, had, for two or three weeks previous to being taken down sick, drank profusely of water, and more or less of beer and ale. At my first interview with him, he acknowledged that he had drank two or three quarts of fluid per day, and had sweat correspondingly profuse. A little reflection will show you how rapidly the composition of the blood must be changed, in some important respects, by such a process. All know that *perspiration* contains a notable quantity of saline matter, especially salts of soda; while neither water nor the beer drank supplied these elements. Hence, his excessive drinking and consequent excessive perspiration rapidly exhausted the free alkaline salts, and left these solvents of the albumen and fibrine deficient in the blood. But the evil did not stop here. A normal proportion of saline matter in the blood is necessary to give it the capacity for absorbing and holding the oxygen gas furnished in the air-cells of the lungs; or, in other words, to render complete the change from venous to arterial blood. This defective arterialization resulted in diminished innervation; muscular weakness; a leaden hue of the lips; a soft weak pulse, and feelings of decided general debility. Add to these board and lodging in damp, ill-ventilated apartments, with the accompanying impurities of a city atmosphere, and you have a fair view of the influences that were at work, effecting the important pathological changes from which our patient suffers to-day. The same causes, acting

with less intensity, perhaps, affect thousands of the inhabitants of all our cities and populous towns. The changes produced in the blood by the excessive use of drinks, and the resulting excessive perspiration, constitute very important pathological conditions, and have more to do with the production of attacks of diarrhœa, cholera morbus, and typhoid fever than is generally supposed. If the circumstances to which we have alluded, or indeed any others, have so far influenced the blood of the patient before us as to give rise to emboli that have completely obstructed the passage of blood to the lower extremities, and caused the present appearance of incipient gangrene, it is not likely that any course of treatment will avert a fatal result. It is not likely that any remedy can be safely introduced into the blood, in sufficient quantity to re-dissolve a fibrinous clot large enough to block up the iliac arteries. If the deficiencies in the composition of the blood had been corrected by a supply of pure air, and a judicious use of the chlorine salts, during the preliminary or forming-stage of the attack, it would probably have prevented both the fever and the arterial obstruction. But in the present state of the patient, the prognosis is entirely unfavorable. He should be sustained as much as possible with good nourishment, and such medicine as will help sustain the vital properties and nervous force. Carbonate of ammonia and camphor, alternated with small doses of strychnia, would probably afford the patient as much benefit as anything we could suggest.

The formation of emboli in the cavities of the heart is not very unfrequent; and it occasionally happens, that a patient laboring under disease of such nature as to cause diminished innervation and cardiac weakness, has life terminated suddenly, and unexpectedly, from this cause.

A few years since I attended a man in feeble general health, who was attacked with dysentery. His discharges

were largely mixed with blood; but they had continued only about twenty-four hours when he suddenly presented signs of syncope, and almost immediately expired. A *post mortem* examination revealed a tenacious white fibrinous clot occupying the right ventricle, and extending several inches into the pulmonary artery. It adhered quite closely to the edges of the tricuspid valve as well as to the columnæ carnæ.

Within a few days, a neighboring practitioner was attending a case of typhoid dysentery which had presented no unusual symptoms, but was apparently progressing favorably, when there suddenly supervened feelings of great exhaustion, bordering on syncope; the sounds of the heart became muffled and obscure; the pulse extremely feeble, and extremities cold. He passed directly into complete collapse, and died in about twelve hours. Although no *post mortem* examination was allowed, yet I have no doubt but a cardiac embolus was the immediate cause of the fatal result.

While speaking of these unusual complications I am reminded of a case recently seen several times in consultation. The patient, a laboring man, aged about twenty-five years, was attacked with a chill, followed by an exceedingly severe pain in his back and loins, with fever of a distinctly remittent type. The urine was scanty and high-colored; stomach irritable; the bowels costive, and the pain in the back so severe as to cause the attendant to fear direct inflammation of the lumbar portion of the spinal cord. After a few days of treatment, chiefly with anodynes and alteratives, during the febrile exacerbations; quinia and morphia in the remissions; and active revulsives and counter-irritation to the spine, all the more active symptoms subsided. The patient remained quite comfortable for two or three days, though not entirely free from dull pain and soreness, both in the lumbar region of the spine and in the direction of

the psoas muscles. The tongue remained coated, the urine rather scanty, and a noticeable increase of pain and fever every alternate day, but no chills. The continuance of these symptoms, and especially the dull pain and tenderness in the psoas regions, led to a suspicion that there might be forming a psoas abscess. But up to the time we now allude to, there had occurred no rigidity or contraction of the psoas muscles, causing the thighs to be flexed on the pelvis, as is usual in cases involving inflammation or suppuration in the psoas regions. While in this state, about one week after the commencement of his sickness, there came, suddenly, pain in the left hip, thigh, and calf of the leg, accompanied by diffuse swelling of the whole limb. The swelling, tenderness and pain were greatest on the anterior and outer part of the thigh and in the calf of the leg. There was no redness or erysipelatous appearance of the surface, and but little, if any, increase of temperature. Over the dorsum of the foot and ankle there was sufficient œdema to present pitting on pressure; but the calf of the leg and the whole thigh had a hard or semi-elastic feel, like that of phlegmasia alba dolens. The extent and character of the swelling; the rapidity with which it had been induced, and the preceding pain in the lumbar and psoas regions, led to the belief that some mechanical obstruction existed in the iliac vein; and it was feared that rapid and diffuse suppuration would take place in the cellular tissue of both thigh and leg. The stomach of the patient being irritable and inclined to reject whatever medicine had been given, he was directed nothing but a powder of sub-nitrate of bismuth, six grains, and sulphate of morphia, one-quarter of a grain, every three or four hours, and an emollient poultice of linseed meal over the whole thigh and leg. Under this treatment, with mild nourishment, he became quite comfortable, the pain gradually declined in the limb, and after two or three

days the swelling began to abate, and in a week it had entirely disappeared, without any vestige of suppuration. The patient, though free from fever, remained weak and still suffering from pain and lameness in the small of his back.

You will doubtless learn, at a future time, what becomes of the poor patient before you.*

This next case, gentlemen, to which we now call your attention, is that of a laboring man, aged about twenty-eight years, naturally spare in flesh, and of nervous temperament. He came to me about four weeks since, in my office, complaining of the usual initial symptoms of an attack of typhoid fever. I directed him some medicine, and proper hygienic management, and saw or heard nothing more from him until he was brought into this ward of the hospital, about one week since. At the time of admission his case presented all the symptoms of a grave form of typhoid fever, in the advanced stage of its progress. His skin was dingy; countenance dull; lips retracted and dry, leaving the upper teeth covered with sordes; mouth and tongue dry; mind somnolent and sometimes wandering; skin dry and rough, and above the natural temperature; muscular movements unsteady and awkward; abdomen tympanitic and full; bowels moving five or six times per day, the discharges being dark brown and thin; respirations twenty per minute and short, with dry bronchial rhonchi

* This patient continued steadily to fail, and died in about one week after he was admitted into the hospital. The right leg had become entirely discolored from gangrene, and the left partially so. A *post mortem* examination revealed no unusual pathological changes in the abdominal or pelvic viscera, except in the abdominal aorta and its branches. Commencing about three-quarters of an inch above the bifurcation, a tough, yellowish-white fibrinous clot occupied the vessel and extended through both common iliacs, and on the right side through the external iliac to the groin, and the internal iliac two or three inches; also through the external iliac of the left side, but only slightly into the internal iliac. Throughout the extent just mentioned the arteries appeared full, round, and firm, as if injected, while above and below they were empty and collapsed as usual. The coats of the plugged vessels showed no appearance of inflammation.

over both sides of the chest, and some dullness on percussion over the lower and posterior parts. The pulse was soft, quick, and varying from 120 to 130 per minute. If we suppose that at the time when he called at my office he was in the forming-stage of the fever, it will be seen that when admitted into the hospital he was at the end of the third week of the disease, and the symptoms such as to render the prognosis doubtful.

The soft, frequent pulse, the mental dullness, the muscular unsteadiness, the dark hue of the lips and skin, all indicated that profound typhoid condition when the qualities of the blood and the properties of the tissues are both impaired, causing all the resulting actions in the economy, such as capillary circulation, secretion, nutrition, innervation, etc., to be performed feebly. In the more malignant cases of typhus and typhoid fevers, these alterations in the qualities of the blood and properties of the tissues are sufficient to suspend the organic changes, and, consequently, to prove the direct cause of death. In addition to the general pathological conditions, there are important local changes in the viscera of the chest and abdomen. The dry, bronchial rhonchi over the whole anterior part of the chest, with dullness on percussion over the lower and posterior part, and the short inspirations, show that the bronchial mucous membrane is in a state of congestion, and the parenchyma of the lower lobes so occupied with hypostatic or passive infiltration, as to materially diminish the capacity of the lungs for air.

This condition of the lungs, of course, lessens the oxygenation and decarbonization of the blood, and thus indirectly increases the general impairment of function throughout all the organs. The tympanitic abdomen, with the frequent thin reddish-brown and copious discharges from the bowels, indicate, in this stage of the disease, extreme softening, and,

perhaps, ulceration, of the aggregate glands of the ilium and those of the mesentery.

These local pathological conditions in the chest and abdomen are frequently the most dangerous developments, during the progress of this variety of fever, sometimes determining a fatal result in cases presenting only moderate primary changes in the blood and properties of the tissues. In the patient before us, at the time of his admission, the symptoms, as we have recalled them, indicated much general depression, with serious lesions both in the chest and abdomen. Hence the special indications for treatment were to sustain the general properties and functions by plenty of good air and judiciously selected nourishment; and to administer such medicines as would relieve the congested condition of the bronchial mucous membrane, on the one hand, and, on the other, such as would arrest the process of softening and disintegration in the glands of the ilium and colon. The first object was secured by the size of the ward, its free ventilation, and the limited number of patients in it; and the feeding of the patient animal broths well salted, alternately with thin sweet milk and wheat-flour porridge. These articles of nourishment, given in small quantities, and at short intervals, are capable of being taken up by the absorbents and lacteals of the stomach and duodenum, leaving the smallest amount of fæcal residue to pass over the diseased surface of the ilium and colon. To accomplish the second purpose, we gave one fluid drachm of the following mixture every four hours :

R.	—Ammon. hydrochl.	3 iiii.
	Antim. et potass. tart.	grs. ij.
	Morphiæ sulph.	grs. iij.
M.	Syr. glycyrrhiz.	℥ iv.

To secure the third object, we give one fluid drachm of

the following emulsion every four hours, alternately with the foregoing prescription :

R.—Olei. Terebinthinæ.....	3 ii.
Tinct. opii.....	3 iii.
Acaciæ g. pulv. } aa.....	3 iv.
Sacch. alb. }	
Olei. gaultheriæ.....	gtts. xx.
Misce. et add. aquæ.....	3 iii.

After these remedies had been used for three days, the dry bronchial rhonchi diminished, and were partially replaced by moist mucous rattles; the skin became less hot and dry; but the pulse remained weak and frequent, and the mind more wandering.

The emulsion was continued every four hours, and ten drops of chloroform added to each dose. The use of the solution of hydrochlorate of ammonia, etc., was diminished to one dose, morning, noon and evening. The same nourishment was continued as before.

Four days have elapsed since any alteration has been made in his treatment. If you now examine the patient carefully, you will find the skin but little above the natural temperature, and more soft; the countenance more pale; the lips thin, and still somewhat retracted, but the sordes mostly gone from the teeth; the middle of the tongue dry and red, but moist and white along the margins; the respirations shorter and more frequent than natural, with a moderate development of mucous rhoncus over the anterior part of the chest, and some dullness on percussion over the lower and posterior part. The pulse is 110 per minute, small and soft.

The abdomen is only slightly tympanitic, but the intestinal discharges continue thin and light-brown, and average from three to five discharges in twenty-four hours. You will readily perceive that some of the symptoms to which

your attention has been called indicate improvement, while others point to a more doubtful prognosis. For instance, the nearer approach to a natural condition of the skin, the less appearance of sordes on the edges of the lips and teeth, the moist condition of the margins of the tongue, and the lessening of morbid sounds in the chest, all indicate the commencement of convalescence. But the continued weakness and frequency of the pulse, with the quality and number of the intestinal discharges, indicate the continuance of a serious amount of disease in the ilio-cæcal portion of the alimentary canal. It happens, not very unfrequently, in the severer cases of enteric or typhoid fever, that all the general symptoms of fever subside, and convalescence ensues, while the patches of aggregated glands in the ilium, which had become softened or ulcerated during the progress of the fever, are still not cicatrized or much improved in texture. Your attention is called to the fact as one of much practical importance. If it be overlooked, and as soon as the patient appears otherwise convalescent, all remedies designed to exert a soothing influence on this part of the mucous membrane are withdrawn, and a liberal diet allowed, it will sometimes happen that the intestinal evacuations will gradually increase in frequency, and after a week of partial convalescence, the abdomen will again become tympanitic, the mouth dry, the pulse frequent and feeble, with rapid loss of strength, until a fatal result is reached. In a smaller number of cases the general appearances of convalescence continue, but the patient does not improve in strength. The bowels do not become regular, sometimes moving three or four times in succession, and then quiet twenty-four or thirty-six hours. After a time, varying from one to three weeks, they are suddenly attacked with acute pain in some part of the abdomen, followed rapidly by abdominal distention, tenderness and prostration. The pulse becomes very

rapid and feeble, the countenance hippocratic, the skin covered with cold perspiration, and death follows in twenty-four to forty-eight hours. These are cases in which some one of the patches of Peyer's glands remained unhealed, after the convalescence from the general fever; and instead of subsequent cicatrization, the ulcer slowly extended, until the coats of the intestines were perforated, inducing, suddenly, peritonitis and death.

Many years since, a marked instance of this kind occurred in the person of a medical student, in this city. After an apparently mild course of typhoid fever he convalesced; continued to be up a part of each day for a week, and began to go to the table for his meals with other boarders, when he was attacked suddenly with fatal peritonitis, from a perforating ulcer in the intestines. In a much larger proportion of cases, however, patients convalesce from typhoid fever while numerous places in the mucous membrane are in a state of partial or complete ulceration. They regain a fair degree of flesh and strength, and often attempt to resume attention to their ordinary work. But the intestinal evacuations never become regular. In some, there will occur from one to three or four of these fæcal discharges per day, constituting what might be styled a slight chronic diarrhoea. This state of the system will continue in some cases many months, and finally the patients begin to lose flesh and strength, and slowly reach a stage of fatal exhaustion.

In other cases the uncicatrized patches appear to be limited to the colon. The patients recover a fair degree of flesh, and resume attention to business; but their intestinal evacuations remain very irregular, usually going from two to four days without any discharge, and then having six or eight in a single day. It would seem that the peristaltic motion of the small intestines was impaired, and the fæcal

contents were carried forward only slowly ; but as soon as they began to accumulate in the colon and come in contact with the patches of diseased membrane, an exaggerated motion is started, which does not stop until the whole canal is emptied, when it returns to the dormant state as before. Patients have come to me often with this state of the bowels, and, on carefully inquiring into their history, I have traced them directly back to an attack of typhoid fever, which had occurred, sometimes, four or five years previously. I am thus particular in calling your attention to this point, because it is one of direct practical importance. Careful attention to the state of the bowels, during convalescence from typhoid fever, will save many patients from troublesome sequelæ.

The patient before us gives plain evidence of commencing convalescence ; but his bowels remain actively loose, and his pulse quick and feeble. We shall therefore continue to give him the emulsion of *ol. terebinth.* and *tinct. opii* every four hours, and feed him on sweet milk and wheat-flour porridge, until the intestinal discharges become more natural.

A few days since I directed your attention to two cases of typhoid or enteric fever, in this ward, each complicated with serious pneumonic inflammation. One of them is still occupying the bed in which you saw him, but is now convalescent. He is a native of Norway, aged about twenty-two years, and had been sick for ten or twelve days before his admission into the hospital. At the time your attention was called to his case, he was presenting all the symptoms of the advanced stage of typhoid fever ; such as somnolency ; delirium ; dry tongue and mouth ; sordes on the lips and teeth ; dryness of the skin, with congestion of the cutaneous capillaries ; tympanitic abdomen, with five or six thin, reddish-brown intestinal discharges daily. Upon this con-

dition had rapidly supervened, during the three or four preceding days, short and hurried breathing, with loud bronchial rhonchi over the whole anterior part of the chest; a mixture of dry and moist rhonchi in the axillary and sub-axillary regions; and in the latter, dullness on percussion. There was cough, with a scanty expectoration tinged with dark blood, and the pulse was 120 per minute, small, and weak. I then explained to you that the case presented all the phenomena of typhoid fever, with the enteric disease peculiar to that grade of fever well developed, on which had supervened universal congestion of the mucous membrane of the respiratory passages, with pneumonic infiltration of the middle lobes of both lungs, constituting a most dangerous condition, yet one frequently met with in this climate during the latter part of autumn and early spring.

You will remember that we directed a blister to be applied to his chest, while he took internally the emulsion of ol. terebinth. and tinct. opii every four hours, and one of the following powders between :

℞.—Pulv. opii.....grs. vi
 Antim. et potass. tart.gr. i.
 Sacch. alb.....grs. xxx.

M. Fiant pulv. vi.

Under that treatment he soon began slowly to improve.

The other case to which I directed your attention at the same clinic, was one of typhoid fever, presenting complications of the same nature, but much more severe. The patient—a German, aged about twenty-five years—instead of being somnolent, was affected with constant delirium and subsultus; the intestinal discharges were not only more frequent, but they were mixed with mucus and blood, and the whole right lung, from the clavicle to the diaphragm, yielded complete dullness on percussion, and only a very

slight respiratory or vesicular murmur by auscultation. At first a blister was applied to the right side of the chest, and the same remedies given internally as in the case previously alluded to. After continuing this treatment two full days, the intestinal discharges and abdominal tympanites were much improved; but the delirium, the muscular tremulousness, and the oppression of breathing, were much increased. The pulse was small, soft, and frequent. Thinking it very desirable to lessen the nervous jactitation and delirium, so as to induce some sleep, and finding the powders of opium and antimony to fail, I caused them to be omitted, and fifteen drops of chloroform given in their place, every three hours, alternated with the turpentine emulsion. In twenty-four hours after commencing the use of the chloroform, his pulse and respirations were slower, the subsultus less, and he obtained short intervals of quiet sleep. The bowels also remained quiet; consequently the same remedies were continued, only at a little longer intervals. On the afternoon of the second day, he not only remained more quiet and rational, with a fair amount of sleep, but he coughed less, and there was decidedly less dullness over the upper lobe of the right lung, with a corresponding increase of respiratory murmur. The bowels had also remained without any evacuation, and the abdomen only slightly tympanitic. The amount of chloroform was now reduced to ten drops every four hours, and an anodyne cough or expectorant mixture given instead of the emulsion. On the fourth day after the first exhibition of the chloroform, the patient appeared so much improved, in all respects, that I thought his convalescence had fairly begun. He was consequently ordered to have more nourishment, and the use of the chloroform restricted to ten drops each morning, noon, and evening. During the latter part of the following night, however, the patient suddenly expired. The death was preceded by no

new symptoms sufficient to attract the attention of the nurses, and no *post mortem* examination was permitted. The immediate cause of the patient's death is therefore left to conjecture. It might have been syncope, from some unobserved attempt to rise from the bed, or from the formation of emboli, or fibrinous clots in the cavities of the heart. The very small quantity of chloroform which he had been taking during the preceding twenty-four hours, could hardly be suspected of having induced excessive anæsthesia of the nervous centers. We have administered that agent in doses of from ten to fifteen drops, in several cases of typhoid fever with pneumonic complications, in which there was constant delirium and sleeplessness, and in all previous instances, with the most satisfactory results.

This patient now before you is a German by birth, aged about twenty-five years. He was admitted to the hospital three days since, and was reported to have been sick about two weeks previously. At my first visit, after his admission, his face was suffused with a dark red flush; lips and tongue dry; expression dull; skin moderately hot and dry; pulse 112 per minute, small, and weak; respirations short, and accompanied by coarse, dry, bronchial rhonchi over both sides of the chest, intermixed with a sub-mucous rhoncus over the middle and lower part of the right lung, with considerable dullness, on percussion, over the latter region. There was also frequent cough, with but little expectoration. The mind was dull, and more or less wandering, and slight hæmorrhage from the nose. The abdomen was quite full and tympanitic, and he had been having from three to five thin, brown, fæcal evacuations daily. You will recognize in this assemblage of symptoms, as well as in the present aspect of the patient, a well-marked typhoid condition, with the usual enteric disease of the aggregated glands, and, in addition, a dry, congested condition of the

pulmonary mucous membrane, with considerable pneumonic engorgement of the middle and lower lobe of the right lung. To restrain the intestinal irritation and excessive evacuations, I directed him to have a teaspoonful of the turpentine and laudanum emulsion every four hours; and yesterday, finding the dry sounds still predominating in his chest, and the skin dry, I ordered one of the following powders to be taken between each of the doses of the emulsion:

R.—Pulv. opii.....grs. viij.
 Hydrarg. chlor. mit.....grs. vj.
 Antim. et potass. tart.....gr. i.
 Sacch. alb.....grs. xx.

M. Fiant pulv. vi.

The object of this was to induce such a change in the functions of the skin and pulmonary membranes as would result in free secretion from both, and thereby lessen the congested condition of the pulmonary textures.

The patient has taken the powders just named, alternated with the emulsion, during the past twenty-four hours; and if you now step forward and examine him, you see his face less flushed, lips and tongue less dry, though there is still a dry, crusted strip through the middle of the latter, and some sordes on his lips. The skin is relaxed and universally wet with warm perspiration. His countenance is still dull; mind somewhat wandering; and you see a little blood on the upper lip, indicating recent slight epistaxis.

If you watch the motions of the chest, you see that the respirations are short and too much abdominal. If you now take the stethoscope and listen over the anterior and right lateral part of the chest, you will perceive still more clearly the imperfect expansion of the chest by inspiration, while you find the dry, wheezing sounds of yesterday replaced with moist or mucous rhonchi, intermingled with only an

occasional coarse, dry sound. If you move the stethoscope to the anterior margin of the axillary region, you will hear less respiratory sounds of any kind; but if the patient articulates sounds, you will have decided vibration of voice, indicating increased density of that portion of the lung. Now, what is the exact pathological condition of our patient, and what the indications for further treatment?

The typhoid condition of the patient is strongly characterized; and though the general febrile condition is improved, as indicated by the soft and moist condition of the skin, the less tympanitic condition of the abdomen, and the more quiet condition of the bowels, yet the pulse is very soft, weak, and 115 per minute; the respirations are short, and the patient gives evidence of a feeling of exhaustion. He has evidently arrived at a critical period in his disease. He is vacillating to-day, between a tendency to convalesce, on the one hand, and such a general depression of vital properties in his tissues as would soon cause a return of copious intestinal discharges, perhaps mixed with blood, with a rapid increase of infiltration into the pulmonary textures, followed by colliquative sweating, involuntary discharges, and death. Hence it is necessary to adjust the further treatment with great care. If we continue the antimony and calomel in the powders, we shall increase the risk of the latter alterative; but if we can bring to our aid some agent calculated to give increased tone or contraction to the capillary system of vessels, without restricting secretion, we may decide the progress of the case in favor of convalescence. With this view, we shall continue the turpentine and laudanum emulsion every four hours, and change the powders by substituting sulphate of quinia, two grains, and pulverized bloodroot, one grain, for the antimony and calomel, in each powder, leaving the opium as before. As thus altered, one to be given half-way

between the doses of emulsion. Of course, in all such cases, the patient is carefully fed with animal broth, well salted, and a porridge of sweet milk and wheat-flour.*

The patient in this next bed is in the second week of typhoid fever, with a pulmonary complication, which makes his condition quite serious. The expectoration has been tinged with blood for two or three days, and there is dullness over a part of one lung, with severe bronchial cough. These symptoms led to the conclusion that the inflammatory action, which had existed in the capillary bronchial tubes was extending to some of the lobules of the lungs. The typhoid depression was considerable, and the indications were to sustain the circulation and innervation, and to induce freer secretion from the pulmonary mucous membranes, and thus lessen the tumefaction and admit a larger supply of oxygen to the blood. The first indication is well met by the following prescription:

R.—Ammon. carb. ʒij.
 Quiniæ sulph. grs. xx.
 Camph. gum. grs. x.

M. Fiant pulv. x. Take one every four hours.

To accomplish the second object, the solution of muriate of ammonia, tartrate of antimony and morphia in syrup of liquorice, was given every four hours, alternating with the other medicine. A blister was also applied to the sternum. At present the pulse is fuller and less frequent, the expectoration more abundant, and the whole aspect of the case decidedly better.

Here we have also another case of typhoid fever complicated with capillary bronchitis, which has been on the use of the emulsion of turpentine and laudanum, and the

*This patient progressed well under the last prescription, and made a good recovery.

muriate of ammonia mixture. The former medicine has brought the bowels into a satisfactory condition, but the want of innervation has been so great that the patient was in much danger from the depression of the nerve-centers. To remedy this he was given the following prescription :

R.—Strychniæ.....	gr. j.
Acid. nitric.	ʒ j.
Tinct. opii.....	ʒ iij.
Aquæ	ʒ jv.—M.

Dose—One teaspoonful in sweetened water, every four hours.

Now, after two days, the patient is improved, the countenance looking better, and the mind clearer; but the typhoid depression is still considerable, and it is best that the tonic be continued. The muriate of ammonia mixture is also to be continued on account of the bronchitis. On examining the chest, the spaces above the clavicles and between the ribs are seen to sink at the beginning of each inspiratory act, and to bulge during expiration. This is evidently due to the difficulty in getting air into the air-cells, on account of the obstruction of the capillary tubes. On the expansion of the chest the air cannot enter fast enough to fill the cells, and a partial vacuum is produced; atmospheric pressure from without then presses in the soft tissues at the intercostal spaces; while in expiration the air is with equal difficulty passed out of the cells through the obstructed tubes. Thus forcible inspiration and slow expiration is the characteristic respiration where the air-cells are themselves permeable but the capillary tubes partially closed. But when the air-cells are infiltrated, the respiratory acts are short.

Sometimes, when there is typhoid depression, wandering of the mind and bronchial tightness, chloroform is useful,

and in this case may be given with propriety, according to the following formula :

℞.—Chloroformi	ʒ iij.
Acaciæ g.	ʒ vj.
Sacch. alb.	ʒ vj.
Aquæ	ʒ vj.

Dose—A tablespoonful every four hours, alternately with the other medicine.

LECTURE III.

CASES OF PERIODICAL FEVER.—CHRONIC AGUE AND ITS SEQUELÆ.

Gentlemen :—This patient was admitted to the hospital two days since. He is a native of Ireland, aged about thirty years, and has been working in a district of country where periodical fevers are of frequent occurrence. He states that he has had paroxysms of intermittent fever every alternate day, with occasional interruption for a week, during the last three months. He has had one paroxysm, consisting of a well-marked chill and fever, since he came into the hospital. His skin and lips are pale, indicating an impoverished or spanæmic state of the blood; but the most prominent item of complaint on the part of the patient is a severe pain in the left hypochondriac region, aggravated by a short, dry cough, with loss of appetite and general muscular weakness. On making physical examination, the respiratory murmur is found rough and exaggerated, indicating slight bronchitis; the left hypochondriac region is fuller than the right; decided tenderness on percussion at the lower margin of the ribs, with dullness extending vertically from two inches above the margin of the ribs to the crest of the ilium, and, transversely, from the left margin of

the epigastric region to the spine. With the patient on his back, and the thighs flexed on the pelvis, you can trace by the touch, the hard rounded edge of a solid tumor, extending from the margin of the epigastric region downward and to the left until it nearly touches the crest of the ilium. Both percussion and the touch show that the broadest part of the tumor is upward, and extending fully under the ribs of the left side. These facts show that the tumor is simply an enlarged spleen.

The moderate degree of tenderness existing in the spleen, the recent date of the enlargement, and the fact that it co-exists with chronic ague, render it probable that it is caused by simple inflammatory congestion with semi-plastic exudation into the texture of the organ.

The treatment in such cases should have for its objects both the permanent arrest of the intermittent paroxysms and the removal of the local inflammation. If the former is not accomplished, each chill and febrile exacerbation will renew the local congestion, and defeat all treatment directed to that alone. The patient will be directed to have five grains of sulphate of quinia, with two of blue mass, each morning and noon for two days, then the quinia alone every morning for a week or more, at the same time he is to take ten grains of hydrochlorate of ammonia, dissolved in syrup of liquorice, every four hours, until the splenic enlargement disappears. The latter is an old remedy for visceral enlargements consequent on chronic ague, it having been recommended by Dr. Eberle in his work on practice. After the intermittent paroxysms have ceased, and the local symptoms of inflammation have abated or disappeared, it will be proper to keep the patient for some time on small doses of quinia in combination with a soluble salt of iron, of which the citrate and phosphate are the best. This combination should be continued, with a mild, easily digested

diet, and moderate out-of-doors exercise, until the patient regains his muscular vigor, and the blood its natural proportion of red corpuscles.

We would also call your attention to the pale and rather sallow complexion, the empty veins and bloodless appearance of this next patient, who has entered the hospital after being troubled with ague more or less for four months. Malaria diminishes the amount of red corpuscles, and, in extreme cases, the thinning of the blood produces a tendency to anasarca. By examining the blood of patients who had suffered from malaria, we have found the red corpuscles reduced from the normal 127 in 1,000 to 50 in 1,000. This is a regular concomitant of intermittents, and forms a marked contrast with typhoid fever. It is uncertain whether the red corpuscles are destroyed by the direct action of the malaria, or their development arrested by some change in the organs by which they are matured. But in treatment the fact is to be remembered, especially in chronic cases.

The physician who is called to stop the paroxysms of intermittent fever frequently does nothing further, and there is a relapse with which the patient is dissatisfied, or a new disease may arise from the condition in which the intermittent leaves the patient. Intermittents can be easily interrupted, but the disease is not cured by merely stopping the paroxysms. Treatment should be adopted, at once, to restore the blood to its natural condition. This may be well accomplished by the use of the extract of cornus florida with iron and nux vom., as in the following formulæ :

℞.—Ext. hyoscyam.....	-----	∅ij.
Ext. cornus floridæ }	-----	∅jv.
Ferri citratis.....	-----	
Ext. nucis vomicæ.....	-----	grs. xx.

M. Fiant pilulæ xl. Take one pill before each meal-time, until the blood regains the normal proportion of its red corpuscles, and the patient's strength is restored.

This patient still having slight paroxysms of an intermittent character, with looseness of the bowels, will be directed a powder of sulph. quinia, three grains, and sulph. morphia, one-fourth grain, to be taken each morning and noon, in addition to the use of the above pills.

We have here another patient, also a native of Ireland, aged about twenty-five years, a laborer, who has been spending some months in the South. While there he was attacked with periodical fever, and found his way into a hospital in St. Louis. By judicious treatment his fever was arrested, and in due time he was discharged. Probably from undue exposure, he soon had a relapse, in the form of a tertian intermittent. Without any regular treatment, the patient has continued to suffer from this disease, in the meantime enduring more or less exposure and fatigue, until he reached this city, and was admitted into the hospital on yesterday. You see, at a glance, that his skin and the conjunctival membrane of the eyes present a deep yellow color; his pro-labia are pale; tongue coated with a yellowish white fur; and his general aspect that of anæmia. His skin is only slightly above the natural temperature; pulse ninety per minute and soft; bowels inactive; respiration rather short, but not difficult; moderate cough, with an acute, sore pain in the left sub-axillary region; urine scanty and very high-colored.

It is evident that the patient has been laboring under the intermittent fever long enough to induce considerable diminution of the red corpuscles in the blood, as is shown by the paleness of his lips and the general muscular weakness; but this does not satisfactorily explain either the pain in the left side of the chest, or the jaundiced hue of the skin, with a sense of fullness and soreness in the epigastric and right hypochondriac regions. To determine the origin of these symptoms, we must resort to auscultation and percus-

sion, or, in other words, to a physical exploration of the chest and abdomen.

Uncovering the patient for this purpose, you perceive the epigastric and right hypochondriac regions to be somewhat more full than natural; but as we percuss, you will learn from the tympanitic resonance that most of the fullness is from gaseous distention of the intestines, while the hepatic dullness is restricted to its natural limits. The patient complains, however, that the percussion causes a sore pain over most of the hepatic region. From this tenderness and fullness of the right hypochondriac and epigastric regions, it is evident that a low grade of inflammation exists in the liver, and probably also in the mucous membrane of the duodenum, which would fully explain the jaundiced hue of the patient. Finding nothing unnatural in the left hypochondriac region, we will pass to an examination of the chest. As we percuss extensively over its surface, you detect no unnatural sounds until we come to the sub-axillary region of the left side. Here the resonance is diminished, indicating that the parts within are more dense than natural. Listening through the stethoscope applied to this region, you will hear distinctly a fine, crepitant rale, indicative of pneumonic inflammation in the early stage of its progress. We are now prepared to explain all the symptoms that the case presents. We have a chronic or protracted intermittent, complicated with a low grade of hepatic and duodenal inflammation, by which the digestive function is impaired, the hepatic ducts obstructed, and the coloring matter of the bile retained in the blood to such an extent as to stain all the tissues a yellow color; while a more acute grade of inflammation has invaded the lower lobe of the left lung.

The indications for treatment are three, namely: The interruption of the intermittent paroxysms, the removal of

the local inflammations, and the restoration of the blood and tissues to their normal condition. The time has been when the detection of a local inflammation in connection with a periodical fever would cause the first of these indications to be superseded by the second, under the idea that the tonic qualities of the quinia rendered its exhibition unsafe, while local inflammation existed in any of the textures of the body. Experience, however, has fully demonstrated the fallacy of this idea, and shown that the prompt interruption of the febrile exacerbations by quinia, actually facilitates the reduction of the local inflammation. Hence, we shall endeavor to fulfill, in this case, both the first and second indications, by the administration of the following combination :

℞.—Quiniæ sulph.....	grs. xij.
Hydrarg. protochlor.....	grs. xij.
Pulv. opii.....	grs. vj.

M. Fiant pulv. iv. One to be taken every four hours, and a teaspoonful of the following mixture between :

℞.—Syr. scillæ. comp.....	$\frac{3}{4}$ i.
Tinct. sanguinariæ.....	$\frac{3}{4}$ ss.
Tinct. opii camph.....	$\frac{3}{4}$ iss.
Tinct. verat. viridis.....	$\frac{3}{4}$ i.

To-morrow, after all the powders have been taken, the bowels should be moved by a dose of castor-oil, after which a powder composed of quinia, two grains; potassa nitras, three grains; and pulv. opii, one grain, may be given every four hours, and a blister-plaster applied to the lower part of the left side of the chest. These measures will probably prove sufficient to interrupt the intermittent paroxysms, and completely remove the pneumonic inflammation in two or three days, leaving only the generaldebility, with more or less duodeno-hepatic derangement for further treatment. If so, we shall direct the

following pills, which have frequently proved effectual in similar cases :

℞.—Ext. cornus floridæ.....	3 i.
Ferri sulph.	grs. xxx.
Pil. hydrarg.....	grs. x.
Ext. taraxaci.....	grs. xxx.

M. Fiant pilulæ xxx. One to be given before each meal-time, and at bed-time.

This patient, gentlemen, is a boy about sixteen years of age, who was admitted to the hospital some three weeks since. Those members of the hospital class who were in attendance at that time, will remember examining him carefully soon after his admission. His skin was bloodless; lips, tongue and gums pale, indicating a decidedly spanæmic or impoverished condition of the blood, especially in reference to the red corpuscles; pulse soft, and nearly natural in frequency; appetite impaired; and he complained of a harsh cough, with some soreness in the chest; and great muscular debility. He had suffered paroxysms of intermittent fever, at irregular intervals, for several weeks. You will also remember, that a physical exploration by auscultation, percussion, and palpation, revealed a mixture of dry and moist rhonchi in both sides of the chest, and extensive dullness over the left hypochondriac region, extending from the seventh rib to near the anterior part of the crest of the ilium; the first, indicating chronic bronchitis, and the latter, a decided enlargement of the spleen. The pathological conditions then presented by the patient, were impaired tonicity of the organized structures, with that impoverishment of the blood which usually results from chronic ague, complicated with a low grade of inflammation in the bronchial mucous membrane, and enlargement and induration of the spleen. To meet the indications for treatment afforded by the general impairment of tonicity, and irregular par-

oxysms of ague, the patient was directed to take three grains of sulphate of quinia after breakfast and dinner, each day. For the bronchial irritation, and enlargement of the spleen, he was directed to take a teaspoonful of the following mixture before each meal-time, and at bed-time :

R.—Ammon. hydrochlor.....	3 iii.
Antim. et potass. tart.....	grs. ii.
Morphiæ sulph.....	grs. iii.
Syr. glycyrrhiz.....	3 iv.

The muriate of ammonia in the mixture acts as an alterative, in promoting the absorption of the adventitious deposits, or exudations into the spleen, while it is free from any of the objectionable properties possessed by the preparations of mercury ; the small doses of antimony and morphia will lessen both the irritability and vascularity of the bronchial mucous membrane.

The patient followed this treatment for one week, with a constant improvement in all his symptoms. The quinia was then limited to one dose after breakfast, each morning, and the muriate of ammonia mixture continued four times a day, as before. At the end of the second week, his cough was entirely removed, and his strength, color, and appetite so much improved, that he ceased to present himself for further advice until to-day.

You see now his general aspect very much changed. His prolabia are red, the veins of the surface moderately full, and his flesh increased. He has had no cough ; appetite good ; and bowels regular ; but during the last few days he has complained of several attacks of pain in the epigastrium, apparently of a neuralgic character. We say neuralgic, because they were accompanied neither by fever, loss of appetite, or flatulency. By re-examining the epigastric and left hypochondriac regions, at this time, you will find

nothing unnatural in the epigastric region proper ; but dullness still exists over too large a portion of the hypochondrium ; and by placing the patient in the dorsal position, with thighs flexed upon the pelvis, so as to relax the abdominal muscles, the fingers pushed a little deeply under the margin of the ribs, on the left side, readily feel the rounded, hard margin of the spleen, thus showing that it is still larger and harder than natural. The enlargement is very much less than when he was admitted into the hospital, three weeks since, but it is still sufficient to impair the functions of that organ, and, indirectly, that of the stomach also. It is quite probable that the paroxysms of epigastric pain, of which he complains, have originated from taking food more freely than the digestive organs could digest perfectly. The leading indications for treatment at present are, to improve the functions of the stomach, and still further reduce the enlargement of the spleen. To fulfill these indications, we will have the patient take one of the following pills before each meal-time, and at bed-time :

℞.—Ext. hyoscyam.....	℥ij.
Ext. taraxaci.....	℥jv.
Ferri sulph. }	
Pil. hydrarg. }	℥i.

M. Fiant pilulæ xl.

The hyoscyamus and iron are designed to improve the sensibility and secretory action of the stomach ; while the taraxacum and blue-mass will continue such alterative action as will further reduce the size of the spleen. The food of the patient should be plain, easily digested, and taken in very moderate quantities at a time.

We find here, in this next bed, another patient who was attacked by chills and fever five weeks ago, and in the course of two weeks, under his physician's treatment, the

chills disappeared and the general fever was cured. Since then, however, he has remained pale, coughs and sweats considerably at night. These unpleasant symptoms not unfrequently follow typhoid and intermittent fevers, which have impoverished the blood and led to some exudation into the tissues of the lungs. This exudation, if not absorbed, may degenerate, constituting a condition which Niemeyer calls caseous infiltration. The patient convalescing from the intermittent, is nevertheless languid, short of breath, coughs, especially in the evening and morning, has quickness of pulse and heat, generally with night-sweats. Unless prompt treatment is resorted to, the infiltration progresses to suppuration, with fatal exhaustion, in two or three months, constituting quick consumption.

In this case, auscultation reveals increased density in the right lung, especially at the base, which is scarcely at all inflated, except by forced infiltration. This density is due to exudation, brought on by local congestion, with the impoverished condition of the patient's blood. Tonics are evidently indicated, and likewise anodynes, to allay irritation in the lungs. He is taking, twice a day, the muriate of ammonia mixture previously described. Besides the anodyne influence of the mixture, the muriate of ammonia as an alterative promotes absorption. Of the many tonics which might be used, the extract of malt (Liebig's) and compound syrup of the hypophosphites, in the proportion of two parts of the former to one of the latter, taken in two drachm doses at each meal-time, constitute one of the best. Many would order cod-liver oil, which, however, is apt to disagree with the stomach, and so impair digestion. For this patient we shall direct the syrup of iodide of iron, twenty drops after each meal. This gives the alterative influence of iodine with the tonic properties of the iron.

LECTURE IV.

RHEUMATIC FEVER.—ACUTE ARTICULAR RHEUMATISM.—MUSCULAR AND BRONCHIAL RHEUMATISM.—RHEUMATIC INFLAMMATION OF SPINAL NERVES.—INTESTINAL RHEUMATISM.—CHRONIC RHEUMATISM, ETC.

Gentlemen:—The case before you is a middle-aged man, a laborer, who was admitted into the hospital, one week since, laboring under acute articular rheumatism. He had been attacked several days previous to his admission to the hospital, but what treatment he had received, if any, I do not know. You observe his expression of countenance, especially when he attempts any motion, is indicative of suffering; you find his tongue coated with a whitish fur; his pulse full, and 90 per minute; skin a little above the natural temperature, and dry; bowels rather costive; and urine scanty and high-colored.

He complains of stiffness and soreness through his back, hips, and still more in his knees, which latter have a constant gnawing-pain, greatly aggravated at night. On examination you find both knees considerably swollen and tender to the touch, warmer than the rest of the body, but not red on the surface. While the swelling is general around the joint, with no definite line of demarkation, you see a

more prominent fullness on each side of the ligamentum patella below, and on each side of the attachment of the rectus femoris above, giving to the knee a characteristic oblong shape. This is produced by the effusion of serum into the cavity of the synovial membrane, which is less covered with ligaments to resist its distention at the points indicated. That the membrane is distended with serum, is readily determined by the plain fluctuation felt at the points indicated.

At the time the patient was admitted into the hospital, last week, all his symptoms were more aggravated than at present. The general fever was more active; the pains were more severe; and the articulations were swollen one-third larger than at present. The local inflammation commenced in the shoulders and spine, and had extended downward to the hips and knees, having just fully involved the last-named joints at the time of admission to the hospital. This migration of the inflammation from one articulation to another, is one of the striking characteristics of rheumatism. It generally subsides in one series of articulations, at the same time that it attacks another, but not always; for we sometimes meet with cases in which it involves one part after another, until almost every joint in the body and limbs is affected, and the patient lies utterly helpless. Another characteristic of the disease is, that the inflamed parts seldom, if ever, suppurate. When the synovial membranes are involved, they become quickly distended with effused fluid, and the fibrous structures exterior to the membrane become filled with plastic exudation, but in neither locality is there any tendency of the effused material to degenerate into pus.

When the disease attacks the sheaths of the tendons, more especially in the wrists, ankles and smaller joints of the hands and feet, it is accompanied by an exudation so highly

plastic that it forms a firm bond of union between the tendons and the fibrous sheaths surrounding them, which, in some individuals, remains after the inflammation and swelling have subsided, causing a species of permanent ankylosis. Generally, however, the exudations accompanying acute rheumatism are absorbed soon after the active stage of the inflammation has passed by, leaving the parts for a time somewhat stiff and tender, and for a long time predisposed to new attacks.

The fact that the general causes favoring attacks of rheumatic fever interfere mostly with the eliminative functions of the skin, in connection with the further fact that the blood and secretions appear to contain an excess of acid, and all the exudations plastic, afford strong evidence in favor of the theory which attributes the fever and local inflammations of rheumatism to an excess of some irritating acid material in the blood. It is further probable that such acid material results from the retention of effete matters which are naturally eliminated through the cutaneous surface. Whether it is lactic acid, as claimed by Richardson, and suggested by many others, can hardly be considered fully determined. Conceding this theory of the pathology of the disease to be correct, the indications for treatment become obvious. They are, first, to neutralize the excess of acid in the system by the free use of the non-purgative alkaline salts; second, to mitigate the patient's suffering; and, third, to lessen the plasticity of the exudative material in the inflamed parts, and hasten its absorption. Perhaps the best means for accomplishing the first of these objects, is to give the patient twenty grains of the carbonate, or thirty grains of the bi-carbonate of potassa, dissolved in plenty of water, every two or three hours, and an occasional dose of the Rochelle salts to move the bowels. In moderate cases, the second indication is sufficiently met by a full

dose of pulv. Doveri with a grain or two of calomel, at bedtime, each night. But in the more acute and severe cases, a teaspoonful of the following mixture, given between each of the doses of alkaline salts, during the first two or three days, will aid very much both in mitigating the pain and lessening the fever :

R.—	Æther. nitr.	℥ i.
	Vini colchici	℥ i.
	Tinct. opii camph.	℥ ii.
M.	Tinct. verat. viridis	℥ i.

After the skin has become moist, the urine more free, and less acid, the pulse softer, and less frequent, and the inflammation has ceased to extend to new articulations, this sedative mixture may be omitted, and the patient left on the use of the alkaline salt alone, with only a dose of Dover's powder, without the calomel, at night. If, at the end of one week, or more, the fever has subsided, leaving the patient pale, the skin relaxed, and almost constantly bathed with perspiration, and yet the joints stiff and weak, from two to three grain doses of quinia, given three times a day, will generally be of much service.

Local applications to the inflamed articulations are generally of but little importance ; yet, in the acute stage, keeping the part constantly wrapped in cloths wet in an infusion of aconite leaves, holding in solution hydrochlorate of ammonia, will aid much to mitigate the pain. Such is the general outline of treatment that has been found most efficacious in the treatment of acute rheumatism. When resorted to early, and pursued judiciously, it will, in many cases, lead to convalescence in from seven to ten days ; and there will occur a less ratio of cardiac complication than under any other system of treatment that has yet been tried. There are some cases, however, that persist through a period of

three, four, or even six weeks, despite of all treatment. There are many other articles of the *materia medica* that may be used instead of those already named, for fulfilling the same indications. The bi-tartrate of potassa may be used instead of the carbonates; or the salts of soda may be substituted for those of potassa; or the oxide of calcium—known in the shops as the syrup of lime—may be used. And in cases where the *colchicum* purges the bowels too much, it may be replaced with double of its quantity of tincture of *cimicifuga racemosa*.

We would now call the attention of the class to some additional cases, which serve to illustrate a few of the many special forms and complications of rheumatism, as manifested in different parts of the body, and the corresponding variations in treatment.

This first patient, a laboring man, twenty-one years of age, was admitted into the hospital about two weeks since, complaining of pain and soreness in the chest; frequent, harsh cough, with but little expectoration; and moderate fever. There were no physical signs of pneumonia; and the case was regarded as one of catarrhal irritation of the bronchial tubes, coupled with rheumatic soreness in the muscles of the chest and shoulders.

He was directed to take one teaspoonful of the following mixture every four hours:

	R̄.—Ammon. hydrochlor.	ʒ iij.
	Antim. et potass. tart.	grs. ij.
	Morphiæ sulph.	grs. iij.
M.	Syr. glycyrrhiz.	ʒ iv.

Under the influence of this the cough ceased, and the pains in the chest diminished; but in three or four days he began to complain of nausea, great weakness and soreness in the muscles of the thighs and calves of the legs, aggravated by motion.

The rhythm of the heart was natural, but the first sound was muffled or gruff, and the impulse increased.

The former prescription was omitted, and the two following given instead :

℞.—Ammon. hydrochlor. 3 iij.
 Tinct. aconiti rad. 3 j.
 Syr. glycyrrhiz. ʒ iv.

M. Give one teaspoonful every six hours, in a little water.

℞.—Sodæ bicarb. 3 ij.
 Bismuthi sub-nitr. 3 ij.

M. Fiant pulveres xx. One to be taken every six hours, alternately with the other prescription.

Animal broth and milk for nourishment.

This treatment was continued for three or four days, during which the cardiac sounds and impulse became more natural; the pulse slower and more soft; and the muscular soreness in the lower extremities less. But the countenance of the patient was depressed and anxious; the skin wet with a cold, clammy perspiration; the tongue dry and red along the middle or upper surface; and his bowels slightly relaxed, as though there was a typhoid tendency.

He was put on the use of a powder composed of quiniæ, sulph. two grains, and bismuth sub-nitr., five grains, each morning, noon, tea-time, and bed-time. A decided improvement was observable in the condition of the skin, tongue, and countenance, the next day. Four days have since elapsed, and the improvement has continued, until, at present, the patient appears to be convalescent. In several other cases of well-marked rheumatic fever, which have lately been under my care, the rheumatic symptoms abated under the free use of alkaline salts; but the tongue became dry in the middle; the skin cool and clammy; pulse quick, and weak; with disgust for food, and mental despondency. The combination of bismuth and quinia produced a rapid

improvement, however, and convalescence was speedily established.

We have here another patient, who has been complaining, for a considerable length of time, with symptoms resembling those of ordinary rheumatism, but differing from them in some respects. He was admitted a week ago, complaining of a troublesome cough. Says he takes cold easily, which is followed by a hard, tight cough, that annoys him more in the latter part of the night, and is very harassing. His chest is free from dullness or any abnormal sound; pulse of natural frequency and force; temperature of the skin natural.

Aside from the cough, and a vague sense of soreness in the chest, there is a degree of lameness in the hip, manifesting itself in a manner somewhat different from simple muscular stiffness.

In the act of rising from the sitting posture, there is, frequently, marked and sudden spasmodic contraction of certain muscles, more especially in the right hip, that brings him down. Does not complain of any sharp pain running along the course of the sciatic nerve, as in rheumatism, involving the origin of this nerve. The pain appears to be in the gluteal and abductor muscles. He locates the pain in both hips, but mostly in the right; there is some tenderness in the bottom of the foot on bearing his weight upon it, and some morbid sensibility of the parts.

The cramp, and an alteration in his gait, raised the question whether this was a case of simple rheumatic inflammation, involving the muscles, or whether he was laboring under disease of the spinal cord, constituting the early stage of that form of disease styled progressive locomotor ataxia. But in watching his movements, and noting the changeable character of the pain, the florid countenance, and sanguine temperament, we are led to conclude that there is no ten-

dency to atrophy of the spinal cord, but true rheumatic inflammation, involving certain portions of the cord that supply the parts in which he complains of pain. There is probably the same grade of inflammation involving the fibrous structure of the bronchial tubes, which gives rise to the cough.

The diagnosis of these cases requires great care. The early stage of hip disease is often mistaken for rheumatism, till the parts begin to fill up with matter; and the same is true of inflammation in the psoas region.

In hip disease, however, if you will place the patient upon the back, with your hands upon the trochanters, and press the head of the femur into the socket, he will complain at once of pain. In addition to this, if you take hold of the foot, straighten the leg, and push up, you will produce the same result. Rheumatism, on the contrary, will not be affected by such pressure; at least it will produce only superficial pain, and it will hurt more to pull the hip out than pushing it back. In the early stage of hip disease, also, the toe is turned in, and the heel drawn up.

If the affection is in the psoas region, the thigh is more or less flexed, and the patient is unable to extend it.

In this case we have absence of all of these conditions, and hence regard the patient as laboring under simple chronic rheumatic inflammation. On admission to the hospital, he was put upon the following treatment:

R̄.—Vini colchici sem.....	3 j.
Tinct. aconiti. rad.....	3 j.
Tinct. stramonii.....	ʒ ss.
Syr. et Aquæ.....	ʒ iiss.

M. Dose, one teaspoonful every four hours.

To procure more rest at night, he took fifteen grains of bromide of potassium at bed-time.

He has been under this treatment one week, and his condition is very much ameliorated; the colchicum has not disturbed the bowels; the rheumatic trouble about the hip and back is improved; he has no muscular cramps, and goes about tolerably free.

In those cases of rheumatic inflammation chiefly restricted to nerve structure, we have not found ordinary alkaline salts to produce as satisfactory results as some other remedies that have a more powerfully sedative influence upon the nervous sensibility.

There appears to be irritation set up in the nerve structure, which the alkaline salts alone are not able to overcome.

The above combination, in patients of sanguine temperament, acts very favorably.

In persons less sanguineous, and with a less degree of excitability of the circulation, we would leave out the aconite, which is added to increase the sedative effect upon the nervous system.

We would also call your attention to this man, who was admitted to the hospital this morning, and says he was taken, three days ago, with a violent pain or cramp in the bowels. The left side of his abdomen is tender under pressure, and at the ilio-cæcal junction there is tenderness and a little hardness. He was at one time sick at the stomach, and vomited. His symptoms plainly indicate some degree of peritoneal inflammation, but it is of slight extent, for his abdomen is not full, tense, and painful, as in severe peritonitis. There are two conditions which often give rise to symptoms such as we have observed: First, a slight inflammation of the peritoneal coat, with a lodgement of fæcal material at the ilio-cæcal junction, causing tenderness and hardness, with obstruction and vomiting, which sometimes extends over the whole peritoneum, and ends fatally in two or three days. Another condition is observed, especially in

extreme cold weather: The attack commences with severe abdominal pains, tenderness, but little hardness, and no bloating. The tongue is clean, but the patient feels that tension of the abdomen which makes him think that physic would give relief; yet cathartics invariably aggravate the symptoms. This condition generally depends on true rheumatic inflammation of the muscular coat of the intestines, and sometimes becomes very protracted.

A number of these cases occur every winter, and the patient before us appears to be one of this class. The inflammation chiefly affects the colon, and extends to the peritoneum slightly. Considering the pain caused by movements in other parts affected with rheumatism, it is easy to see how the peristaltic motion of the bowels should cause severe pain, particularly during the action of a cathartic.

The treatment consists mainly in the use of anodynes and alkaline salts. It is best to choose such medicines as will act freely on the skin and kidneys. The patient was ordered the bi-carbonate of soda and acetate of potash, each ten grains, to be taken every four hours, alternating with Dover's powder eight grains, nit. potassa, five grains, and calomel two grains — the mild chloride to be omitted after the first twenty-four hours. Relief may be facilitated by narcotic fomentations applied to the abdomen. In family practice fomentations of hops may be used, or the infusion of hops may be used to make linseed meal poultices large enough to cover the painful part of the abdomen.

This young woman, aged eighteen, has been afflicted with rheumatism for about three years. She was admitted into the hospital in the early part of last summer, and while here has been under a variety of treatment. The case presents some features different from those which characterize ordinary rheumatism, although there is the characteristic

style of inflammation traveling from one part to another, and creating more or less swelling and pain in the parts, with a failure to suppurate.

A joint that is attacked becomes swollen, and the ligaments seem flabby and wanting in natural tone and elasticity, so that free movement of the part is interfered with. There is a progressive, persistent atrophy of the muscular tissue, and impoverishment of the blood. There is a laxity and want of tone in the capillaries, which disposes to effusion, so that but little additional influence is required to make exosmosis predominate. The patient is greatly emaciated, and presents a bloodless appearance of the surface, which would indicate an almost entire loss of the power to manufacture red corpuscles. There are, however, no apparent indications of tuberculous disease.

The patient suffers a good deal of pain at times, which is acute and severe. Several weeks ago she had an attack, commencing at first in the right hip and limb, which was greatly swollen and almost entirely helpless, while she could use the other quite freely; the pain then shifted to the left hip and knee. Aggravations of pain and heat in the part are followed by increased swelling, which will finally subside to a given point. The effusion is not organizable like that which occurs in ordinary rheumatism, but remains fluid.

Almost every alkaline remedy that has been tried has seemed rather to aggravate the symptoms, a result which might be expected from their tendency to render fibrin and albumen more soluble, thus increasing the fluidity of the blood, which is already too thin. The indications are, on the contrary, to increase the plasticity of the blood by invigorating the digestive and assimilative functions. After trying various remedies, the most beneficial effects seem to have been obtained from the administration of the alkaline

tincture of guaiac, one teaspoonful four times a day, fifteen drops of the tincture of stramonium being added to each dose to allay the irritability of the tissues; a powder, consisting of sub-nitrate of bismuth, six grains; sub-carbonate of iron, four grains; lupuline, two grains; was directed to be given before each meal, in order to impart tone to the digestive system. In about two weeks the guaiac was diminished to twice a day, and the iron withdrawn, as she thought it produced headache. At the same time she was put upon a solution of bitartrate of potassa, three drachms; morphia, two grains; dissolve in a tumblerful of water, a tablespoonful to be given every three or four hours. At this time she could use her limbs quite freely, and seemed to be progressing finely. Just as our hopes were up to par, however, the inflammation moved over to the other side, and she has continued to suffer a great deal with it since, although now again on the mend. The condition of the system is such as presents no apparent recuperative tendency.

It might be an improvement in the treatment now, to change the preparation of guaiac and try the effect of the following combination:

℞.—Pulv. guaiacii gum. 3 iss.
 Ferri citratis 3 i.
 Ext. cannabis indicæ grs. x.

M. Fiant pilulæ xxx. Give one pill before each meal, and at bedtime.

I would continue the use of the bitartrate of potassa and the morphia, as long as they produce a good effect on the kidneys, and the appetite remains fair.

Electricity might be useful, but any more than a very moderate use of this agent is apt to act as an excitant, and to increase the pain.

We find here, in this bed, a man aged about thirty years, a laborer, who was admitted to the hospital on yesterday.

He says that he has been subject to pains in his right side, for a few days at a time, for the last two years. Though generally located near the lower margin of the ribs, they sometimes change to the shoulder, and sometimes to the left side. They have not usually been accompanied by fever or cough, and have seldom been sufficiently severe to prevent ordinary labor. Six or seven days since the pain commenced, as usual, in the right side, but in a day or two changed to the left, and became unusually severe. In that place it has continued until the present time. His pulse is now eighty-five per minute, moderately full; his tongue covered with a whitish fur; his skin dry and slightly warmer than natural, and his bowels inactive; his breathing short, with an inclination to dry cough, which is suppressed as much as possible on account of the great aggravation of pain which it induces. The pain at present is located in the region of the attachment of the diaphragm to the ribs, from the left side of the spine to near the sternum, and is very greatly aggravated on attempting to take a full breath, or coughing, or making considerable movement of the body in any direction. The pain is also increased at night.

The severity of the pain, its increase by respiration and coughing, and its location in the side, would readily lead to the supposition that the patient had pleuritic inflammation; while the fact that pains had long existed in the opposite side, changing occasionally to the shoulders and other parts, and that the present attack commenced in the right side, would rather indicate rheumatic inflammation of the diaphragm. Perhaps auscultation and percussion alone can enable us to form an exact differential diagnosis. If pleurisy existed in its first stage, we should hear a friction sound on applying the ear or the stethoscope to the affected side; if in the second stage, accompanied by effusion, we should have either a continuance of the friction or creaking, or a decided

dullness, with absence of respiratory sound, according as the effusion was plastic or serous.

On making a physical examination, however, we find none of these signs of inflammatory effusion. The natural respiratory murmur and the natural resonance are present down to the diaphragm.

We consequently diagnose the case as one of sub-acute rheumatism, affecting the left portion of the diaphragm, and shall prescribe for him as follows :

R.—Vin. colchici..... $\frac{\text{ʒ}}{3}$ i.
Tinct. cimicifugæ..... $\frac{\text{ʒ}}{3}$ ii.

M. Give a teaspoonful every four hours.

At bed-time give a powder containing pulv. opii, two grains, potassa nitras, ten grains, and hydrarg. chlor. mite., one grain, to be repeated in two hours, if sleep is not induced. The object is to increase all the excretory functions, especially those of the skin and kidneys, and so far destroy the pain as to enable the patient to sleep during the night.

LECTURE V.

SCARLATINA AND RUBEOLA.—RENAL DROPSY.—SUPPRESSION
OF URINE.—CONVULSIONS.—MEASLES.

Gentlemen :—There are but few general practitioners who have not found the sequelæ of scarlet fever among the most obstinate and serious ailments that come under their observation. Among these none are more important than the renal affections accompanied by anasarca.

We have here before us to-day a case which well illustrates the important series of pathological phenomena developed in the progress of such cases. The patient, a girl aged fourteen years, usually in good health, was attacked with scarlatina simplex, on January 11th. The disease ran a very mild course, requiring but little medical treatment. By the 22d she seemed quite well again. When brought here on the 8th of February, we found her presenting the appearance of a moderate degree of general anasarca, with a dull pain in the loins and head, and scantiness of urine, but no fever. She was directed to have two drachms of the bitartrate of potassa, and three drachms of the acetate, dissolved in half a pint of water, and to take a tablespoonful of the solution every four hours.

I did not see her again until the 13th. The prescription made on the 8th had appeared to have very little effect. The bloating of the whole surface had steadily increased, with increase of the pain in the head and back, frequent nausea and some fever. The urinary secretion had decreased until the 12th, when it became entirely suppressed, and violent general convulsions began on the night following. The convulsive paroxysms followed each other in quick succession, allowing only an imperfect degree of consciousness to be recovered between them; the stomach promptly rejected all drinks by vomiting; the pulse was small and frequent; skin cool; pupils slightly dilated; respirations short, but regular, between the convulsive paroxysms. She had had no passage of urine or fæces during the preceding twenty-four hours. Immediately after the convulsions commenced, late in the evening of the 12th, the house physician gave the bromide and iodide of potassa freely, but without any perceptible effect. On my visit on the morning of the 13th, I ordered extensive warm fomentations, with a view of promoting the action of the skin, and gave internally a powder of hydrarg. chlor. mite., five grains, and nitrate of potassa, five grains, every two hours, with ten drops each of chloroform and fluid extract of cannabis indica between. The latter was given more to prevent vomiting than for any supposed anti-spasmodic influence.

The convulsions continued to recur through the day, but at longer intervals; otherwise there was no improvement in her symptoms, and no evacuations, either of urine or fæces. The further use of the powders was suspended, and in their place croton-oil, suspended in the form of an emulsion, was given, in doses of a little less than one drop every hour until evacuations should occur. When she had taken three drops, a part of which was rejected by vomiting, it began to operate freely on the bowels.

On the morning of the 14th we found her quiet; no convulsions since the evening previous; face, and surface generally, still much bloated from dropsical infiltration; skin cool; pulse small, and 120 per minute; mind dull, but capable of being partially aroused to activity; and indications of partial paralysis of the left side.

The bowels had been evacuated freely several times, and she had passed a moderate quantity of urine twice. She was directed to have beef-tea in small quantities for nourishment, and a solution of bi-tartrate of potassa for drink. On the 15th she was much improved in all respects, except that the left arm was completely paralyzed, and the movements of the bowels had continued frequent, with some tenesmus, and mucus in the discharges. The urine was nearly natural in quantity and appearance. She complained of some pain in the paralyzed arm, between the shoulder and elbow.

The following prescriptions were ordered:

℞.—Ext. scutellarix fl.	℥ iii.
Tinct. digitalis.....	℥ i.
Potass. iodidi.....	℥ iii.

M. One teaspoonful to be taken every four hours.

Also:

℞.—Ol. terebinthinæ.....	℥ ii.
Tinct. opii.....	℥ ii.
Acaciæ g. pulv. } aa.....	℥ iii.
Sacch. alb. }	

Misce. et add.

Æther nitr.....	℥ iss.
Aquæ menthæ piperit.....	℥ iss.

A teaspoonful every four hours, alternating with the other prescription, until the dysenteric irritation of the lower bowel ceases.

The use of the latter prescription was required only three or four times, and the patient improved steadily from

day to day, until the anasarca, the paralysis, and nearly all symptoms of disease had disappeared. From the 18th to the 24th the patient continued cheerful and active in mind; appetite good; bowels regular; strength improving, and all the appearances of returning health. But there remained some anasarcaous puffiness of the face and lower extremities, and the urinary secretion was unsteady. Some days it was natural in quantity and appearance; on others it was smaller in quantity, and turbid. She was confined to the use of light food, subjected to no injudicious exercise or exposure to atmospheric changes, and during the period last named, took for treatment only mild diuretics and tonics.

On the 25th, however, she again became dull, more anasarcaous, and the stomach irritable, with only a slight discharge of very high-colored urine; and before the next morning convulsions again came on as violent as in the first attack. The same means were resorted to, with the addition of a vapor bath, and the omission of the croton-oil, the powders of calomel and nitrate of potassa operating freely. The convulsions again ceased on the procurement of free intestinal evacuations and the return of renal secretion. But her subsequent progress to recovery has been very slow and vacillating, and is yet imperfect.

Another somewhat similar case that I met with a few years ago, was that of a girl aged twelve years, previously in good health, who was attacked with scarlatina simplex, at the same time with two or three other children in the same family, in one of whom it presented the anginose variety, which was the occasion of my being called in. At the time of my first visit the girl was sitting up, and complaining so little that the mother did not think she required medical treatment.

The rash had been well developed on the surface, the fever moderate, and the case free from any appar-

ent complications. She convalesced, and appeared well for some ten days, when her face and limbs began to swell. I was then called again to see her, and found the surface generally pale, and swollen from anasarca; pulse moderately accelerated; skin dry and but little above the natural temperature; head light or giddy; dull pain in the back, with sense of heaviness and lameness in bending the trunk on the pelvis; bowels inactive, stomach nauseated at times; appetite much impaired, and urine scanty and dark-colored. On examination, the latter was found to contain a few blood corpuscles, and much albumen, with epithelium and fibrinous shreds. She was directed to have a saline laxative to open the bowels, to be followed by a prescription containing digitalis, nitrous ether, and iodide potassa, to be taken every three hours.

Two days later, when I saw her again, her bowels had moved very freely, and she had taken the medicine regularly, but there was no marked change in her symptoms. The urine had not increased in quantity, and was more bloody.

She was ordered a solution of bi-tartrate of potassa, of which she was to take freely. The mixture of digitalis and nitrous ether was continued, a powder of potassa nitras, hydrarg. chlor. mite, and pulv. Doveri, being added at night. Warm fomentations were also applied, both to the loins and abdomen. The anasarca continued, however, slowly to increase; the pulse became smaller and more frequent; the head more dizzy; the stomach more irritable; and the urine more scanty, and more largely mixed with blood.

During two days she passed not more than three or four ounces in the twenty-four hours, and this more than half blood.

In the evening of the fourth day after my first visit, she was seized with several general convulsions. Living in a part of the city distant from my residence, a physician from

the neighborhood was called in, who ordered a warm bath, followed by fomentations, and the liberal internal use of bromide and iodide of potassa. The convulsions, however, continued to recur at short intervals, until I saw her on the next afternoon.

The urinary secretion had been entirely suppressed for the preceding twenty-four hours; the face and whole exterior surface of the body and limbs were much bloated; the pulse 130 per minute, small and weak; skin moist, and temperature nearly natural; pupils dilated, and mind incapable of being roused to consciousness. Warm applications to the trunk and lower extremities were continued, and the following prescription ordered:

℞.—Hydrarg. chlor. mit. grs. xx.
Potassæ nitratis grs. xxx.

M. Fiant pulveres iv. One to be taken every two hours until the bowels were freely moved; the operation to be aided by warm salt water enemata.

To act as a temporary anti-spasmodic, ten drops each of chloroform and fluid extract of *cannabis indica* were given between the powders. After she had taken three of the powders and one or two enemata, the bowels began to move freely, and the convulsions ceased. Soon after, she also passed four or five ounces of turbid urine. During that night and the following morning she urinated three or four times, and the bowels were evacuated copiously, but without attention on her part. She remained quiet during the night, and at my visit at ten o'clock the following morning she could be aroused to partial consciousness, but was very feeble. She was ordered a solution of bi-tartrate of potassa and gum arabic for a drink; and a powder containing five grains of potassa nitras, and three grains of pulv. Doveri, every three hours. All other remedies were dispensed with, except beef-tea for nourishment.

From this time the urinary secretion continued to improve in quantity and quality; the skin continued moist; the pulse became slower and more full; and the mental faculties regained their activity. In about one week she had so far convalesced as to need no further attendance.

In a practice extending over a period of more than thirty years, during which I have seen a fair proportion of scarlet fever patients, and have often seen some degree of renal dropsy as a sequel, the two foregoing are the first cases that have occurred, in my own practice, of complete suppression of urine, and convulsions, following this much-dreaded fever. Both these cases occurred after the mildest grade of fever, and in spite of some directly preventive treatment. And neither seemed to be benefitted by any remedies except such as aided in the elimination of the retained elements of urine, by promoting the action of the skin, kidneys, and bowels.

Here, in an adjoining bed, we find another girl, who was taken sick some five or six days ago, and was brought to the hospital on yesterday.

On examining her, you will see that she presents the characteristic eruption of measles, easily distinguished from that occurring in scarlatina by the points of eruption being aggregated in clusters, with natural skin between; and from that of small-pox, in which the eruption comes in pointed, elevated, hard nubs, not so red as in this case, presenting only a slight flush, and without the catarrhal premonitory symptoms, or weeping of the eyes.

The patient is now at the stage when she is suffering oppression and tightness in the chest, with a harsh cough, which produces intense pain through the temples with each paroxysm.

In this disease, if uncomplicated, the indications for treatment are very plain and simple. The disease has a nat-

ural course to run; cannot be broken up; is self-limited; and the physician is not expected to interfere with active means, but simply to modify its severity as much as possible, so as to leave the system in the best possible condition.

Give enough of some anodyne expectorant to lessen the severity of the bronchial irritation and cough, and mitigate the pain in the head.

One of the best preparations, perhaps, for cases as severe as this, consists in the following:

R.—Syr. scillæ comp.....	$\frac{z}{3}$ iss.
Vin. antimonii.....	$\frac{z}{3}$ ss.
Tinct. opii camph.....	$\frac{z}{3}$ ij.
Tinct. verat. viridis.....	$\frac{z}{3}$ i.

M. One teaspoonful every three hours, in a tablespoonful of water

This will, usually, in the course of twenty-four hours, lessen the fever and modify the cough, while the pain in the head will at the same time be greatly relieved.

As the period is reached when the fever begins to decline, the veratrum may be omitted from the mixture, which may then be continued, given every three, four, or five hours, till the cough has entirely disappeared; the anodyne, with the expectorant, produces a very pleasant effect, and does not tend to interfere with the progress of the eruption; but you will usually find, while using this, that the bowels will become constipated, tongue coated, and urine scanty, which condition, if neglected, leads to a bad state of digestion, disorder of the bowels, etc.

I am not in the habit of giving physic until the eruption is fairly out, when, if the bowels have not moved for a couple of days, I direct a mild laxative, as, for instance, a combination like the following:

R.—Hydrarg. chlor. mit.....	grs. v.
Leptandræ	grs. ij.
M. Sodæ bi-carb.....	grs. v.

This will produce a moderately fair operation of the bowels, which may subsequently be kept in a regular condition by any simple laxative that will be most readily taken; Rochelle salts in effervescing solution, Tarrant's aperient, compound rhubarb pill, etc.

You will occasionally meet with cases where the patient suffers so much at night that it is best to give a tolerably full dose of Dover's powder at bed-time. A good combination for this purpose is, pulv. Doveri, eight grains, with hydrarg. chlor. mite. one grain, followed, if necessary, by a laxative in the morning. Or you may use instead fifteen or twenty grains of the bromide of potassium at night. This sometimes acts very favorably, but is not reliable in cases of eruptive fever.

One important thing to guard against, is extension of the irritation of the bronchial tubes to the lobules of the lungs, making it complicated with lobular pneumonia. In children under two years of age, this tendency is very strong. It is usually about the second day of the eruption that you will first be able to detect this. It may happen later; seldom, however, before the second or third day.

You will observe, first, that they do not breathe naturally, nor as from simple tightness of the bronchial tubes; but every inspiration brings out a forcible expansion of the nostrils; and at the beginning of the expiratory act there is sudden falling in of the walls of the abdomen, produced by contraction of the abdominal muscles.

These, if the case be noticed carefully, will be among the earliest symptoms to warn you of trouble with the lungs. On applying the ear to the chest, you will also find a sharp, well-defined, subcrepitant rhoncus.

If allowed to run along till the time for the fever to subside, you will have the little lobules of the lungs in a hepaticized condition; the patient drowsy and dull; breathing short; lips blue; pulse sharp, short, and quick in stroke,

and easily compressed; lips and tongue dry; patient disposed to lie with the head thrown back, eyes half open; and in a few days death will supervene. In adults, this is the chief source of fatality from measles.

When symptoms of pneumonia occur in connection with measles, the best remedy, in children, is a combination like the following:

℞.—Liq. ammon. acetatis.....	℥ iss.
Syr. ipecacuanhæ.....	℥ ss.
Tinct. opii camph.....	℥ ii.
M. Tinct. verat. viridis.....	℥ i.

The dose proportioned to the age of the child. For a child two years old about twenty drops are usually necessary, though it is best to begin with ten drops; for an adult, one teaspoonful. It should be given every two, three, or four hours, till the fever is controlled. In the active stage of the disease, while using this mixture, cover the chest externally with fomentations, or onions crushed.

I have considerable faith in the popular notion about onions. They certainly afford more relief to the breathing than any other thing we can use. I attribute it to the impregnation of the air which is inhaled, with the volatile oil, more than to any absorption from the surface of the chest, and think this application preferable to blistering.

It will be advisable, in these cases, to give a powder containing from half a grain to a grain of calomel, with Dover's powder, according to the age and restlessness of the patient, about three times a day. The liquid mixture may be continued, at longer intervals, until the symptoms of pneumonia have entirely disappeared.

LECTURE VI.

RESPIRATORY AFFECTIONS.—DIPHThERIA.—CROUP.—CHRONIC
BRONCHITIS.—RHEUMATIC BRONCHITIS.—ASTHMA.—PLEURISY,
ETC.

Gentlemen :—You will recognize the patient before you as one to whom your attention was called, eight or ten days since, on account of a sub-acute rheumatism in the ankles and tarsus of each of the feet. He was born in Ireland; is about twenty-five years of age; slightly anæmic; and thin in flesh. He had nearly recovered from his rheumatic affection, and had been walking about, moderately, for two or three days. Yesterday he began to complain some of soreness and stiffness in the fauces, with some lameness of the cervical muscles; and this morning we find him confined to his bed. If you now note his symptoms carefully, you will find the skin moderately hot; the pulse 90 per minute, soft and small; the eyes watery; the tongue covered with a whitish coat; the mucous membrane of the fauces red, tumefied, and tender; the tonsils considerably swollen, and the whole inner face of each covered with a thick coat of diphtheritic exudation or membrane, and the lymphatic glands in the parotid and submaxillary regions, on both sides, considerably swollen. Thus we have

all the essential symptoms of a well-marked case of diphtheria.

If such cases as this are left to pursue their natural course, unmodified by treatment, the pulse usually increases moderately in frequency, but diminishes in force, for several days; the skin continues dry and warm; the breath becomes offensive; the glands of the neck remain swollen and hard; the membranous exudation separates from the tonsils and fauces, leaving more or less irregular ulcerations, the discharge from which makes the saliva foetid, sanious, and abundant. A similar suppurative inflammation extends to the Schneiderian membrane, causing a muco-purulent discharge from the nostrils, and aiding the swelling of the tonsils, in rendering the respiration rattling, and sometimes difficult. In the meantime, the mental faculties become more dull; the patient being drowsy, with periods of restlessness, and tossing of the extremities, and sometimes delirium. If it is tending toward an unfavorable termination, deglutition becomes more difficult, and the drink often regurgitates through the nostrils; the pulse becomes more frequent, and small; the extremities cool; the sphincters relaxed, with involuntary discharges; very irregular respiration; and death. In some cases, in which the general and local symptoms have progressed several days, without any unfavorable indications, the diphtheritic inflammation extends suddenly to the larynx, adding the dyspnoea and cough peculiar to croup, and determining an early fatal result.

In a few instances, the diphtheritic inflammation attacks, simultaneously, the fauces and the larynx, causing the peculiar symptoms of croup to be present from the beginning. Such cases are distinguished from simple pseudo-membranous croup, or laryngitis, by the accompanying swelling of the glands of the neck, and of the fauces, and by the lower grade of general fever.

In a large majority of the cases of diphtheria presenting the symptoms exhibited by the patient before you, the general febrile action continues moderate for five or six days; the patient complains much of weakness, and of difficulty or pain in swallowing; the membranous exudation gradually separates from the surface of the tonsils and fauces, leaving superficial ulcerations, and an abundant flow of moderately foetid saliva. The ulcerations heal in four or five days; the saliva becomes natural; all febrile symptoms disappear; and the patient becomes convalescent. In most instances the convalescence is protracted, and characterized by much weakness, and a susceptibility to renal affections, anasarca, swelling and suppuration of the lymphatic glands of the neck, and sometimes paralysis. It should have been mentioned that the urine is, in many cases, albuminous during the active progress of the diphtheritic disease; and, also, that diphtheritic exudations are not limited, in all cases, to the mucous membrane of the throat, but may appear on the mucous membrane of the genital organs, or upon cut or abraded surfaces in any part of the body.

From the symptoms of this case, and from the brief general description of the disease just given, it is evident that diphtheria is not a mere local inflammation, but a general disease, of a febrile character, accompanied by local inflammatory processes, more particularly in the fauces and glands of the neck. To indicate its pathology fully, we must consider carefully those symptoms which indicate both the condition of the blood and the properties of the solids. The general tendency to the promotion of membranous or diphtheritic deposits on all inflamed or abraded surfaces, the morbid condition of the secretions, and, especially, the offensive odor of the breath and saliva, plainly indicate a morbid condition of the blood, of a septic, or degenerative character. The constant tendency to ulceration, and, often, gangrene,

in the parts affected with local inflammation; the general feebleness of capillary circulation; the muscular debility, sometimes ending in paralysis; and the dullness of the mental faculties, all point to an impairment of the elementary properties of the tissues, more especially that of vital affinity, by which all atomic and secretory changes are controlled in the living organization, and the organized structures are enabled to maintain their integrity. Hence, pathologically, we must class diphtheria with the typhoidal class of febrile diseases, in all of which there is an inherent tendency to degeneration or impairment of the properties of both solids and fluids, throughout the system. Whether this impairment is caused by the introduction of some subtle poison into the blood, in the form of a contagion, infection, or miasm, which, by its presence, changes the properties of the blood, and thereby, also, its relations, both chemical and vital, to the organized tissues; or, whether it is occasioned by some occult atmospheric condition, by which the oxygen, electricity, and other ingredients of the atmosphere, fail to exert their customary sustaining influence on the vital properties of the living organization, cannot be satisfactorily answered in the present state of medical science. But whatever may be the immediate cause, the existence of the pathological conditions described, can hardly be doubted by any one who has attentively observed the disease at the bedside. With the diminution of vital affinity in the solids, and the progressive deterioration of the blood, there is, necessarily, general impairment of both secretion and innervation.

From these views of the pathology of diphtheria, we may deduce four well-defined and rational indications for treatment: First—To arrest the deterioration of the blood. Second—To improve the vital affinity, and, of course, the general tonicity of the tissues. Third—To restore the secretory organs to their natural degree of activity. Fourth—

To mitigate the violence of such local inflammations as may exist in each individual case.

To fulfill the first of these indications, the chief reliance has been placed on chlorine, bromine, and iodine, or their salts, such as the chlorates of potassa and soda. From experiments recently made with the sulphites of soda and lime, and which have been fully detailed to you in former clinics, it is rendered probable that the sulphurous acid salts will be found more efficacious in the treatment of all the diseases dependent on blood-poisoning, or a septic deterioration of that fluid, than those previously mentioned. As remedies for fulfilling the second indication, we place our chief reliance on quinia, iron, and pure air. Many resort to diffusible stimulants or exhilarants, such as the various alcoholic beverages. These agents, however, spend most of their direct action on the nervous centers, while, indirectly, they depress those elementary properties of the tissues which we deem it most important to sustain. If the two first indications are effectually fulfilled, the accomplishment of the third, namely, to restore secretion, follows as a necessary result. But in the early stage of severe diphtheria, the dryness of the skin, the scantiness of urine, and the general febrile action, is often such that much advantage may be obtained from the use of such remedies as exert a more direct influence over the more important excretory functions; for it must not be forgotten that retained excrementitious matter may become as deteriorating to the blood, and as depressing to the properties of the tissues, as the primary cause of morbid action. Consequently, such remedies as aid in restoring a healthy activity to the organs of excretion are often indicated, both to prevent the accumulation of excrementitious matter and for facilitating the elimination of any poison that may have been imbibed as the cause of the disease. Mercurial alteratives, aided by mild diaphoretics and diuretics will fulfill

this indication more promptly and efficiently than any other means.

The means designed to aid, locally, in combating whatever local inflammations exist, must vary according to the extent, intensity, and stage of the inflammation in each case. In the early stage, the external application to the swollen lymphatic glands of the neck should be anodyne and discutient, such as an infusion of aconite leaves, with muriate of ammonia dissolved in it. In the more advanced stage, when the glands remain indurated and swollen, stimulating liniments may be used, such as a combination of olive-oil, oil of turpentine, and chloroform; or a mixture of camphorated soap liniment and tincture of iodine. To the inflamed surface of the fauces and tonsils, in the first stage, the local applications should be of a decidedly soothing character. All cauterizing or irritating applications in this stage, I am satisfied from close observation at the bedside, positively do more harm than good. In the later stages, when unhealthy ulcerations or gangrene actually exists, the local applications should be antiseptic and moderately stimulant. For the first stage I generally use nothing for the interior of the throat but the following :

R.—Potass. chlor.....	3 i.
Acid. hydrochl.....	20 gtts.
Tinct. belladonnæ.....	3 i.
Aquæ.....	$\frac{z}{3}$ iii.

M. Give from half a teaspoonful to a dessert-spoonful every two hours, without further dilution.

The application is made much more complete and easy by swallowing it, than by any process of swabbing or sponging; while the introduction of the medicine into the system constitutes one of the best means for fulfilling the first indication in the general treatment. In the latter stages, the best local application is a dilute solution of chlorate of potassa

and tincture of chloride of iron. Occasionally, an ulcerated surface may be presented, of that foul character that the direct application of a strong solution of sulphate of copper, or of iodine, or of per-sulphate of iron, a few times, would be beneficial. But, in my own practice, I have not found it necessary to apply anything with a swab or sponge to the throat of a diphtheritic patient during the last four years.

Having thus given, briefly, my views concerning the nature of diphtheria, and the general principles of treatment, it only remains to prescribe for the patient before us. The disease, with him, is still in its first stage. He is somewhat anæmic, and, as already mentioned, has been recently under treatment for sub-acute rheumatism. We shall direct for him the following prescriptions:

℞.—Potass. chlor.----- ʒ iss.
 Acid. hydrochl.-----gtts. xx.
 Tinct. belladonnæ-----ʒ iii.
 Aquæ-----ʒ iv.

M. One teaspoonful to be taken every two hours.

℞.—Quiniæ sulph.-----grs. xvj.
 Pulv. Doveri-----ʒ ij.
 Hydrarg. chlor. mit.-----grs. viij.

M. Fiant pulv. viii. Take one every six hours.

At the same time we will keep the swollen lymphatic glands, behind the angles of the jaw, covered with a cloth wet with the following infusion, viz.:

℞.—Aconiti fol.-----ʒ i.
 Ammon. hydrochlor.-----ʒ ss.

M. Pour on one quart of boiling water, and use only slightly warm

The first prescription taken in small and frequently repeated doses, constitutes the only local application necessary for the throat; while, as an internal medicine, it is efficient in counteracting the further degeneration of the blood.

The second prescription will aid in improving the tonicity or vital affinity of the solids, gently promote the excretions, and allay irritability. In about forty-eight hours we shall expect to find the white exudation on the tonsils mostly removed, and in its place some degree of ulceration. The saliva will then be more abundant and offensive; the general febrile symptoms less; the pain in swallowing less acute; but the patient complaining of much weakness. If no evacuation from the bowels occurs during that time, we shall give him a mild laxative, and substitute for the previous mixtures the following:

R.—Tinct. ferri chlor.....	$\frac{z}{3}$ ss.
Potass. chlor.....	$\frac{z}{3}$ ii.
Aquæ	$\frac{z}{3}$ iv.

M. Give a teaspoonful every three hours; also, one dose of sulphate of quinine and Dover's powder each night and morning.

If the glands of the neck remain swollen and hard, then apply, three times a day, the following liniment:

R.—Lin. saponis.....	$\frac{z}{3}$ ii.
M. Tinct. iodinii.....	$\frac{z}{3}$ i.

Under this treatment we shall expect the patient to be fully convalescent from the diphtheritic disease in from six to eight days.

We would call your attention for a moment in passing, gentlemen, to this child, a little boy three years of age, who is just recovering from a severe attack of membranous croup. Some five days since he was attacked suddenly, in the middle of the night, with a hoarse cough, and the choking, suffocating symptoms characteristic of croup. Various domestic remedies were tried during the night without avail, and the next morning I was summoned hastily to see him. I found the little one on the verge of actual suffocation; the breathing short, hurried, and noisy; the pulse 120 per min-

ute, weak and thready; a dark, venous congestion of the surface; lips and nails blue; and extremities cold. Some little powders, containing four grains each of hydrarg. sub-sulphas were ordered as an emetic, and a solution of ferri lactas, twenty grains, in two ounces of water, to be given in half-drachm doses every three hours.

Copious vomiting ensued in about ten minutes after the administration of the first powder, a large amount of thick, ropy mucus being ejected. This cleared the larynx, and gave immediate relief to the breathing, so that he passed off into a quiet sleep for a few minutes. The relief, as is usual in these cases, however, was but temporary, the exudation being rapidly re-formed, until it again blocked up the larynx. At the end of an hour and a half it was found necessary to administer a second powder, which was followed by prompt relief, as before. Twelve of these powders, in all, were given to the child during the succeeding forty-eight hours, at intervals of from two to six hours, according as the symptoms seemed to indicate. The cough and dyspnœa continued nearly the same, improving slightly through the day, but returning worse again at night. He took nourishment in the form of beef-tea, boiled milk, etc., freely and readily, and has seemed to maintain a surprising degree of strength throughout. For the past two days the obstruction and difficulty of breathing has been gradually diminishing, so that he has required no emetic. The solution of ferri lactas before mentioned, has been continued every four hours, alternating with half-drachm doses of the following mixture:

℞.—Liq. ammoniæ acetatis.....	℥ i.
Syr. ipecac.....	℥ ii.
Tinct. opii et camph.....	℥ i.
M. Ether nitr.....	℥ i.

The cough continues somewhat severe; and you notice that the breathing is a little hurried and labored, and the

pulse rather small and quick. The severe and dangerous symptoms, however, are all past; and by simply continuing the same treatment for a few days longer, it is probable that the little patient will regain his usual health and strength.

The great majority of these cases of membranous croup terminate fatally, from suffocation, in spite of any course of treatment that may be adopted. A few, however, like this little one, if relieved from time to time, as the symptoms become urgent, by a prompt emetic, will maintain sufficient strength and vitality to carry them through until the inflammation in the larynx and trachea subsides.

This next case, gentlemen, was brought to your notice, and fully examined, on Thursday last, which was the next day after his admission to the hospital.

You will remember that his expression of countenance was then anxious and depressed; his breathing labored, with a dry, wheezing rhoncus; his pulse about 90 per minute, and firm; tongue slightly coated with a white fur; and he complained of some nausea, with pain in the cardiac region; a sense of constriction across the chest, and a harsh, severe cough, with very little expectoration. You will recollect that, on examining him with the stethoscope, you found the respiratory murmur much exaggerated, with a prolonged dry rhoncus in expiration over both sides of the chest, except in the mammary and axillary regions of the left side, in which there was a strongly-marked sub-crepitant rale. The patient then told us that he had been sick with cough, difficulty of breathing, and pain in the chest, for two or three months. We expressed the opinion that the patient was laboring under a chronic bronchitis, by which the bronchial mucous membrane had become thickened, its secretion diminished, and on which had supervened a pneumonic congestion of the middle and lower lobes of the left lung.

To relieve these pathological conditions, we then directed for the patient a powder composed of pulv. opii, one and one-half grains; tart. ant. et potass., one-eighth grain; and hydrarg. chlor. mite., one grain; to be given every three hours. He continued these for two days, during which time his cough became less severe; expectoration more free; and the pain and tightness in the chest much diminished. The powders were then discontinued, and the following mixture ordered in their stead:

R.—Syr. scillæ comp.....	ʒ i.
Tinct. opii et camph.....	ʒ ii.
Tinct. verat. viridis.....	ʒ i.

M. One teaspoonful to be taken every four hours.

This he has continued until the present time. You now observe no difficulty of breathing while he is at rest; and on applying the stethoscope to the chest, you find no prolonged, dry, wheezing rhoncus on either side; and there is only a slight trace of the sub-crepitant rale in the left mammary and axillary regions. The latter regions still show slight dullness on percussion; and the proper inspiratory murmur remains somewhat exaggerated over the infra-clavicular regions. He coughs but little, and expectorates a thick, opaque mucus. It is thus seen that the condition of the pulmonary organs is greatly improved.

On further inquiry, we find that the patient has frequent pains in the abdomen; a desire to pass urine oftener than natural, with some scalding; and the intestinal discharges, though not more than one or two in the twenty-four hours, are yet watery and unhealthy. The pulse remains a little accelerated and firm. These symptoms indicate a very general irritation of the mucous membranes throughout the system, and may account for the continuance of a firm pulse, while the general aspect of the patient is that of debility. The desire to urinate often, with scantiness of that

secretion, also suggests the possibility of albuminuria, or Bright's disease of the kidneys.

The latter affection sometimes comes on very insidiously, producing mental despondency, indigestion, cardiac palpitation, and sometimes pulmonary congestions, with so little direct disturbance of the urinary organs that neither the patient nor his physician suspect the true nature of the case. So true is this, that in all cases of protracted ill health, or the frequent repetition of attacks of local symptoms without a manifest cause, the practitioner should not only make the usual general inquiries in regard to the urinary secretion, but should subject it to such chemical and microscopic tests as will determine, positively, its composition and qualities. Hence we shall have some of the patient's urine saved to-morrow morning for examination, the results of which I will inform you at the next clinic.* At present we will omit the expectorant and sedative mixture, which has been given during the last three days, and give something better calculated to allay the general irritation of the mucous membranes, and to promote a more free and diluted secretion from the kidneys. For these purposes we shall direct the following:

℞.—Benzoini g. pulv.....	3 ii.
Tinct. opii.....	3 i.
Acaciæ g. pulv. } aa.....	3 iii.
Sacch. alb. }	

Miscæ et add

Syr. ipecac.	℥ i.
Aquæ menthæ.....	℥ i.

One teaspoonful to be taken every four hours.

Also :

℞.—Æther nit.....	℥ ii.
Tinct. digitalis.....	℥ ss.

A teaspoonful every four hours, alternately with the emulsion.

* On examining the urine before the class, the next clinic morning, it was found to contain both an excess of phosphatic salts, and a quantity of albumen.

This man, a sailor, aged about twenty-five years, was admitted into the hospital one week since. At the time, his face was turgid, and some bloating over the whole body, of a semi-œdematous character, with a look of spanæmia. His breathing was short and hurried; pulse quick and irritable; paroxysms of severe, harsh cough; expectoration scanty, but sometimes mixed with streaks of blood; respiratory murmur harsh and exaggerated, with some dry rhonchi, but no marked dullness on percussion. There was also well-marked rheumatic pains in the joints of the lower extremities, and the urine was scanty and high-colored. Previous to the attack, the patient had been exposed to cold and wet on the lake, and the case was regarded as rheumatic inflammation of the bronchial tubes; especially of the smaller tubes, with congestion of some of the lobules of the left lung. It was remarked that rheumatic bronchitis was not unfrequent in our climate, and was generally characterized by harshness and severity of cough; scantiness of expectoration; constriction or tightness in the chest, sometimes amounting to asthmatic breathing, especially at night; and the coincidence of rheumatic pains and swellings in other parts.

To correct the rheumatic diathesis, and mitigate the severity of the cough, this patient was given ten grains of bitartrate of potassa, and ten grains of Dover's powder, every four hours, and a teaspoonful of the following mixture between :

℞.—Ammon. hydrochl.....	3 iiii.
Antim. et potass. tart.....	grs. ii.
Morphiæ sulph.....	grs. iii.
Vin. colchici.....	℥ ss.
M. Syr. glycyrrhiz.....	℥ iiiss.

This treatment has now been continued one week, and all the symptoms are much relieved. The soreness, cough,

and sense of tightness in the chest are so much relieved that the patient rests comfortably at night, and the urine is much more abundant. He will continue the hydrochlorate of ammonia mixture before each meal-time, and the Dover's powder and bi-tartrate only at bed-time.

We have here another patient, a native of Ireland, aged about fifty years, who came to the hospital about one week since. He has been afflicted for many months with a severe, harsh cough, and severe paroxysms of dyspnœa. For two weeks past his cough, and difficulty of breathing, have been so severe, each night, that he has been wholly unable to lie down and sleep.

The expectoration is scanty and viscid; the skin cool; lips leaden color; and the dry, bronchial rhonchi easily recognizable over both sides of the chest. The entire absence of febrile symptoms, the wheezing quality of the respiration, and the severe exacerbations of dyspnœa at night, plainly designate it as a case of asthma.

We would remind the class, however, of the fact that asthma, like dropsy, is merely a symptom, which is generally dependent on some prior, and perhaps remote, pathological condition. Thus, one class of cases depend on organic disease of the heart; another on chronic inflammation of the bronchial mucous membrane; and another on a morbid condition of the respiratory nerves, inducing purely spasmodic action. The latter cases are distinguished by the suddenness and violence of the paroxysms, and the entire relief from all symptoms of respiratory disturbance in the intervals. The two former are to be diagnosticated with certainty only by the aid of auscultation and percussion. In the present patient, there is constantly a shortness of breath, greatly increased by exercise; considerable cough, especially in the morning, with a tenacious, opaque expectoration; and on applying the stethoscope, there is heard, on both sides, a

harsh and exaggerated inspiratory murmur, somewhat prolonged in expiration, but neither bronchophony nor increased dullness on percussion. The rhythm and sounds of the heart are also normal.

These symptoms and physical signs, existing at a time when the patient is entirely free from any special paroxysm of the asthmatic affection, are sufficient to show that the bronchial mucous membrane is thicker and more dry than natural, thereby lessening the capacity of the bronchial tubes, inducing shortness of breath, and rendering the sound produced by the ingress and egress of air harsher than natural. This state of the mucous membrane is doubtless the product of chronic inflammation. We often find similar changes in the respiratory murmur accompanying the early stage of tubercular deposits; but this is easily distinguished by the addition of more or less bronchophony and diminished resonance, symptoms that are absent in the present case.

This patient has been taking, for temporary relief, a powder composed of pulv. opii, two grains, and tart. ant. et potass., one-fourth grain, each morning, noon, and evening; and they seem to have had a beneficial effect. We shall now put him on the following treatment:

℞.—Tinct. cimicifugæ.....	3 iss.
Tinct. lobeliæ.....	$\frac{3}{4}$ ss.
Tinct. opii et camph.....	$\frac{3}{4}$ ii.

A teaspoonful before each meal, and at bed-time.

And—

℞.—Pulv. aloes.....	grs. xx.
Ferri sulph.....	grs. xx.
Pil. hydrarg.....	grs. x.
Ext. cannabis indicæ.....	grs. x.

M. Fiant pilulæ xx. One to be taken at eight o'clock each evening.

This next patient is a young man, admitted into the hos-

pital two days since. His face was then deeply suffused with a purplish flush; lips pale; extremities cool, but surface of trunk hot and dry; pulse 120 per minute, moderately firm; respirations short, and 30 per minute, but no cough, no expectoration, and no pain in the chest; bowels inactive, and urine scanty. He had been sick about one week. Inspection of the chest shows flattening of the left infra-clavicular region, with slight dullness, and tubular respiration; the right side is less flattened, antero-posteriorly, but very dull on percussion over the whole lower and lateral part, with silence on auscultation. These symptoms and signs indicate latent pleurisy, with effusion on the right side, with tuberculosis of the upper lobe of the left lung. His treatment has been moderately sedative and diuretic, consisting of one teaspoonful of the following mixture every four hours:

	R.—Syr. scillæ comp.....	℥ ii.
	Tinct. opii et camph.....	℥ ii.
M.	Tinct. verat. viridis.....	℥ i.

Also, between each of the above doses, a fluid drachm of a mixture of equal parts of liquor ammonia, acetatis and nitrous ether. This treatment has now been followed two days, and the veratrum has rendered the pulse slower and more soft, with less suffusion of the face, and less heat of surface over the chest. On account of these changes, and a slight feeling of nausea, the veratrum will be omitted from the expectorant and anodyne mixture, and twenty drops of tincture digitalis be added to each dose of the liquor ammonia acetatis, and nitrous ether.

LECTURE VII.

PULMONARY TUBERCULOSIS.—CASES ILLUSTRATIVE OF THE
INCIPIENT, SUPPURATIVE AND EXCAVATED STAGES.—DIAGNOSIS,
—TREATMENT.

Gentlemen :—We propose to occupy your attention the present hour with a consideration of the subject of Pulmonary Tuberculosis, as illustrated by three cases in this ward.

This first patient, a German, aged twenty-five years, was admitted into the hospital ten days since. At the time of his admission he had a slight fever, accompanied by soreness in the chest behind the sternum, and a pretty severe cough. He took three or four alterative doses of hydrarg. chlorid. mite., with pul. Doveri, followed by a laxative, which lessened the heat and dryness of the skin, and somewhat relieved the soreness in the chest. But the cough and quickness of the pulse continuing, I prescribed the following mixture :

℞.—Syr. scillæ comp.....	℥ i.
Tinct. sanguinariæ.....	℥ ss.
Tinct. opii et camph.....	℥ iss.
Tinct. verat. viridis.....	℥ i.

M. To be taken in doses of a teaspoonful every four hours.

Under the influence of this his cough has abated, but not ceased; the soreness behind the sternum has disappeared, and he has no longer any febrile symptoms, except an accelerated pulse. But as you stand by his bedside, gentlemen, you observe that his respiration is shorter and more frequent than natural; his pulse about 90 per minute, and quick; his face and limbs show a moderate degree of emaciation; and he has a frequent, short cough, more severe in the morning, and accompanied with a moderate expectoration of whitish mucus.

At the time this patient was admitted, he was undoubtedly affected with a sub-acute bronchitis. But the symptoms peculiar to that disease having subsided, while there still remains a short cough, quick, sharp pulse, with moderate emaciation, the question is at once suggested whether the patient is not affected with incipient tuberculosis. The probability of this is increased by the fact that he has had more or less cough, with some shortness of breath, on taking muscular exercise, for three months past. But there are no symptoms on which we can rely as certainly diagnostic of tubercular disease in its early stage, except those derived from a physical examination of the chest. Making the chest bare, therefore, we will carefully auscultate the respiration and the voice. In the infra-clavicular region of the right side we find the inspiratory murmur enfeebled and irregular in its development, while in expiration the murmur is renewed and prolonged. There is also in the same region moderate bronchophony, or increased vibration of voice. Over the corresponding region of the left side the respiratory murmur is exaggerated or puerile, but neither irregular nor prolonged. After each of you have taken the stethoscope and examined for yourselves, we will ascertain the result of percussion. If the room is kept perfectly still while we percuss over corresponding parts of the

two sides of the chest, you do not readily detect any alteration from the natural resonance until we reach the infra-clavicular region of the right side, where you at once recognize a moderate diminution of the resonance.

Hence we may sum up the results of the examination as follows: An enfeebled, irregular and prolonged respiratory murmur, with increased vibration of voice, and increased dullness on percussion over the infra-clavicular region of the right side; and simply an exaggeration of the respiratory murmur over the upper part of the left side. Here, you perceive, are no rhonchi, or new sounds, but simple alterations of the natural ones; requiring much care to appreciate them; and yet they are of the most serious import. The irregular and prolonged murmur, the moderate bronchophony, and the diminished resonance, clearly demonstrate the existence of greater density than natural in the upper lobe of the right lung; while the simple exaggerated murmur of the left side is undoubtedly produced by the more forcible distension occasioned by diminished capacity of the right lung for air. But what causes the greater density of the upper lobe of the right lung? On the proper solution of this question depends the correctness of our diagnosis. We may have increased density of the lung from several different pathological conditions: from pneumonia and its consequences; from pleuritic effusions; and from tubercular deposits. The first would be preceded and accompanied by the well known phenomena of pneumonic inflammation, which have not been present during any part of the progress of the case before us, The second is always accompanied by increased fullness of the side affected; while the dullness is greatest in the most dependent part of the chest, instead of the upper and anterior part, as in this case. It is well known, however, that the deposit of tubercular matter almost always commences in the upper

lobe of the lung, and is accompanied by atrophy of the pulmonary tissue, instead of increased fullness. From these considerations it is very evident that the patient before us has incipient or primary tubercular deposits in the upper lobe of the right lung. The special pathology of tubercle, and the successive changes which it undergoes, we cannot take time to consider at present. The rational symptoms and physical signs accompanying these changes are strikingly exhibited in the two other patients in this ward.

Mr. C——, aged twenty-six years, native of Ireland, was admitted to the hospital three days since. He has had some cough with increasing emaciation for the last eighteen months. You see, by the contents of the vessel here, that his expectoration is considerable; consisting of mucus, with circumscribed masses of distinctly purulent matter. His pulse is 100 per minute, and soft; lips pale, cheeks sunken, and whole body considerably emaciated; the pulse is more frequent in the evening, with some heat of skin, and some sweating toward morning. By uncovering the chest you see the infra-clavicular space of the left side decidedly depressed, and the inter-costal spaces more or less sunken on both sides. On applying the stethoscope to the left infra-clavicular region, you have no respiratory murmur proper, but a loud, sharp, sub-mucous and crackling rhoncus. The bronchophony is strongly marked, and so is the dullness on percussion. Here you have, then, all the phenomena of tuberculosis in the second or active stage of its advancement, when the tubercular masses are softening, and a slow ulcerative process is being established in the tissue surrounding them, inducing more rapid emaciation, and the slighter grade of hectic fever. To complete the examination of physical signs belonging to phthisis in the different stages of its progress, you may now turn to this next bed, where we have another patient, Mr. D——, aged

thirty years, who has been suffering from tubercular disease for the last three years. You see him extremely emaciated; his pulse 110 per minute, and small; respiration very short; coarse rattling of mucus in the trachea and larger bronchial tubes; voice hollow and husky; with copious purulent expectoration and night sweats. Uncovering the chest, we find the infra-clavicular region on both sides much depressed, and all the inter-costal spaces sunken. On applying the stethoscope to the upper lobe of the left lung, you hear a very plain cavernous sound with each respiratory act, close under the end of the instrument, and, on causing the patient to articulate sounds he seems, to speak almost directly into the end of the instrument, producing what is called pectoriloquy.

Thus, gentlemen, you have in the first case examined this morning, those simple alterations in the natural sounds produced by respiration, voice, and percussion, which indicate tubercular disease in its first and comparatively dormant state. In the second case you have present all the phenomena of the second stage, or that of active softening of the tubercular masses; while, in the third case, you find the cavernous respiration and pectoriloquy indicative of the third stage, in which the softening has been completed, the matter discharged by expectoration, and cavities more or less numerous formed in the structure of the lung.

We come next to consider the treatment of phthisis, particularly with reference to these cases. There are but few diseases that have been subject to a greater variety of treatment, or concerning which the professional mind has diverged into greater or more opposite extremes. It is but a few years since pulmonary phthisis was regarded as originating from inflammation, and it was deemed of the highest importance to keep each patient closely confined in a uniform warm atmosphere; to avoid all stimulants; to restrict

the diet; and to directly combat the disease by local bleeding and counter-irritation, with internal sedatives and anodynes. Subsequent investigation having developed a more correct knowledge of the pathology of tuberculosis, and clinical observations clearly proved the inappropriateness of the former treatment—at least in a large proportion of cases—the practice of the profession took so rapid a turn in the opposite direction, that the treatment advised by many at the present day might be summed up as consisting in free exercise in the open air, free use of alcoholic drinks (especially Bourbon whisky), cod liver oil, and the most nutritious diet. Abundant observation has satisfied me, however, that cases of tuberculosis differ much from each other in their causation or mode of development, their progress, and the co-existing condition of other important organs; and, consequently, that no special routine of treatment can be marked out as applicable to all cases. In many, the development and progress of the disease is extremely slow, almost entirely exempt from inflammatory or febrile symptoms, and equally exempt from any derangements of digestion. Such cases will generally bear rich food, stimulating drinks, and abundant exercise in the open air at all seasons of the year. In another class of cases, there is a low grade of inflammation in the mucous membrane of the pharynx, larynx, and bronchia, which not only greatly increases the severity of the cough, but renders the patient so sensitive to atmospheric changes, that out-of-door exercise can be taken only to a limited degree, and with extreme caution. Still another class, by no means small, presents a similar inflammatory condition of the mucous membrane of the stomach and intestines, rendering it very difficult for the patient to retain or digest anything but the most bland and unstimulating articles of diet or drink. A well-marked case of this kind now occupies a bed in the ward for females, below.

It is very obvious, therefore, that we cannot prescribe a fixed routine of treatment for phthisis, without doing as much harm to some patients as we do good to others. The general rules which should guide us in its treatment may be stated, however, as follows: First—To give the patient as nutritious a diet as the condition of the digestive organs will bear without inconvenience. Second—As much exercise in the open air as the strength of the patient will permit, without injurious fatigue. Third—To give such medicines as will allay the morbid sensitiveness or excitability of the respiratory organs, and improve the functions of assimilation and nutrition. Fourth—To remove, with the least possible waste of strength and vital power, such local developments of inflammation as frequently supervene during the progress of tuberculosis.

To allay the morbid sensibility of the pulmonary tissue, and to sustain the functions of digestion and nutrition, are indications common to all cases, and in all stages, of pulmonary tuberculosis. In addition to this, in the first stage, it is of great importance to maintain the full capacity of the lungs for air, and to supply the blood with whatever constituents the circumstances of the patient may have rendered deficient. In the second stage, in addition to the general indications, constant vigilance is required to ward off the frequent supervision of pneumonic, bronchial, and pleuritic attacks of inflammation, which often result in the establishment of wasting hectic. In the third or suppurative stage, we have still the two leading indications mentioned, with the addition of such means as will lessen the suppurative process, and prevent exhausting discharges, whether from the skin or bowels.

In carrying out the first rule, many attempt to prescribe a certain amount of nutritious food, and then stimulate the digestive organs up to the point necessary for digesting it.

From such a course, I have never known good results. On the contrary, I fully agree with Dr. Thomas Watson, that it is much better to adjust the quantity and quality of food to the existing condition of the stomach than to undertake the very difficult task of adjusting the stomach to a given quantity of food. One ounce of nutritious matter perfectly digested and assimilated, is better for any patient than four ounces imperfectly prepared, to nourish the textures of the body. A large portion of phthisical patients have no difficulty in taking a sufficient quantity of any of the ordinary articles of diet, such as bread, meat, and vegetables; but for the class of patients to which I just alluded, as possessing a highly irritable condition of the stomach, or what some of the older writers called "dyspeptic phthisis," the selection of diet is of paramount importance. In the great majority of such patients I have succeeded better with milk than any other article. By adding lime-water in the proportion of one ounce to four ounces of the milk, patients will generally bear from one gill to one pint at a time, without inconvenience; and it contains all the elements for nourishing the body more perfectly than any other article of diet with which we are acquainted.

For drink, I induce tuberculous patients, generally, to use what is called "algæ chocolate," as a substitute for both tea and coffee. Besides being more nutritious, it contains a small proportion of iodine, from the sea-weed which is mixed with the chocolate, and is, therefore, more or less valuable as a medicine. In regard to the patients here in the ward, the first and second cases to which I have called your attention, are able to take a reasonable quantity of all the more nutritious articles of diet. The third case, however, has become so much exhausted that the functions of the alimentary canal are much impaired, and he has become subject to short attacks of diarrhœa, and has consequently

been obliged to rely principally on milk - porridge for nourishment.

The rule in relation to exercise, perhaps, sufficiently explains itself. So long as the patient has sufficient strength, he should take such exercise, daily, as will bring the whole voluntary muscular system into action. Walking, riding on horseback, and moderate manual labor in the open air, are the most reliable methods of exercise. The first case you have just examined, takes active exercise by walking, every day. The second has too much shortness of breath to endure much walking, but might be greatly benefitted by riding in an open carriage. The third, however, is too feeble to leave his bed.

To carry out the third rule, requires a careful selection of such anodynes, sedatives, and tonics, as are best suited to each individual case. In the early stage of the disease, while the tubercular deposit is still in its crude state, I find that many patients derive a good deal of benefit from the following combination :

℞.—Ext. lactuæ fl.....	℥ i.
Ext. cimicifugæ fl.....	℥ i.
M. A teaspoonful before each meal, and at bed-time.	

Where there is more or less cough and morbid sensitiveness of the pulmonary organs, one of the following formulæ will sometimes act more efficiently :

℞.—Syr. hypophosphis comp.....	℥ iv.
Morphiæ sulph.....	grs. ii.
M. A teaspoonful before each meal.	

Or :

℞.—Bismuthi sub-nit.....	℥ iii.
Ferri sub-carb.....	℥ ii.
Morphiæ sulph.....	grs. iii.
M. Fiant pulveres xxx. Take one before breakfast, dinner, and at bed-time.	

If there is much diminution in the capacity of the lungs for air, as indicated by shortness of the inspiratory act, a tablespoonful of the following solution may be taken after each meal, with much advantage, viz.:

℞.—Potassæ chloratis.....	3 ii.
Acaciæ g. pulv.....	3 ii.
M. Aquæ.....	℥ vi.

When the second stage comes, characterized, as it usually is, by pains in the chest, greater severity of cough, feverishness, and other symptoms of an inflammatory nature, the following expectorant and alterative solution we have found more beneficial than any other:

℞.—Ammon. hydrochlor.....	3 iii.
Antim. et potass. tart.....	grs. ii.
Morphiæ sulph.....	grs. iii.
Syr. glycyrrhiz.....	℥ iv.

M. Take one teaspoonful every four or six hours, according to severity of cough, etc.

In such cases as are accompanied by passive hæmorrhage, the fluid extract, or wine of ergot, may be substituted for the cimicifuga with advantage. If the pulse is quick, and the pulmonary organs very sensitive to atmospheric changes, much additional advantage will be derived by giving a wine-glassful of the infusion of lycopus virginicus half an hour after each meal.

The same plan of treatment is also well adapted to some cases in the second stage of advancement. There is now in the hospital a patient who was admitted three months since, with all the symptoms of phthisis in its second stage. There was much emaciation; copious, purulent expectoration; night sweats; and all the physical signs of softened tubercular disease in the upper lobes of both lungs. This patient has been kept upon substantially the same treatment as that just described. After the first six weeks the cough

and expectoration began to diminish, and the latter has now ceased altogether. The hectic symptoms have also ceased, and the patient has gradually gained sufficient flesh and strength to enable him to walk about the city freely. Whether there is any truth in the theory of Dr. Churchill respecting the deficiency of phosphorous as an element in tubercular diseases, or not, it is certain that the hypophosphites are among our best hæmostatic tonics. Still, there are some patients, even in the early stage of phthisis, who do not seem to derive benefit from them. Such is the first case to which I called your attention to-day. Previous to his admission here, I several times prescribed some one of these preparations for him; but, under their use, his cough, and other symptoms of pulmonary irritation, invariably increased. Hence I have kept him pretty constantly on the use of the following mixture, viz.:

R.—Glycerinæ.....	℥ iiss.
Syr. ferri iod.....	℥ ss.
Morphiæ sulph.....	gr. i.

M. Take a teaspoonful before each meal, and at bed-time.

He has also taken, constantly, the infusion of *lycopus virginicus* after meals.

In all the advanced stages of the disease, when the suppurative process is fully established, the expectoration copious, and the hectic rapidly wasting the patient, no medicine has done more in my hands to stay the progress of the disease, and support the strength of the patient, than this last formula.

The powders of bismuth, iron, and morphia, already given, also constitute one of the best combinations that can be used at this stage. There are now in the hospital wards three cases in which the cough, night sweats, and expectoration have been almost stopped by these powders, while the appetite and strength have decidedly improved. Occa-

sionally cases are met with in the advanced stage, in which the tubercular disease is complicated by chronic bronchitis of such a grade that it greatly increases the dyspnœa, and the quantity of expectoration. A strongly-marked case of this kind was presented to you in Ward No. 9, not long since. In such cases the following formula has often afforded great relief to the patient :

℞.—Bal. copaibæ.....	3 iii.
Chloroformi	3 iii.
Syr. tolu.....	3 iv.
Acaciæ g. pulv. } aa	3 iii.
Sacch. alb. }	
Miscæ et add	
Tinct. opii camph.....	℥ ii.
Aquæ menthæ.....	℥ ii.

A teaspoonful to be taken before each meal, and at bed-time.

Perhaps no remedy has been more generally used in the treatment of consumption, during the last ten years, than cod liver oil. As the result of much observation, I have come to the following conclusion regarding its use, viz.: Whenever patients can take at least three tablespoonfuls of the oil per day without causing nausea, or impairing the relish for food, it will pretty certainly prove beneficial. But, unfortunately, a large majority of tuberculous patients can take it but a short time before it begins to disturb the stomach so much as to do more harm than good. In those cases where it is well borne, the improvement of the patient will be rendered much more certain by giving, in conjunction with the oil, five grains each of hypophosphite of lime and Dover's powder, three times a day. Within the last few years, the preparation known as Liebig's extract, or syrup of malt, has also grown much into favor as a tonic and nutrient remedy in the earlier and middle stages of phthisis. It certainly seems to exert a very markedly beneficial effect in many cases where the state of the digestion renders the

oil inadmissible. It can be very advantageously combined with the comp. syrup of the hypophosphites, in the proportion of two parts of the malt, to one of the hypophosphites, from two to four drachms of the mixture being taken after each meal-time. In cases where the hectic is marked, and night-sweats excessive, hypophosphorous acid may also be added to the mixture, so as to give from five to ten drops of the acid to each dose.

In favor of the use of alcoholic drinks in the treatment of phthisis, I can say nothing. I have carefully watched their influence in connection with this disease for the last ten years. They have proved worse than useless in counteracting the tuberculous diathesis, or preventing the deposit. In the active, suppurative stage of the disease, their free use will sometimes retard the emaciation, lessen the cough, and give a decided appearance of improvement; but it is in appearance only; for in most of such cases, while the disease of the lungs is apparently retarded, the retention of carbon in the blood hastens a fatty degeneration of the liver and kidneys, and develops dropsical effusions, and albuminous urine. Two cases of this character have called on me, from country districts, within the last three weeks. For more than five years I took the trouble to keep written records of all well-marked cases of tuberculosis coming under my observation, having any connection with the use of alcoholic drinks, either as medicines or otherwise. The legitimate deductions from these records are, that those drinks, whether fermented or distilled, have no power either to prevent the development of tubercular phthisis, or to prolong life, after the disease is developed.

Perhaps I ought not to dismiss you without a word in regard to the effects of climate on consumptives. For patients predisposed to phthisis, or in the first stage after the deposit, while it is unsoftened, a removal to a moderately

elevated, interior region, with a dry air, mild temperature, and good water, will be of great advantage; especially if associated with habitual out-of-door occupation. But the practice of sending patients to remote regions, away from home and friends, after the disease is advanced to its full suppurative stage, and especially when it occupies a large part of one or both lungs, is not only useless, but unjust to all parties.

LECTURE VIII.

DISEASES OF THE ALIMENTARY TRACT. — GASTRITIS. — SCIRRHUS AT THE PYLORIC ORIFICE OF THE STOMACH. — CHRONIC INFLAMMATION OF THE STOMACH. — CHRONIC ARMY DIARRHŒA, CHRONIC DIARRHŒA, SEQUEL OF TYPHOID FEVER. — ACUTE DYS-ENTERY.

Gentlemen :—This man I have not seen before, and you have heard his statement to the effect that he came to this country a little more than a year ago, when he went to work in the hay and harvest field, laboring harder than he was used to. He states that during the harvest he drank excessively of milk and water. About last Christmas he felt a burning, disagreeable pain in his stomach, and had attacks of vomiting soon after eating. Though he dates this uncomfortable feeling about Christmas, I presume, if he had paid particular attention, he would have noticed it in September.

In the morning, when his stomach is empty, he feels very well, and feels as though he could eat a good large breakfast; but almost as soon as he gets food down, he recognizes the old pain, and, after two or three hours, it is generally thrown off. Now, mark this particular symptom: the food is soon thrown off, and the pain is of a burning, heating

character. When I asked him what he vomited, he said if he vomited soon after his food was taken into the stomach, he vomited only his food, which is very sour; but when it is retained for some time, there is much more thick mucus. Gentlemen, we could easily diagnose this case as that of indigestion; but this would not benefit us much unless we know the exact state of the stomach which causes the failure in digestion.

The simple failure of the stomach to digest the food, may arise from either deficient secretion of gastric juice, some grade of inflammation affecting the mucous membrane, or from cancerous disease.

The first class of cases consists of a want of the peristaltic motion, and insufficient secretion of the gastric juice.

Now, if this were the case with this patient, after taking food, he would feel a heavy weight in his stomach, with frequent belching of wind or gases.

Patients of this class seldom have vomiting; the bowels remaining torpid, the food lies like a load for two or three hours, undergoing more or less fermentation, when it is worked off, and the patient again feels quite comfortable. This is the most frequent class you will be likely to meet with. A history of this man shows you that it does not belong to this category, as there is a soreness, on pressure, over the stomach, and a burning pain, with vomiting.

In the second class, where there is an inflammation of the follicles, there is a sense of uneasiness felt before the meal is fairly finished, frequently obliging the patient to get up from the table and go out to vomit.

When the inflammation affects the mucous membrane, generally in a low, chronic form, it does not allow the gastric juice to be secreted, but it causes the formation of an excess of mucus, generally of an extremely acid character; consequently, food not only produces immediate distress, which

grows worse and worse, until vomiting is induced, but the matters vomited are sour, and often acrid.

There is one class belonging to this category which will give you a different train of symptoms, and that is when the follicles are exclusively involved. In such cases, the patient is apt to vomit within thirty or forty minutes after having taken food; but you will not find an atom of food in the matters vomited, that which is thrown up being, in some cases, a thin, watery mucus, and, in others, as much as a tea-cupful of thick, ropy mucus. Now, in such cases, both mucus and gastric juice are secreted in such large quantities that it hurries the solution and discharge of the food from the stomach into the intestines. In these cases the patient does not feel much uneasiness until time enough has elapsed for the food taken to have become dissolved and passed out of the stomach; but the gastric secretions, continuing their accumulation, soon occasion sufficient distress to induce vomiting, when these secretions alone are ejected, sometimes sharply acid, at others, tasteless.

Some of this class of patients vomit a quantity of the gastric secretion every morning before taking food. Such cases are often called pyrosis, or water-brash. The distress accompanying such cases is more a gnawing, or craving, than pain.

From these general remarks, you will recognize the case before you as that of a diffusive inflammation, affecting both the follicles and mucous membrane of the stomach.

Before we decide positively, however, on the diagnosis of this case, we should allude briefly to the diagnostic symptoms of cancer of the stomach. The fact is, cancerous disease rarely causes such smarting and burning pain as chronic inflammation. The favorite seat of cancer is at the pyloric orifice of the stomach; and the food is retained for an hour or more, before the most severe pain is experienced. There

is another difference: the cancerous patient seldom vomits more than a small portion of his food, it being usually digested and absorbed in part, leaving but little to be ejected with the ropy mucus that is generally vomited in from one to two hours after taking food. When cancerous disease of the stomach has existed for several months, the patient will often go from six days to two weeks without a passage from the bowels, and still the abdomen will be lank and empty.

Now, gentlemen, when you find a patient past middle life, free from fever, vomiting mostly mucus, an hour or more after eating; bowels never moving except by medicine, yet the abdomen lank and empty; with gradual emaciation; you may be quite sure you have cancer of the pylorus.

In chronic inflammation the bowels are generally distended with gases. There is also another item which will help you out in your diagnosis. In cancer, the disease comes on slower, and the patient cannot tell you positively when he first began to feel unwell; whereas, in chronic inflammation, the patient will tell you pretty promptly when his gastric troubles commenced.

If it be true that the patient before you has a low grade of chronic inflammation of the mucous membrane of the stomach, the longer he continues to dose himself with active physic, under the popular notion that he is bilious, the worse he will get. The principle of treatment should be to give only the most bland and simple articles of nourishment, and such medicines as are calculated to allay the morbid sensitiveness of the inflamed surface. One of the best items of nourishment is a mixture of three parts of sweet milk and one of lime-water. At first it should be given in doses of one or two tablespoonfuls, and repeated every hour. The lime-water neutralizes the excess of acid in the secretions of the stomach, and aids in preventing the coagulation of the casein of the milk until

it is absorbed. Once or twice a day a small quantity of thin porridge, made of milk and wheat-flour, may be given in addition to the other. Also, occasionally, a tablespoonful of animal broth may be allowed. For medicine we will give him, for the first three or four days, the following prescription :

℞.—Bismuthi sub-nit.....	grs. xl.
Pulv. ipecacuanhæ.....	grs. iv.
Hydrarg. chlor. mit.....	grs. iv.
Pul. Doveri.....	grs. xx.

M. Fiant pulveres viii. Take one before each meal-time and at bed-time.

After three or four days the powder may be superseded by a pill containing one grain of extract of hyoscyamus, and one-third of a grain of nitrate of silver. In some cases, a pill composed of one grain each of extract of hyoscyamus and sulphate of iron, taken just before each meal, produces a very beneficial effect. But no kind of medication will succeed in these cases, without the most rigid care in relation to the food and drinks.

We have here, in this adjoining bed, a case which presents, in a marked degree, the assemblage of symptoms just described as belonging to scirrhus of the pyloric orifice of the stomach.

The patient has been troubled with indigestion for several years, and within the last month has commenced to be annoyed with vomiting whenever food accumulates in the stomach. The food is then ejected with a little bile and thick, ropy mucus. If she abstains from food and drink, vomiting will not occur. The same result might be obtained by limiting the diet to sweet milk and lime-water, in equal parts, taken every half or three-quarters of an hour. This amount would probably be absorbed without creating distress, but if a large quantity is taken it will produce in-

creased muscular action in the walls of the stomach. The ingesta brought in contact with the pyloric orifice excites reflex action, and the food is expelled.

On examination, we find a tumor of a hard, unyielding feel, the most prominent point of which is at the umbilicus, and extending some distance above and below.

There is complete development of the cancerous cachexia; great emaciation; sallow hue of the skin; and some degree of œdema in the lower extremities, the result of an impoverishment of the blood.

The most effectual method for securing relief in these cases, is the restriction of the patient to a diet composed of bland, simple substances, capable of being absorbed by the coats of the stomach; and these should be given in small quantities, so that what is taken at one time may be absorbed without leaving any accumulation to be carried through the pylorus.

In cases as far advanced as this, when the pyloric orifice has become sufficiently narrowed to embarrass the passage of food, the patients will frequently importune for something to move the bowels; but physic will only increase the distress. The bowels do not move, simply because there is nothing in them to excite peristaltic action; and the less they are interfered with the better.

When we find a case of this kind, at any stage, there is no reason, in the experience of the past, to suppose that the case will yield to treatment.

Iodine, carbolic acid, etc., have all been used without marked success, in any instance.

The principal thing to be done is to regulate the diet, as before indicated, and put them upon such treatment as will soothe the pain, and assist nutrition.

I have found more amelioration from the use of a solution of carbolic acid, rendered anodyne by camph. tinct.

opii, than from any other combination. The formulæ directed in this case were as follows :

R.—Acidi carbolici cryst.....	grs. vi.
Glycerinæ	℥ ss.
Tinct. opii et camph.....	℥ jss.
Aquæ.....	℥ ij.

M. One teaspoonful every three or four hours.

This, associated with the use of lime-water, and thin porridge, occasionally, in small quantities.

This patient is a young German, whose business has been bar-keeping. He has not drank what is called to excess, but daily taking more or less alcoholic drink.

The combined influence of this habitual use of liquor, and too much confinement, has engendered well-marked gastric irritation, probably genuine follicular inflammation, but of a very low grade, just sufficient to give rise to an increased secretion of gastric fluid, and vomiting, or what is called pyrosis, every morning before breakfast.

In addition, there is more or less distress after taking food, which produces a heavy sensation in the stomach, and is sometimes rejected.

Besides these symptoms, there is a difficulty in swallowing, so that extra effort is required ; and it hurts, as if there was a sore place in the œsophagus. There is a degree of actual inflammation, of a chronic character, in the lining membrane of the pharynx and œsophagus, similar to that existing in the follicles of the stomach.

I have noticed, occasionally, from the commencement, a peculiar noise in his breathing ; a coarse, rough sound ; and he complains of not getting breath good ; of a want of air. Three-fourths of the respirations seem natural in sound ; but if he takes a quick breath, it will bring a vibration in the vocal apparatus, giving a peculiar sound with the ingress of

air, and this may sometimes be detected almost to the bottom of the chest. This led me to examine more closely, to see if there was any evidence of a tumor, or enlargement of the aorta, which would exert mechanical pressure upon the trachæ; but I was unable to discover anything of the kind. The chest expands easily.

I think there is a degree of direct nervous irritation that is reflected to the larynx, causing tension of the vocal apparatus, and a sense of constriction that extends more or less to the tubes below.

The tongue is red along the edges and at the tip; the papillæ a little prominent, but not much coated; lips red; face flushed, and covered with an eruption resembling psoriasis, a form of tetter, consisting in slight tumefaction of the skin, with desquamation of the cuticle; this appeared within the last few days.

The membrane covering the tonsils, and lining the pharynx, is a little reddened, and the parts are swollen and tumefied.

When admitted, complaining of these symptoms, and learning his previous history, I directed a powder of

R.—Bismuthi sub-nit.....grs. vj.
 Lupulinæ.....grs. ij.
 To be taken three times a day, before meals.

And to hasten the disappearance of the inflammation in the stomach, I prescribed, in addition, the following solution :

R.—Acidi carbolicæ cryst.....grs. vj.
 Aquæ.....℥ ij.
 Tinct. opii et camph.....℥ iss.
 Glycerinæ.....℥ ss.

M. One teaspoonful to be given after each meal.

The patient improved to a certain extent, vomiting less frequently; but the difficulty of swallowing; difficult breath-

ing, etc., remained. Treatment, so far, had not seemed to make much impression on that part of the difficulty.

Two days ago, when this eruption on the face made its appearance, and the membrane of the pharynx assumed a darkish hue, I was led to believe that there might be another element present, which had operated to produce a degree of impurity of the blood, of a specific character.

I accordingly directed, in place of the carbolic acid solution, the following:

R.—Sodii iod.....	ʒ iij.
Hydrarg. bichlor.....	gr. j.
Ext. conii fl.....	ʒ j.
Syr. glycyrrhiz.....	ʒ iij.

M. One teaspoonful after each meal; the powders of bismuth, etc., to be continued as before.

He has not been on this long enough to develop decided effects from it; but if it does not set up an irritation of the stomach, it will not be a week before this eruption, and much of the bad feeling in the upper part of the pharynx and œsophagus will disappear. By that time the powders should be limited to twice a day; at breakfast and dinner, giving the liquid mixture as before; meanwhile, the diet should be carefully guarded.

This patient, gentlemen, was in the army, in active service, and endured great hardships. In 1863 he contracted a chronic diarrhœa, which has persisted, in spite of every method of treatment which has been tried, up to the present time. He is now much emaciated; skin dry and harsh; circulation languid and feeble; tongue pale, but clean and moist; breathing slow and regular. On his admission to the hospital the passages from the bowels were copious, but thin, white, and frothy, like soap-suds; occurring without pain, and containing no mucus. The urine was abundant, clear, and natural.

While he was living upon an ordinary mixed diet the bowels would move five or six times a day, at certain intervals, followed by periods of quiet.

The pathology of these cases is involved in some degree of obscurity. The cases, as they have come under my observation, are capable of arrangement into two classes. One, in which the discharges are reddish-brown, with some mucus intermixed; some tenderness of abdomen; quick pulse; and dryness and redness of tongue, with feverishness, especially in the afternoon. The *post mortem* examination in these generally shows hypertrophy and ulceration of the glandular structures in the small intestines and colon. The second class of cases is fairly represented by the case now before the class.

The only alterations detected on *post mortem* examinations have been attenuation and atrophy of the mucous membrane of the intestines, and atrophy of the liver. This condition is probably the result of the morbid nervous sensibility, which causes a perversion of the natural function of the mucous membrane of the intestines, so that instead of imbibition, there is constant exudation.

The serous fluid which escapes in this way, together with undigested portions of the food, constitute the discharges.

As regards treatment, the bowels could be held in check for a certain length of time by astringents, but they would produce so much bloating and discomfort that the patient would be clamorous for physic in less than twenty-four hours, and at length there would be poured out a copious, profuse evacuation, equal in amount to the several discharges which would have occurred had astringents not been given. Our object should be: First, to restrict the diet as far as possible to those articles which can be digested and absorbed by the stomach and duodenum, without leaving any residue to pass through the bowels; secondly, by the use of proper

remedies, to overcome, if possible, the morbid and perverted sensibility of the intestinal mucous membrane. For nourishment, this patient has been furnished with milk-porridge, in moderate quantity, often enough to afford good support to the system, the quantity being increased as fast as he is able to appropriate it. At present he is taking about three pints in the twenty-four hours.

For medicine, he has been taking an emulsion of oil of terebinth. and tinct. opii, and the following prescription :

℞.—Bromini	gtts. xv.
Potass. brom.	℥ iii.
Aquæ dist.	℥ iv.

M. Teaspoonful doses, four times a day.

The bromine will, usually, in the course of three or four days, change the color of the passages to a bright yellow.

It is useless to attempt to stimulate the liver. There is a suspension of secretion, from atrophy, and alteratives administered for the purpose of acting upon this organ would only add to the prostration.

We have here a patient who was admitted into the hospital six or seven weeks since, in the third week of a severe enteric typhoid fever. He then presented all the phenomena of the gravest form of typhoid fever in its advanced stage, with more than the usual abdominal tympanites and intestinal looseness. The discharges from the bowels were not only very frequent and thin, but were stained with blood, and contained some mucus. He was sustained by regular use of wheat-flour and milk-porridge for nourishment, and the emulsion of oil of turpentine and tincture of opium, every four hours, alternated with small doses of strychnia and nitric acid. In about one week after admission the symptoms of general fever disappeared, and the patient, though extremely weak, appeared convalescent in all

respects, except the continuance of diarrhoea. His passages numbered from six to twelve per day, and continued thin, reddish-brown, and offensive. Regarding this diarrhoea as dependent on the ulceration of the patches of aggregated glands, his diet was carefully regulated, and a variety of remedies, such as sub-nitrate of bismuth, carbolic acid, acetate of lead, and the mineral acids, each combined more or less with opiates, were given, but with no other effect than temporary diminution of the number of intestinal discharges. In the meantime, two weeks had passed since his convalescence from the general fever, and his condition was very unpromising. There was much emaciation; haggard expression; quick, weak pulse; much abdominal tympanites and distention; and still from eight to twelve intestinal evacuations of thin, reddish-brown stools, often distinctly mixed with blood. He was then put on the use of a mixture of syrup of ipecac and tincture of opium, equal parts, half a fluid drachm every two hours. The dose was subsequently increased to nearly a drachm. During the first four or five days, this produced a decidedly favorable influence, lessening the number of discharges, and improving their quality. After that time it began to lose its beneficial effect, and was continued at intervals of every four hours; and a pill of nitrate of silver, one-third of a grain, with pulverized opium, two grains, was given between—making them two hours apart. From that time he began very gradually to improve, and after about two weeks his discharges were reduced to one in the twenty-four hours, but it was still thin. The interval between the doses of medicine was lengthened to six hours, at which rate he has continued to the present time. He is now able to sit up a part of the day; is gaining in flesh; appetite good; but feet become œdematous when dependent. Though steadily improving, the patient cannot be left, safely, without further

treatment. The ulcerated patches in the mucous membrane are not entirely cicatrized, and if treatment is discontinued too soon, the diarrhœa will increase again. We shall direct him to adhere to a bland, nutritious diet; take one of the pills of opium and nitrate of silver before breakfast, dinner, and supper, and two-thirds of a teaspoonful of the mixture of syrup of ipecac and tincture of opium at bed-time.*

This patient came into the hospital last Friday; was taken with acute dysentery the previous Wednesday. The attack commenced with slight chills and some general pains, more especially in the abdomen, where they were griping, sharp and severe, with frequent desire to evacuate the bowels, and tenesmus. Passages slimy and mixed with blood.

There was moderate fever, coated tongue, pulse slightly accelerated, and the temperature of the skin a little elevated. There are many remedies which have been used to arrest acute dysentery. Some physicians are in the habit of putting a patient in the first stage upon laxative salines till they obtain a free fœcal evacuation, and continue them for several days after.

I have never succeeded with the evacuant treatment; and, so far as my observation goes, in most of the cases where it has appeared to be successful, it has been where enough of the salines had been given to evacuate the bowels, and then combined with opium, without which they would not have succeeded.

Another method is by the use of ipecac in large doses, given at once, and the earlier the better; twenty grains, for instance, at intervals of four to six hours; and this is claimed to be infallible. If the first dose vomits, the second will generally be tolerated, it is said, and two to four doses are

* One month later the patient was apparently well; bowels regular and passages natural; suffering only from general debility. He had taken no medicine for a week previous.

claimed to be sufficient to subdue the disease. I have faithfully and thoroughly tried it in but few instances. In about half of the cases it vomited uniformly, no matter how many times I gave it. In some it produced the happiest effects; in others, where it could not be retained in the stomach, I have administered it successfully per enema of starch associated with laudanum.

This patient, before I saw him, had taken one dose of opium. Since then has been taking the following emulsion, viz. :

R.—Ol. terebinth.	3 iij.
Tinct. opii.....	3 iij.
Acaciæ } aa.	3 iij.
Sacch. alb. }	
Aquæ menthæ.....	℥ iij.

M. One teaspoonful every four hours.

And a solution of carbolic acid, as follows :

R.—Acid carbolicæ cryst.	grs. vi.
Tinct. opii et camph.....	℥ jss.
Glycerinæ	℥ ss.
Aquæ	℥ ij.

M. One teaspoonful every four hours, alternately with emulsion.

Improvement has been steady, and he is now almost entirely cured; has but one passage in twenty-four hours, and this nearly natural.

The method of treatment which I have usually followed during the first stage, is to give, if the patient has not had free evacuations at the beginning of the attack, four or five grains of calomel, either with or without two or three grains of ipecac, followed in five or six hours by a laxative of castor oil, sulphate of magnesia, or Rochelle salts, as it is safe to assume in such cases that there is more or less fecal matter retained in the alimentary canal; then putting them upon some combination that is sufficiently anodyne to

overcome the pain, and to reduce the frequency of the discharges. Turpentine has some property that diminishes inflammatory action of the mucous membrane, especially after the first stage. It is not merely astringent or tonic, but it possesses an alterative influence that is valuable in the peculiar condition of the vessels that belongs to these cases after the acute stage.

This patient needs no additional treatment, except to lessen the amount of medicine; and as the emulsion begins to nauseate, and the passages occur but once in twenty-four hours, we may safely and profitably omit it.

LECTURE IX.

INTESTINAL AND UTERINE IRRITATION.—BILIOUS COLIC,
—TOBACCO ENEMAS.—HYDRATE OF CHLORAL AND BELLADONNA
ENEMAS.—INFLAMMATION, AND ITS TREATMENT.

Gentlemen:—Every physician in active practice meets, now and then, cases of a unique character, requiring for successful treatment either unusual remedies or new modes of using ordinary ones. The special peculiarity of such cases may depend on some permanent idiosyncrasy of the patient, or the interposition of some temporary mental or physical condition that modifies, for the time being, the susceptibilities of the patient. They are pre-eminently the cases that baffle and annoy the inexperienced and the routine practitioner.

It is to a case of this kind that we would now call your attention. The patient, a middle-aged woman, and mother of a family, was attacked severely with what is usually styled "bilious colic." She sent immediately for Dr. L., who during three or four days exhausted his skill in vain for her relief. He tried successively anodynes, fomentations, cathartics, enemas, etc.; but the stomach of the patient soon became irritable, and everything taken was speedily reject-

ed by vomiting, while enemas returned without any fœcal discharge. In the meantime the abdomen had become very largely distended and tympanitic; tender to the touch; the extremities cool; pulse small, quick, and weak; respiration irregular, and occasional sighing; frequent retching and vomiting; with great restlessness and prostration. At this stage in the progress of the case the patient was removed to the hospital, and came under my charge. It was evident that the case had arrived at a critical stage, and must be relieved soon, or the patient would be lost.

As most of the ordinary remedies had already been tried without avail, we ordered at once a drachm of chewing tobacco to be put into one pint of boiling water, and when cool enough about one-half the quantity was injected into the rectum, as an enema. Within twenty minutes the patient became free from all pain. The countenance turned pale, accompanied by a sense of faintness; and there speedily followed a very copious evacuation of the bowels. The evacuation did not cease until the intestines were thoroughly emptied. She soon rallied from the sense of exhaustion, and improved rapidly for three or four days, when the intestinal obstruction again returned, with a renewal of pain, abdominal distension, quickness of pulse, and vomiting.

The infusion of tobacco was again administered as an enema, which speedily induced very large fœcal evacuations, and entire relief to all the bad symptoms. This time the relief has been permanent, and the patient is now nearly recovered.

It is more than thirty years since we gave the infusion of tobacco, the first time, for relieving dangerous obstruction of the bowels; produced by irregular contraction of the muscular coat of the intestines.

The disease had been induced, apparently, by eating a

large quantity of popped corn, and walking about three miles, carrying a baby only two weeks old.

On the same night, after the long walk, she was attacked with severe pain in the abdomen, which was followed by all the symptoms attributed to "bilious colic." A very intelligent physician in the neighborhood was called and attended the case faithfully for six days, but failed to afford the patient any relief. Being on a visit to my brother, who resided in the same neighborhood, we passed the house of the sick woman together on our way to the adjoining town. Being recognized by a member of the family, we were stopped and requested to see the patient. We learned that the attending physician had been in a short time previous, had informed the family that further treatment was useless, and had left to visit other patients several miles distant. We found the patient presenting a haggard expression of countenance; cool extremities; a small, quick and weak pulse; the abdomen more distended than before her confinement, very tympanitic, and tender to pressure; prompt rejection of everything she took, with frequent retching; and mind wandering. The condition seemed fully to justify the unfavorable prognosis which had been given by her physician. Although far from my own home, and without any medicine, it occurred to me that there was still a probability that the powerful relaxing effect of tobacco might relieve the intestinal contractions and procure evacuations in time to save the life of the patient. Finding some chewing tobacco in the house, what was thought to be about one drachm was put into a pint of water, boiling hot. It was stirred up frequently until it was no more than milk-warm; then one-half of the infusion was injected into the rectum as an enema. We stepped out to look about the farm a little and to while away the time until the result was obtained. In twenty or thirty minutes a messenger came running after

us, saying the patient was dying. We hastened in, when we found the family gathered around the bed, the patient as pale as a corpse, breathing slow and still; pulse a mere thread, but slower, and the mind like one in a trance. The condition of the breathing soon satisfied us that she was not dying; and in ten minutes more an active rumbling was heard in the abdomen, quickly followed by a copious evacuation from the bowels. Several evacuations occurred in the next few hours, and in the fœces was easily recognized a quantity of the popped corn, wholly undigested, that she had eaten the week previous. Soon after the evacuation of the bowels, she rallied from the sedative effects of the tobacco, her stomach ceased to be irritable, and she retained bland nourishment. During the next twenty-four hours the bowels moved so frequently as to require small doses of morphia to allay the irritability of the mucous membrane, but she subsequently progressed steadily to complete recovery. From that time to the present we have occasionally resorted to tobacco enemas for the removal of obstinate intestinal obstruction, not dependent on invagination, and generally with success. It is, however, a remedy of extreme power, and should be used with corresponding caution.

This next patient, a female, aged about thirty-five, living in the southern part of the city, after exercising more than usual for two or three days, was attacked during the night with severe pain in the left iliac and hypogastric regions, accompanied by constipation. She had also had a miscarriage not more than three weeks previous. The pain was exacerbating and very severe; extremities cool, and pulse small and quick, but neither much tenderness nor distention of the abdomen. A physician was called during the night, who endeavored to allay the severe paroxysms of pain by suitable doses of morphia. This afforded partial relief for a few hours, but was soon followed by secondary nausea,

and the prompt rejection of everything taken into the stomach.

In the meantime the pain in the lower part of the abdomen and back remained unabated. Most of the succeeding day was spent in efforts to allay the pain by anodynes, and enemas were given for procuring evacuations of the bowels, but with no relief to the patient. I found her here at evening, about twenty hours after the commencement of the attack. Her countenance was dejected; skin cool; pulse small and quick; lower part of the abdomen rather full and tender to the touch; urine scanty, and its passage painful; no movement of the bowels; and constant nausea, with restlessness. Being satisfied that the pain was dependent mostly on uterine irritation, and that no preparation of opium would be tolerated, even by sub-cutaneous injection, without perpetuating the nausea and vomiting, she was advised to desist from all remedies by the mouth, and to have an enema of hydrate of chloral, twenty grains, tincture of belladonna, twenty drops, in half a teacupful of water, slightly warm, and to repeat the same in one, two or three hours, as the pain might indicate.

Fomentations had already been applied over the abdomen, and they were continued. On visiting the patient the following morning, we learned that the first enema of chloral and belladonna was retained, and in half an hour the patient was so far relieved that she slept quietly, and continued to do so for two hours or more. In about three hours she had a slight passage from the bowels, made up in part of the enema, and some pain following it. Another enema of the same materials was given. This again quieted her so far as to procure rest for the remainder of the night. In the morning we found her pupils moderately dilated; mouth dry, and face suffused with redness, evidently from the effects of the belladonna in the enemas. In all other respects she was much

better. She was advised to rest quiet, take a teaspoonful of nitrous ether in a little water, every three hours, to increase the action of the kidneys; and if the abdominal pains returned, to use an enema containing only half the quantity of chloral and belladonna that was used before. She had felt no nausea since the first enema.

During the last twenty-four hours, she has had three additional enemata of the smaller quantity; the effect of the belladonna on the pupils and throat has gradually disappeared, and the patient seems in a fair way to recovery.

Another case, in which a similar course of treatment proved successful, was that of a young man, who was just recovering from a severe attack of inflammation in the right iliac region, resulting in the formation of a large internal abscess, but which had been entirely healed for ten days. He was attacked suddenly and severely with pain in the region of the sigmoid flexure of the colon; had rode out during the day, and exercised more than at any time previous since the beginning of his sickness. In the middle of the night he began to have disturbance of the bowels, three evacuations occurring in quick succession, and leaving him with intense pain in the left iliac region. No further evacuations occurred, and though warm fomentations were applied externally and an anodyne taken internally, the pain continued without abatement, and I was called early in the morning. Knowing from previous trials that any of the preparations of opium would be followed by secondary nausea and persistent vomiting, it was very desirable to avoid their use; and yet the severity of the pain, without fever, rendered an efficient anodyne influence highly important. He was directed to have an enema of slightly warm water, half a teacupful, containing twenty grains of hydrate of chloral, and twenty drops of tincture of belladonna; and if not relieved in one hour, to repeat the same with the addition of twenty drops

of the tincture of opium. The first enema not affording much immediate relief, he took the second as directed, which relieved the pain so fully that he slept some and rested well for twenty-four hours. Fearing that the attack might result in inflammation and suppuration, similar to what had occurred in the opposite side of the abdomen, he was kept at rest for several days. No bad symptoms followed, however, and he needed but little further treatment.

We have here, gentlemen, a patient who has been admitted to the hospital since our visit yesterday. He is a native of Ireland; aged about forty years; a laborer. You see his countenance is expressive of anxiety and severe suffering; and he tells us that, about three days since, he was attacked with severe pain in the abdomen, which still continues, and is coupled with extreme tenderness over the whole epigastric and umbilical regions. His urine is scanty; his bowels quiet; considerable thirst, with a disposition to reject drinks by vomiting; pulse soft, and not more than 90 per minute. All the symptoms in this case point to the abdomen as containing the seat of disease; while the acute pain and tenderness would equally indicate its inflammatory nature. We may find severe pain in the abdomen, from colic; but this, instead of being accompanied by acute tenderness, is relieved by pressure. We may also find severe pain in the abdomen, from strangulated hernia, either concealed or manifest, or from intussusception. But in either of these conditions the pain would be more circumscribed—that is, referred to some particular part of the abdomen—and be accompanied by complete obstruction of the bowels. Again, in either of the last conditions named, before three days had elapsed, as in this case, the vomiting would be frequent, and perhaps stercoraceous, with great general prostration. In the patient before us, however, the pain and tenderness are both diffused; the vomiting is not persistent; and free fœcal evacu-

ations have occurred since the attack commenced. Hence, we regard it as hardly possible that the present case is one of intestinal obstruction or strangulation. The symptoms would seem rather to arise from a sub-acute inflammation of the peritoneal covering of the intestines. If it involved that part of the peritoneum lining the abdominal parieties there would be a much greater degree of tenderness and fullness of the abdomen; and if it extended to the mucous membrane, there would be diarrhœa. The consequences of peritoneal inflammation, when uncontrolled, are, thickening of the membrane, plastic exudations, and serous effusion. The second often leads to adhesions, and the third to ascites, or abdominal dropsy. Most pathologists, in treating of the nature of inflammation, have restricted their attention too exclusively to the condition and movements of the blood, or fluids in the part affected. Thus, Dr. Williams makes inflammation consist, essentially, of a determination of blood to the structure involved, with the circulation through it partly increased and partly diminished. We regard every inflammation as involving three primary elements, or morbid conditions, namely: an accumulation of blood in the part; an exaltation of the elementary property of the tissue, which we call susceptibility; and an alteration of the vital affinity.

If the accumulation of blood in the part is accompanied by an active determination to it, with increase of both the susceptibility and affinity, it constitutes what is familiarly known as active, sthenic, or phlegmonous inflammation. If, on the other hand, the accumulation of blood in the part results not from increased determination, but from an impaired action of the capillaries themselves, with diminution of vital affinity, while susceptibility alone is increased, it constitutes asthenic or aplastic inflammation.

We thus claim that the movements of the fluids, and the properties of the solids, are both necessarily involved in

every true inflammatory process. Hence, we have two uniform and rational indications for treatment, namely: to allay the morbid susceptibility, and to diminish the fullness of blood in the part. Anodynes, and the local application of cold, constitute the principal means for accomplishing the first; while the means of accomplishing the second will depend upon the immediate cause of accumulation. Thus, where active determination of blood to the part inflamed exists, depletion and arterial sedatives will be required; but, if the cause of the accumulation is an impaired condition of the capillaries of the part, then, instead of sedatives, such stimulants or excitants as are capable of giving increased tone and contractility to the capillary system, will be most promptly efficient. These observations relate to inflammation in its first, or elementary stage. If it has existed long enough to produce secondary effects—such as infiltration of texture; effusions, either serous or sanguine; softening, suppuration, etc.—these will afford other indications for remedial agencies. In the case before us, there is not that fullness of pulse, or force in the action of the heart, which would call for either depletion or sedatives; neither are there any signs of effusion. Hence, the only clear indications are, to subdue the extreme morbid susceptibility of the inflamed membrane, and overcome the irritability of the stomach.

The most efficient means that we possess for this purpose are narcotic fomentations, and full doses of opium, with alterative doses of calomel. To be effectual, in such cases, the opium must be given in doses sufficient not only to allay pain, but to induce more or less sleep. In inflammations of the serous membranes, this can be done with impunity. But when the respiratory organs are involved, causing increased secretion into the air-passages, narcotism, by suspending cough, and efforts to clear away the excessive

secretion, greatly increases the danger of suffocation. It is necessary to remember this, especially when prescribing for children.

For the patient now before us we will direct fomentations of hops, or aconite leaves, over the abdomen, and give a powder, composed of pulv. opii, two grains, and hydrarg. chlor. mite., two grains, every two hours, until six doses are taken, unless the patient sooner becomes easy, and exhibits a disposition to sleep. If this should occur, the interval between the doses will be lengthened to four hours. We add the calomel to the opium, in such cases, partly to lessen the gastric irritability, and partly to keep up those important secretory actions which the opium alone would retard, or entirely suspend. If we can succeed in bringing the patient readily under the influence of these remedies, the inflammatory process will rapidly abate, and at the end of thirty-six hours we may suspend their use, and cause a mild but efficient movement of the bowels.

But, as the clinic-hour has already expired, we must omit further remarks until we visit the wards again.

LECTURE X.

SUMMER COMPLAINTS OF CHILDREN. — DIARRHŒA. —
CHOLERA - INFANTUM, ETC.

Gentlemen :—We bring before you to-day several little children suffering from the different forms of summer complaint, and would ask your careful attention to the general appearance and symptoms presented by them.

You see, in all of them, a striking similarity of physiognomy, or external appearance of disease. There is the same sober, melancholy expression of countenance; the same pale, thin lips, sunken eyes, and blanched skin; the same small, weak pulse, and general emaciation in each. You see their limbs attenuated, the muscles soft and flabby, and the skin hanging in dusky wrinkles on the neck. I am informed that they have, most of them, had diarrhœa for from two to three weeks, the discharges being thin, like green or yellowish water, and occurring as often as six or eight times in the twenty-four hours, with vomiting occasionally after drinking freely. Their skin over the trunk of the body, and especially over the abdomen, is warmer and dryer than natural, while the extremities are cool. A spell of restlessness, or crying, or moaning, a few minutes before a passage from the bowels, indicates the existence of abdo-

minal pains, or gripings, though in many cases these are almost entirely absent. They have little or no appetite for anything but water, although the thirst is, in some cases, so great that they drink almost any bland liquid greedily.

These cases of irritation of the mucous membrane of the alimentary canal, or the *summer complaints of children*, as met with in general practice, may be arranged into three groups. The first group embraces those cases in which the patient is suddenly attacked with copious vomiting and purging of serous fluid, sometimes tinged with bile, and sometimes hardly staining the napkin. Under the depleting influence of these evacuations, the countenance becomes pale and contracted, the eyes sunken, the pulse small and frequent, the extremities cold and shrunken, the urine scanty or entirely suppressed, and the mind lethargic, with spells of great restlessness. In the more severe attacks these effects follow so rapidly that collapse and death are reached in from six to twenty-four hours.

In most cases, however, after the first eight or ten hours the discharges become less frequent and copious, the vomiting occurring only when drink is taken, and the passages from the bowels being less, both in quantity and frequency. Still, very little nourishment is retained by the stomach, and the greater part of that little is hurried through the intestines without change. Consequently the little patients continue rapidly to emaciate, and unless relieved by appropriate treatment, will usually reach the stage of fatal exhaustion in from one to three weeks.

In the advanced stage of some of these cases, in addition to all the ordinary symptoms of exhaustion, there occurs constant vigilance or wakefulness, with rolling of the head, tossing of the hands, and sometimes moaning. These symptoms induce the parents and nurses to think that the disease has "gone to the head." And I have known several

cases of this kind in which the attending physician had been applying cold applications to the head, blisters behind the ears, and, in two cases, even leeches and a calomel purge, under the impression that the symptoms indicated the super-vention of inflammatory action in the brain or its membranes. I need not remind you that in the cases alluded to such opinions and practice are entirely erroneous, and that the symptoms described are the result, not of inflammatory action in the brain, but of a true anæmic condition of that organ. It is well known that very excessive losses of blood will often produce the most distressing feelings in the head, accompanied by morbid vigilance or wakefulness, and sometimes slight delirium. This anæmic condition of the brain, whether from hæmorrhage or from exhausting serous discharges, may be distinguished from inflammation and active congestion by close attention to the pupil of the eye, the carotid arteries, and the anterior fontanelle, if this still remains open. It is well known that cerebral inflammation produces contraction of the pupils, fullness and hardness of the carotids, and fullness of the fontanelle. It is not until the inflammation has terminated in effusion sufficient to produce compression, that the pupils become dilated. But the same amount of effusion that would dilate the pupils would produce also stupor or coma, and still greater fullness of the fontanelle. Whereas, in anæmia of the brain, the dilated pupil and staring expression is accompanied by restless sleeplessness instead of coma, by softness of the carotids, and by a sunken or depressed fontanelle.

Many of the cases included in what we have called the first group, after presenting the active symptoms of cholera morbus, for the first few days, undergo a different change. The vomiting ceases, the discharges from the bowels remain frequent, but become small in quantity, and composed chiefly of mucus, often streaked with blood. Simul-

taneously with this change in the discharges, more or less febrile reaction comes on, causing the skin to become dry and warm, especially over the abdomen and trunk of the body; the pulse more full and quick; and indications of more frequent and severe pains in the abdomen. In a word, the symptoms become indicative of ileo-colitis or dysentery.

The second group of cases embraces all those (and they constitute a majority of all the bowel affections of children during the hot months of summer) which commence with simple, thin, or serous evacuations from the bowels, without the intermixture of either blood or mucus, and without accompanying fever. The evacuations in the several cases constituting this group vary much in their color, consistence and frequency. In some cases they are, from the beginning, so thin and colorless as to leave no more stain or residue on the linen than turbid water, and so large in quantity as to prostrate the patient very rapidly, causing the skin to become blanched and cool, the eyes sunken, the pulse small and weak, with all the indications of approaching collapse. In many instances the discharges of this character, after continuing long enough to induce a decided deficiency in the watery and saline constituents of the blood, and considerable prostration, become smaller in quantity, less frequent, and mixed with a little mucus. At the same time, a moderate febrile reaction takes place, causing the child to become more fretful, and the abdomen more hot. The color of the intestinal discharges varies much, being sometimes green, at others yellow, and again white. They vary much also in consistence and odor, being sometimes thin as water, and almost as odorless, and at others only semi-fluid, frothy, and extremely offensive.

If the fæces are closely examined, they will generally be found to contain more or less of the food or drink taken, which has passed through the alimentary canal, with little or

no change, and also numerous epithelial cells from the surface of the mucous membrane. The urine is generally scanty in proportion to the copiousness of the intestinal discharges. If the progress of the disease is not arrested by appropriate treatment, the patient continues steadily to lose flesh and strength, until the emaciation is as extreme as in the last stage of pulmonary tuberculosis, and the little sufferer sinks quietly into the arms of death, from simple exhaustion. In some cases, however, after the disease has continued three or four weeks, the patients partially recover; that is, the stomach and upper part of the alimentary canal often recover their functions; the child takes nourishment well, retains it, and regains a degree of cheerfulness. The discharges from the bowels, however, continue more frequent than natural, varying from two to six or eight times in the twenty-four hours. They are usually semi-fluid, of a light yellow or greyish color, often frothy, and always more or less offensive. They often contain curds of milk and other undigested particles of food. The urine is generally less in quantity than natural, and contains such an excess of phosphates and lithates as to give it a whitish or milky appearance, soon after being voided. In this state, the patient usually recovers a good appetite; often, indeed, a morbid craving for food; but so large a part of what is taken is either hurried through the bowels, or only partially assimilated, that the emaciation continues, and sometimes slowly increases. The abdomen becomes gradually more tumid, until after a few months it is greatly distended, presenting a strong contrast to the emaciated extremities. The distended abdomen is generally tympanitic, indicating a simple accumulation of gases, though sometimes hard tumors may be felt through the walls of the abdomen, consisting of enlarged mesenteric glands. When presenting this form, it generally takes the name of *tabes-mesenterica* or *marasmus*,

and may continue one or two years, before ending in death or recovery.

The third class, or group of cases of bowel affections, occurring in young children, during the summer months, are distinguished from the two preceding classes by the presence of distinct febrile action at the commencement of the attack. With the first onset of vomiting, or purging, or both, the skin is found to be hot and dry; the lips parched; the pulse more firm and frequent; and the patient more fretful, and exhibiting more signs of pain. If vomiting exists in these cases, it is generally more a frequent retching, or straining to vomit, with only a slight discharge of thin mucus, sometimes colorless, but often tinged yellow or green with bile. Of course, whatever food or drink is taken, is promptly rejected. The intestinal evacuations are generally frequent, accompanied by signs of pain, and almost always affording traces of mucus. When the disease is limited chiefly to the ileum and upper part of the colon, the discharge is mostly a thin, serous fluid, tinged green or yellow, and presenting only traces of mucus. When the lower part of the colon and rectum are the chief seat of disease, the evacuations are almost wholly mucus, more or less streaked with blood, and accompanied by tenesmus and straining. Emaciation progresses rapidly, and there is more restlessness, accompanied by a fretful, peevish temper, than in the other class of cases.

If you credit the statements of mothers and nurses, you will have no difficulty in determining the efficient cause of all these intestinal affections of summer. In nineteen cases out of twenty, they will tell you, with the utmost confidence, that it is "the teeth," meaning thereby that the growth of the teeth, causing them to press on the gums, is the direct cause of the irritation of the mucous membrane of the alimentary canal; and in the twentieth case, they will be

equally confident that worms are the cause of all the mischief. So confidently and universally are these notions entertained, that hundreds of mothers, especially among the poorer classes, wholly neglect to seek medical aid for their little ones, when attacked with diarrhœa, until it has run on two, three, or even four weeks, and they are reduced to skeletons, with the skin hanging in folds on their emaciated limbs and necks, and they are in a hopeless state of exhaustion.

If you ask the mother why she neglected the child so long, her ready and uniform reply is: "Oh! it was teething;" and she has been looking, every day, for some one or more of the teeth to come through the gums, to afford relief; and by way of doing *something*, she has very likely given one or more doses of castor-oil or vermifuge. This, however, strictly in accordance with the homœopathic principle, *similia similibus curantur*, is, nevertheless, only calculated to hurry the patient a little faster toward the grave. If you suggest a doubt as to the part the teeth play in causing the disease, you will be assured that the gums are "swollen," and that the child is constantly "biting the fingers, or nipple, or whatever else is put into its mouth;" and this, in their estimation, is abundant proof that the teeth cause all the difficulty. Now, gentlemen, I call your attention particularly to this subject of teething, because the observation of many years has satisfied me that the popular errors in relation to it cause the needless sacrifice of thousands of infants annually.

Not only the mother and the nurse make it an excuse for neglecting to seek judicious medical advice, in the first, and most curable stage of the diseases of infancy, but many physicians are in the habit of directly encouraging this neglect, by telling those who bring their children for advice, with the milder forms of diarrhœa, "that they are *teething*,

and it cannot be expected that they will be very well until that process is completed." But is it true that the natural growth of the teeth, and their exit from the gums, is a cause of disease? I think not. First, because it is a strictly physiological process; as much so as the growth of the hair or nails. Second, because the gum is a structure neither endowed with a high degree of sensibility, nor supplied with nerves of extensive sympathetic relations. Third, because the constant disposition of the child to put everything in its mouth, and bite freely with its gums, proves them to be neither tender nor sensitive; and without these, there can be no irritation.

That the growth of the teeth is not the cause of cholera infantum, and the diarrhœas of summer, will be fully evident to you, from the following well-established facts:

The teeth of children are growing at all seasons of the year: in January as much as in July; and hence, whatever diseases arise therefrom, would be as liable to occur at one season as another. But the diseases under consideration are restricted in their prevalence almost entirely to the hottest part of the year. This, in our latitude, is embraced in the months of July, August, and September. So true is this, that the number of deaths from this disease alone, gives to the months named, an average annual mortality more than double that of any other months in the year. And yet, notwithstanding these obvious and universally admitted facts, we daily hear mothers, nurses, and doctors, talking of "teething" as the common, and efficient cause of the intestinal complaints of summer. Again, you will often hear it alleged that the eating of unripe and spoiled fruit and vegetables is the principal cause of intestinal summer complaints. The fallacy of this is sufficiently shown by the fact that a majority of the children attacked are so young that they have not eaten fruit or vegetables of any kind.

The real cause of the summer complaints of children, both predisposing and exciting, will be easily inferred from a careful study of the localities, the season of the year, and the special circumstances under which they occur. They occur much more severely in densely populated cities than in rural districts. They are particularly prevalent in all those cities and populous towns of our country occupying that climatic belt or zone characterized by the greatest contrast of the seasons; that is, the greatest difference between the coldest days of winter, and the hottest days of summer. This belt or zone, so far as regards that part of the United States east of the Rocky Mountains, is included between the parallels of 31° and 42° north latitude. In a large part of this territory, the difference in temperature between the coldest days of winter and the hottest of summer, is from 75° to 140° of Fahrenheit. It can hardly be doubted but this extreme annual variation of temperature operates as a predisposing cause of intestinal fluxes, during the warm part of the year. This predisposition is also increased by habitual dampness of the atmosphere, by the various impurities that exist in the air of large cities, and by that morbid material or agent usually called malaria. Age, too, exerts an important predisposing influence, the attacks being far more numerous in infancy and early childhood, than at any subsequent period of life. There are satisfactory anatomical reasons for this. The mucous membrane of the digestive organs, at birth, is extremely delicate, and both the epithelial layer, and the numerous glandular structures belonging to it, are imperfectly developed, so much so as to be fitted for contact with only the most simple fluids, such as good milk. These structures do not complete their development and acquire the compactness and diminished sensitiveness of complete, or mature organization, until the child is at least three years old. But the

period during which the most rapid development takes place, and during which there is consequently the greatest susceptibility to morbid impressions, is the first two years of life.

The teeth being a part of the digestive apparatus, their growth, and protrusion through the gums, constituting what is familiarly called "teething," takes place during this same two years; and simply affords a visible index to the rapid development of the mucous membrane, and all other parts of the apparatus, by which it acquires that diminished sensibility, that increased compactness of structure, and its glandular appendages that secretory power, which enables it not only to receive and digest a greater variety of food, but also to withstand a greater variety and intensity of morbid impressions, without inducing disease.

Remember then, gentlemen, that the growth of the teeth is only a *coincident* of corresponding growth or development in the whole digestive canal; and to attribute the important diseases of the mucous membrane of that canal, during the first two years of life, to such growth of the teeth, is as absurd as it would be to attribute them to the coincident growth of the hair on the child's head, or the nails on its fingers. While we attribute to the extremes of the seasons, confinement in the nursery, dampness of the atmosphere, malaria, and other impurities, a predisposing influence, I am fully satisfied that the immediate exciting or efficient cause is a high atmospheric temperature.

In this city (Chicago), the time of commencing of the high summer heat is very variable; but, generally, it manifests itself between the twenty-third day of June and the middle of July. In each of the five years that I have witnessed the prevalence of epidemic cholera here, the first week of high temperature commenced during the last week of June. In 1854 we had a week of hot, sultry weather, commencing as early as the twenty-first of June. The pres-

ent season we had a succession of three very hot, oppressive days, between the twentieth and twenty-fourth of June, ending in a copious rain, with two or three cooler days. From that to the present time (July 2d), we have had continuous hot weather, with oppressive south and southwest winds, inducing a great feeling of lassitude in persons in good health.

During the last of the first three days, I was called to several cases of diarrhœa and vomiting, in children, and to two cases of cholera morbus, accompanied by muscular cramps, in adults. During the last four days the attacks of diarrhœa, cholera infantum, and cholera morbus, have increased so rapidly that nearly one-half of all the patients coming under my observation have been of that class; and the past week's mortality will show a large increase over the previous weeks, from the prevalence of these affections. This large increase of mortality, chiefly from the bowel affections of children, recurs regularly every year, beginning the first week of hot summer weather, and continuing through July, August, and a part of September; and these affections are as strictly endemic in the impure summer atmosphere of the cities in the temperate zone of the earth's surface, as the intermittent fever is on the Roman Campagna, or on the alluvial deposits in the Mississippi Valley. The principal determining causes appear to be a high temperature, acting in conjunction with an atmosphere either deficient in free electricity and ozone, or rendered impure by the products of animal and vegetable decomposition.

To understand the *modus operandi* of caloric, or a high temperature, in producing disease, we must have a clear conception of the normal properties of living, organized matter, and the manner in which those properties may be modified by exterior agents. A careful analysis of the phenomena connected with organization and life, shows that every or-

ganized living structure, whether vegetable or animal, is possessed of two properties, elementary and essential to the existence of matter in an organized and living state. The first is an affinity by which the organic atoms are made to assume a definite arrangement, constituting the primary structures and types of organization. This property, for convenience, we call *vital affinity*. The second is a susceptibility to impressions from exterior influences, or a capability of being acted upon. This susceptibility must not be confounded with nervous sensibility, which is merely one of the functions of nerve-structure, and not an elementary property of organized matter. The two elementary properties here alluded to, will be most clearly appreciated by reference to the simpler types of organization, such as the germinal cells of the ovarium, the egg, or the acorn. You examine the latter, for instance, and you find the organic atoms of which it is composed arranged in a certain definite and uniform manner, in strict obedience to a special *affinity*. That the particles thus arranged possess a special susceptibility, is easily demonstrated by the action of certain exterior agents upon them.

Thus, the acorn, lying dry upon the table, manifests no change, any more than a piece of chalk lying by its side; but let a certain degree of caloric or heat, and moisture, be brought to bear upon it, and a change immediately commences, which, continued under the guidance of the special affinity among its particles, soon results in the development of a miniature oak. But the piece of chalk, exposed to the same influences, is only a piece of chalk still; thus demonstrating that the acorn possessed a susceptibility, though passive, or dormant, peculiar to organized matter.

If you thus see clearly what we mean by vital affinity and susceptibility, as the elementary properties of all organized living matter, you are prepared to understand the effects

of a high temperature, both as a predisposing and exciting cause of disease. Caloric is one of those imponderable agents capable of pervading all matter, whether organic or inorganic; and its effect is to expand all bodies, by causing the atoms of which they are composed to be separated farther from each other. Hence, it is the great antagonistic power to affinity, whether simple, elective, or vital. Its direct effects upon the living tissues of the human system, constitute no exception to the general law of its operation upon other matter. Every successive addition of caloric, or increase of temperature, increases the expansion of the tissues, and of course lessens, in the same proportion, the vital affinity between the atoms of which the tissues are composed. If you wish for proof of this, you have only to immerse your finger a few minutes in water of as low temperature as can be borne without injury, fit a ring accurately to it, and then immerse it the same length of time in water as warm as can be borne, and you will find the size of the finger so increased that you will probably be unable to get the same ring on or off. But caloric not only expands living tissues, thereby diminishing vital affinity, but it also increases their susceptibility. It is chiefly by its power thus to diminish the tonicity or compactness of the tissues, while it increases their irritability or susceptibility, that caloric, or a high temperature, becomes an efficient predisposing or exciting cause of disease. Acting more directly on the cutaneous surface, and, both by continuity of structure and close physiological sympathy, on the whole internal mucous surface, also, a high atmospheric temperature renders these structures morbidly sensitive, while their expansion renders them more lax, and thereby puts them in the most favorable condition for sudden and rapid fluxes of fluids into, and through them. Hence it is, that in the midst of summer, all classes and all ages of people are more or less disposed to intestinal

affections, characterized by increased flow of fluids, such as diarrhœa, cholera morbus, etc. What is thus a predisposition in all classes, becomes, in children, at that age when the mucous membrane is yet undergoing development, as already described, sufficient to constitute positive disease. If to this is added further depressing and relaxing effects of confinement in the nursery, or in the impure air of the narrow streets and alleys inhabited by the poor, and the smaller quantity of oxygen inhaled when the atmosphere is rarified by a high temperature, we shall have no difficulty in explaining the annually destructive prevalence of bowel affections in young children, during the hot months of July and August. If the relaxation is excessive, and the exudation or effusion from the mucous surfaces rapid, causing active vomiting and purging, it takes the name of cholera morbus, or cholera infantum; when it is slight, causing only languor, paleness, and several thin discharges from the bowels, it takes the name of diarrhœa, or "summer complaint."

But, gentlemen, I have unconsciously spent so much time in the present explanatory digression, and in the preceding examination of these children, that all comments on the pathology of the diseases under consideration, and on their treatment, must be deferred until the next clinic-hour.

LECTURE XI.

SUMMER COMPLAINTS OF CHILDREN.—THEIR PATHOLOGY
AND TREATMENT.

Gentlemen :—In a preceding clinic I directed your attention to several cases of diarrhœa in children, and described to you the different varieties of bowel affections met with in practice—giving their history, characteristic symptoms, and the causes, both remote or predisposing, and exciting. This morning I shall make some brief comments on the pathology of these affections, and then give you my views in regard to the principles on which their treatment should be conducted. From a careful review of the causes which are most efficient in producing this class of diseases, and their *modus operandi*, which was given at the preceding clinic, you will readily infer the most important items connected with their pathology. It was then shown that all the causes concerned in the production of the diarrhœa, cholera morbus, and dysentery of young children, cooperated to produce an increased susceptibility or irritability of the mucous membrane of the stomach and bowels, with a diminution of vital affinity, and consequent relaxation of the capillary system of vessels. This morbid excitability, coupled with impaired tonicity of the mucous tissue, consti-

tutes the primary pathological condition in all the first and second groups of cases mentioned in the former lecture. The morbid excitability of the membrane invites a rapid influx of blood into it, while the diminished vital affinity and consequent relaxation of the texture, admits of equally rapid effusion, or exudation of the serous part of the blood, and thus furnishes the matter for the copious thin discharges. The rapid loss of the watery element of the blood, carrying with it the salts, by this effusion into the stomach and bowels, speedily diminishes all the glandular secretions, such as urine, bile, gastric and salivary juices, etc.; retards organic or molecular changes in all the tissues, thereby diminishing the evolution of caloric, and causes a marked shrinking of the whole body.

The morbid sensibility of the nervous filaments involved in the mucous membrane, acted upon by the effused fluid, calls into action a reflex influence upon the muscular coat, and thereby establishes the frequent efforts to evacuate the stomach and bowels. Such are the pathological conditions which constitute the active stage of these diseases.

They cannot exist long, however, without inducing other pathological changes of no less importance. Thus the continuance of the serous discharges, more or less rapidly exhausts the blood of its water and salts, leaving it too viscid to circulate freely through the capillary system of vessels; while the rapidity of effusion through the mucous membrane carries with it more or less of the epithelial cells of that membrane, which may be easily detected in the evacuations by the aid of a microscope. If vomiting exists to such an extent as to prevent the retention of drinks long enough to afford any replenishment of the water in the blood, there will be danger of an entire suspension of capillary circulation, and a speedily fatal collapse. Or, the increased viscosity of the blood may so modify its relation

to the capillaries of the mucous membrane as to stop the effusion and consequent discharges spontaneously before the state of collapse is reached. If the discharges thus cease before complete collapse ensues, rest, and a judicious replenishment of the blood by liquid nourishment, soon restores the patient to health, in the majority of cases; but in some, another pathological state is developed, which should not be overlooked. I have said that, during the active stage of diarrhœa or cholera morbus, the rapid efflux of fluid through the mucous membrane, carried with it more or less of the epithelial cells of that membrane, and thereby produced more or less impairment of the texture.

Hence it happens that when the discharges have ceased, capillary circulation and organic actions are resumed, and the patient is said to have a healthy reaction fairly established; the impairment of texture in some portions of the mucous membrane is such, that the capillaries are incapable of resuming their circulatory function. The blood accumulates in them; a low grade of inflammatory action is established in a few hours; and the general reaction passes beyond the healthy standard to that of fever; and, in common professional phraseology, the patient has passed from an attack of serous diarrhœa or cholera morbus to that of secondary enteric or typhoid fever. The asthenic grade of inflammation thus set up may gradually subside, and allow convalescence to be established in from one to three weeks; or it may progress through the successive stages of softening and ulceration, ending in the exhaustion and death of the patient. But the mucous membrane is not the only structure in which the capillaries may fail to resume their function, when the active discharges cease, and the stage of reaction has come. When the attack has been violent, and the amount of serous discharge so great as to produce a very marked deficiency of water in the blood, the

latter may become so altered in its relation to the capillaries of the brain that the circulation becomes too feeble to sustain the function of the cerebral hemispheres. In such cases, though the intestinal discharges may cease, the circulation and warmth be restored to the extremities, and a general appearance of healthy reaction be established, yet the patients pass into a state of more or less complete coma, from which they seldom recover.

Another, and perhaps more frequent local failure in the resumption of capillary action, is in the kidneys. In the preceding lecture, I told you that one of the early effects of rapid and copious discharges from the mucous surface of the alimentary canal, was a partial or complete suppression of urine. It sometimes happens that when the active intestinal discharges cease, reaction takes place generally, but the secreting structure of the kidneys fails to keep pace with the improvement in other textures. Consequently, no urine is secreted, and symptoms of uremic poisoning are speedily developed.

Such are my views of the pathology of the different stages of the first two groups of bowel affections, described in the preceding clinic. The pathology of the third group of cases, which we described as accompanied by fever from the commencement of the attack, differs in one primary element from the first two. There is the same morbid susceptibility or irritability of the mucous membrane, and consequently the same unnatural influx of blood into it; but the general relaxation of the capillaries, which, in the first cases, allowed a rapid escape of the fluids constituting serous discharges, does not exist in this group. Consequently, although the efforts at vomiting or purging, or both, may be frequent and severe, yet the amount of fluids actually evacuated is not large, and they are found to consist

mostly of mucus, thereby indicating the existence of inflammation.

These pathological views afford us clear and definite indications for treatment in each successive stage of these diseases. Thus, in the first stage of those cases characterized by simple serous discharges, either by vomiting or purging, the indications are to allay the morbid irritability of the mucous membrane, and to increase the tone or contractility of the capillaries. To fulfill these, requires the judicious combination of a tonic and anodyne.

Here is a case illustrating this class, a baby, eight months old. You see it lying languidly in its mother's lap; the face is a little pale; the eye slightly sunken; the expression sad; its surface and extremities cool; respiration quiet, and pulse soft and weak. The mother says it has had from four to six thin, yellow discharges every twenty-four hours, for the last three days. The passages are thin, copious, and preceded by a little restlessness or peevishness, and followed by languor. There is neither fever, pain, or mucus in the discharges, or anything indicating local inflammatory action. The pathological conditions are, simply, general relaxation, with undue excitability of the mucous membranes of the bowels. The ideas entertained by some, that these cases depend on some derangement of the liver, or that the discharges are the result of an effort of nature to get rid of some morbid matter, or the result of "teething," are founded on neither legitimate reasoning nor the facts involved.

This child's nursing should be regulated so as to prevent overloading the stomach at any one time; but the mother's milk is the best nourishment that it can take, and the less of any other fluid it takes the better.

For medicine, we will give it the following prescription:

℞.—Phloridzinæ.....	grs. xxiv.
Spts. ammon. arom.....	ʒ i.
Tinct. opii et camph.....	ʒ i.
Aquæ.....	ʒ iss.
Syrupi simpl.....	ʒ ss.

M. Shake the vial, and give half a teaspoonful each morning, noon, tea-time, and at bed-time.

The phloridzine, derived from the bark of the root of the apple-tree, is a mild and pleasant tonic; while the camphorated tincture of opium supplies the necessary anodyne influence.

Another combination that we use frequently is as follows:

℞.—Acid. sulph. arom.....	ʒ i.
Magnesiæ sulph.....	ʒ i.
Tinct. opii.....	ʒ i.
Syrupi simpl.....	ʒ i.
Aquæ.....	ʒ i.

M. Give, to a child of the age of this one, fifteen drops every two, three or four hours, according to frequency of the discharges.

Or the following may be substituted:

℞.—Quiniæ tannicæ.....	grs. iv.
Pulv. opii.....	gr. i.
Sacch. alb.....	grs. xx.

M. Fiant pulveres viii. One to be given every three, four or six hours.

In the early part of mild cases, the use of one or the other of these formulæ will generally speedily restore the patient to health. But if the attack is more severe, characterized by, not only frequent serious discharges, but also partial or complete suspension of important secretions, such as urine and bile, we must combine the anodyne with an astringent instead of a tonic, and add to both a small dose of some alterative, to aid in restoring these important glandular secretions. In such cases, if the vomiting is frequent,

and more especially if the matters ejected are sour, I make a solution of soda bi-carb., one drachm, and morphia sulph., one grain, in two ounces of water; and of this give from six to fifteen drops, according to the age of the child, immediately after each act of vomiting. At the same time, give one of the following powders every three hours, until the discharges cease, viz.:

℞.—Hydrarg. chlor. mit.	grs. iij.
Plumbi acetatis.	grs. iii.
Pulv. opii.	gr. i.
Sacch. alb.	grs. xx.

M. Fiant pulveres vi.

The rule to give whatever medicine is designed to suppress the vomiting, in small doses, *immediately* after each act of vomiting, is one of much practical value. Vomiting is an act that cannot be perpetuated continuously, but must always occur in paroxysms, with an interval of greater or less length between them. Hence, if a dose of medicine is swallowed immediately after a paroxysm of vomiting, it will remain in contact with the mucous membrane of the stomach a few minutes, at least, before another effort at vomiting can be performed. During these few minutes, if the medicine is soluble, or already in solution, it will gain some effect, both on the nervous filaments and the capillaries of the mucous membrane; and a repetition of the dose immediately after each paroxysm of vomiting will soon accumulate an effect sufficient to destroy the morbid sensibility, and consequently stop the vomiting. But if we follow the wishes of the patients, and the inclination of almost all nurses, by withholding the medicine after vomiting until the patient has "rested a little," that little period of rest is just sufficient for the muscular coat to regain its contractility, and the mucous coat to pour out a new supply of serous fluid, and con-

sequently the patient is all ready for another paroxysm of vomiting. Now, if the dose of medicine is administered, in nine cases out of ten it will be rejected almost as quick as swallowed, and the effect is lost.

The same rule is equally important in reference to the use of enemas for aiding in the suppression of diarrhœa or dysentery. They should always be administered as speedily after an evacuation as possible, and while the rectum is entirely empty. The longer the enema is delayed after an evacuation, the more mucus, or serous fluid will have accumulated in the intestine, and the more readily will the introduction of the enema be followed by an immediate expulsion. You thus see, gentlemen, that in the more violent gastric and intestinal affections, success in their treatment depends almost as much on the time and manner of administering medicine as on the kind of medicine used.

I have just stated, that in those cases characterized by frequent vomiting of serous fluid, and intestinal discharges thin, and destitute of the coloring matter of bile, small and frequent doses of a solution of morphia and soda, with less frequent doses of calomel and acetate of lead, usually constituted the most efficient means for checking the active progress of the disease, and at the same time favoring the restoration of secretion in the more important organs of depuration, as the kidneys and liver. But many cases are met with, in which the discharges, instead of being sour and destitute of coloring matter of bile; are all bitter and highly colored with the latter fluid, thereby showing a superabundance instead of deficiency of the biliary secretion. In such cases, instead of giving alkalies or alkaline salts and mercurials, all of which tend to increase glandular secretions, I resort directly to the simple combination of anodynes and astringents, as follows :

℞.—Plumbi acetatis.....	grs. xv.
Morphiæ sulph.	gr. i.
Aquæ	℥ ii.

M. Give, to a child one year old, ten drops after every paroxysm of vomiting.

Or, if the vomiting ceases and the intestinal discharges continue, the same dose may be continued every three or four hours. In using simple anodynes and astringents, it must be remembered that copious intestinal evacuations are, almost always, accompanied by scantiness of urine; and that the suppression of such evacuations by opium and simple astringents, whether mineral or vegetable, often leaves the kidneys still in a very inactive state. This difficulty can generally be avoided by giving the child a teaspoonful of the following, between each of the doses of opium and acetate of lead:

℞.—Æther nit.....	℥ ss.
Potassæ acetatis	℥ ii.
Syrupi simpl.	℥ ss.
Aquæ	℥ ii.

M. Shake well before using.

This seldom offends the stomach, and renders efficient aid in restoring a healthy action of the kidneys.

We have here a child, presenting another aspect of the same general malady. Its mother says it is thirteen months old, and was suddenly attacked last evening with vomiting and purging, every few minutes. If it nurses, the milk is ejected almost as soon as it lets go the nipple; if it drinks a spoonful of water, it provokes the same heaving; and thus everything it swallows is speedily thrown up. Yet it is craving for water. The passages from the bowels occur every half-hour, perhaps, and are preceded by a little writhing and fretting, and consist of a turbid or yellowish fluid, so thin as to run readily through two or three napkins,

and leave only a stain of fæcal matter. The child is drowsy; the eyes sunken; the face pale and dejected; the skin, especially of the extremities, cool; pulse thready and weak; and respirations slow, with frequent sighing. Here you have a more active example of the cholera infantum, about eighteen hours after the commencement of the attack.

It is a case presenting actual danger of fatal collapse during the active stage. If it survives this stage, and the vomiting becomes only occasional, with a continuance of intestinal discharges less frequently, the latter will become green, mixed with little masses of mucus, sometimes streaked with blood; the abdomen will become hot; the pulse quick; the child more restless and peevish, with excessive thirst; and after emaciating to a skeleton, may die from inanition at the end of three, four, or six weeks. On the other hand, prompt treatment, designed to allay the extreme irritability of the whole extent of the mucous surface of the alimentary canal, and restore the proper tone of the capillary vessels, will, in many cases, arrest the disease and lead to a rapid recovery of the patient. We will give the little sufferer the following prescriptions :

℞.—Acidi carbolici cryst.....	grs. iij.
Glycerinæ (puræ)	℥ ss.
Tinct. opii et camph.....	℥ i.
Aquæ	℥ iss.

M. Give twenty drops every half-hour until the vomiting ceases; then extend the time to every two hours.

℞.—Hydrarg. chlor. mit.....	grs. iv.
Pulv. opii.....	gr. i.
Sacch. alb.....	grs. xxx.

M. Fiant pulveres viii. Give one every eight hours.

If the vomiting ceases, and the discharges from the bowels are reduced in frequency to only two or three in the twenty-four hours, the powders are to be omitted, and ten

drops of the nitrous ether added to each dose of the carbolic acid solution, to aid in securing proper action of the kidneys. In many cases, this treatment will result in a rapid and entire recovery.

In others, the vomiting ceases, or occurs only occasionally; but the intestinal discharges continue, at intervals of two, three, or four hours, preceded and accompanied by symptoms of pain; the child becomes fretful, craving for drink, and rapidly emaciates. The intestinal discharges are very variable in color and quality. In a majority of such cases the following emulsion acts very favorably:

℞.—Ol. terebinth.	3 ii.
Ol. gaultheriæ.....	gtts. xx.
Tinct. opii.....	3 ii.
Acaciæ g. pulv., } Sacch. Alb., } aa.	3 iv.
Miscæ et add aquæ.....	℥ iii.

Shake the vial and give, to a child of this age, from fifteen to twenty drops every three, four or six hours, according to the frequency of the discharges.

In all cases where the child can have a good breast of milk, that alone should be its nourishment. But if artificial food must be provided, we have found nothing to answer better than a thin, well-prepared wheat-flour and milk porridge, given in small quantities. It is also of great importance to give these little children access to fresh and pure air. Their confinement in small, over-heated, and badly-ventilated rooms, is one of the most prolific causes of their sickness and mortality.

When the acute stage of cholera infantum and serous diarrhœa has passed by, and the disease assumes a chronic form, with rapid emaciation, coolness of the surface and extremities, and the intestinal discharges still thin, with no dysenteric straining, and little or no intermixture of mucus,

then I find some one of the following formulæ to afford most relief:

℞.—Erigeron. canadensis.....	℥ ss.
Quiniæ tannici	grs. xx.
Morph. sulph.	gr. i.

M. Pour on the whole a pint of boiling water, to make an infusion. When cold, give, to a child one year old, teaspoonful every two, four or six hours, according to the frequency of the discharges.

This combination has the advantage of being moderately diuretic and tonic, while it is efficiently anodyne and astringent. In mild chronic cases, in which the evacuations show an excess of acid or sourness, the following will often answer the purpose well:

℞.—Misturæ cretæ fl.....	℥ iss.
Tinct. cinnamoni.....	℥ ss.
Tinct. opii et camph.....	℥ i.

M. Give ten to thirty drops, according to age of child, three or four times a day.

In protracted cases, accompanied by an anæmic condition of the patient, the liquor ferri nitratis, in suitable doses, will be found very valuable, with one of the following powders at bed-time, viz.:

℞.—Quiniæ tannici	grs. iii.
Pulv. opii.....	gr. i.
Hydrarg. cum creta	grs. iii.
Sacch. alb.....	grs. xx.

M. Fiant pulveres vi.

The third group of bowel affections of children—those which were described as accompanied by fever, and mucus in the discharges—involve a true inflammatory condition of the mucous membrane, and their treatment involves the same principles as the treatment of enteric fever and dysentery in adults. Hence it will be more appropriately discussed when we have cases of those diseases before you.

LECTURE XII.

DROPSY.—THE PATHOLOGICAL CONDITIONS THAT GIVE RISE TO IT.—
DIFFERENCES IN LOCATION AND PROGRESS.

Gentlemen :—We have an opportunity to-day to bring before you a series of cases which strikingly illustrate both the pathological conditions giving rise to dropsical effusions and the differences in their location and progress. Excluding hydatids, or cystic dropsy, we may arrange all other cases into three classes, viz.: First—Those that arise directly from inflammation; Second—Those dependent on mechanical obstructions in some part of the vascular system; Third—Those arising from alterations in the blood.

Of the first class I shall not speak at present, although we have in the wards two very interesting cases, the one of pleurisy, and the other of pericarditis, both accompanied by copious serous effusion.

The second class of cases includes all such as depend on mere mechanical obstruction, whether from the pressure of tumors, the gravid uterus, ligatures, fibrinous coagula, diseased valves, or enlarged viscera. But those of chief interest arise from either valvular disease of the heart, or from disease of the liver and spleen.

This patient, Mrs. J., an American woman, aged about fifty years, when admitted to the hospital, some weeks since, was

considerably emaciated ; countenance expressive of anxiety, with a slight œdema of the eye-lids ; pulse 85 per minute, small, and moderately firm ; tongue clean ; bowels regular ; appetite fair, but digestion imperfect ; secretion of urine very scanty, becoming turbid after standing, from an excess of phosphatic salts, but yielded no evidence of containing albumen or sugar. Her respiration was short, and accompanied by a sense of oppression, which was so much increased by the recumbent position, that she maintained the sitting posture all the time, both night and day. The cellular tissues of the lower part of the body, and the whole lower extremities, were greatly distended with œdematous infiltration. A small amount of effusion had also accumulated in the cavity of the peritoneum. The œdema of the legs had existed several months ; and the over-distended skin on the calves of the legs had become broken, and the serum was escaping in such quantity as to keep the feet and ankles constantly wet.

On making a careful physical examination, no evidence of disease was found in any of the viscera ; but over the cardiac region there was increased extent of dullness, and a loud, rough, bellows murmur, covering all the time between the first and second sounds of the heart, showing plainly diseased valves, with hypertrophy of the heart. On tracing the history of the patient, it was evident that the cardiac disease, in this case, originated at least ten years previous, from an attack of sub-acute rheumatism. It will be observed that the dropsical effusions in this case are most marked in the parts most distant from the heart, and most dependent ; and this is true of all cases dependent on mechanical obstruction in the central organ of the circulation.

In an adjoining bed we find another patient, Mrs. C., born in Ireland, the mother of several children. When ad-

mitted to the hospital she was emaciated; countenance expressive of sadness, or despondency; face pale; lips and, indeed, skin generally bloodless, presenting a strongly anæmic look; skin cool; pulse soft and about 90 per minute; respiration shorter and quicker than natural; poor appetite, and food often becoming sour, and sometimes being rejected; bowels irregular, being sometimes costive, and sometimes too free; urine very scanty, and depositing a large amount of phosphatic and lithic acid salts, but containing no albumen. On examining the abdomen, it was found greatly distended by an accumulation of serous fluid in the cavity of the peritoneum, accompanied by a considerable enlargement of the liver and spleen. There was no tenderness or other indication of inflammatory action. For the last few days the ankles have been also slightly œdematous, aside from which the dropsical appearances are confined exclusively to the abdomen. There are no signs of disease in the viscera of the thorax or pelvis.

The history of this case showed that the patient had been attacked with intermittent fever during the past summer, which was somewhat protracted and accompanied by pain in the hypochondriac regions, and much disorder of the digestive organs. Although the intermittent paroxysms ceased, and have not returned during the last three months, yet she does not acquire good health. Her bowels are more or less costive; digestion imperfect and flatulent; muscular weakness; countenance sallow; and urine scanty and turbid.

About six weeks since the abdomen began to enlarge, and has steadily increased until attaining its present great distension. In this case it is evident that the dropsical effusion is chiefly the result of direct mechanical obstruction to the portal circulation, by the enlargement of the liver, and hence, instead of the dropsical effusion being controlled by

distance from the heart and gravitation, as in Case I., it is limited to the cavity containing the distribution of the obstructed blood-vessel; and no mere change of position of the patient produces any change in the location of the effusion.

We would next draw your attention to this patient, Mr. W., an American, aged forty-three years. He has been somewhat addicted to the use of intoxicating drinks; and eight or nine months previous to admission was exposed to a thorough wetting and cold, which was followed by some pain in the right side, and slight fever. These symptoms lasted only a few days, but they were followed by indigestion, flatulency, constipation, and general feelings of ill-health, but not sufficient to confine him to his house. About six weeks since he noticed the commencement of some enlargement of his abdomen, which continued steadily to increase until his admission to the hospital. At that time he was considerably emaciated; his lips pale and thin; his pulse small, tense, and about 100 per minute; skin dry and natural in temperature; appetite variable; bowels inactive; urine very scanty, but destitute of albumen; and his abdomen so much distended with fluid as to impede the descent of the diaphragm, rendering respiration short, and producing much uneasiness from mechanical pressure. No œdema of the extremities, or of any part of the cellular tissue. No solid tumor can be felt in any part of the distended abdomen; but the accumulation of fluid in the peritoneal cavity is so great as to render it difficult to define the lower boundaries of the liver and spleen.

By careful percussion, however, a line of tympanitic or intestinal resonance is found to extend transversely across the right hypochondriac and epigastric regions, quite under the margin of the ribs. This shows that the transverse colon is crowded upward by the fluid in the peritoneal

cavity, and occupies the place usually rendered dull by the lower margin of the liver, when of its natural size. This renders it very probable that the liver, instead of being enlarged, is contracted, or in a state of cirrhosis. Following the line of the colon to the left side, it becomes more obscure and deflected downward, as if crowded in that direction by some pressure from above. This fact, together with uniform dullness, and general fullness of the left hypochondriac region, leaves but little doubt that the spleen is moderately enlarged. The results of a careful physical examination, compared with the history of the case, leads us confidently to diagnosticate the case as one of well developed *cirrhosis* of the liver, coincidentally with moderate enlargement of the spleen.

The contracted condition of the liver, greatly interfering with the circulation through the hepatic branches of the vena porta is, doubtless, the immediate cause of the dropsical effusion. Hence, as in Case II., it takes the forms of circumscribed dropsy, limited to the abdominal cavity, and is not influenced by change of position on the part of the patient, or by gravitation. Finding remedial agents to exert very little influence over the progress of this case, and the patient suffering much from mechanical distention of the abdomen, he was tapped by Prof. Andrews, the attending surgeon of the hospital, and about three and a half gallons of limpid serum drawn off. In about three weeks the effused fluid had re-accumulated to such an extent that tapping was again resorted to, and between three and four gallons of fluid again discharged. At about the same intervals a third and a fourth tapping became necessary. Of course, so rapid and copious a drain of serous fluid from the blood has produced rapid exhaustion of the patient.*

* About one week subsequently symptoms of a low grade of peritoneal inflammation supervened, and the patient died in a few days. Twenty-four hours after death a

To illustrate the third class of cases of dropsy, which arise from alterations in the proportion of the constituents of the blood, we shall now bring to your attention two cases from the adjoining ward. Mr. M., a native of Ireland, was admitted into the hospital three months since. He is naturally a large, muscular man, accustomed to physical labor. He states that his health and strength have been failing several months, accompanied by indigestion, constipation, mental despondency, dull pains in the loins, and weakness of the lower extremities. He has been somewhat addicted to the use of alcoholic drinks. About three weeks before he came to the hospital, he began to exhibit a bloated aspect generally; but the swelling was most marked in the feet and legs, after being up through the day. This swelling, or general œdema, rapidly increased, until he was obliged to take to his bed. On admission to the hospital his skin was dark, approaching a bronzed hue; surface cool; pulse small, and 95 per minute; mental faculties, apparently, dull; bowels costive; and the whole exterior surface much bloated from œdematous infiltration; but the swelling is much more marked in the parts most dependent.

This is illustrated, not only by the position of the extremities, but the left side of the trunk of the body, on

post mortem examination was made. On opening the abdomen, about two gallons of turbid serum escaped. The whole surface of the peritoneum, both that lining the abdominal walls and covering the intestines, was minutely injected, of a dark red color, and covered in patches with a white and partially organized membranous exudation, which possessed so little tenacity, however, that it is hardly proper to say it constituted a bond of adhesion. The spleen was found nearly double its natural size and weight, color nearly natural, and texture firm. The liver was found firmly adherent, at several points, to the ribs and parts surrounding it, as the result of former inflammation. Its color was a shade lighter than natural, and its size diminished nearly one-half. Its entire surface presented a knotted or lobulated appearance; and, on section through the central portion of the right lobe, the contraction of the lobules, and the "hob-nail" appearance was strongly exhibited. The texture of the organ was firm, and the gall-bladder moderately filled with bile. All other important organs were in a healthy condition.

which he has been lying several hours, will pit, on the application of pressure, to the depth of half an inch; while, on the opposite side, the pitting is comparatively slight. There is also a small amount of effusion into the cavity of the abdomen, but none in the chest. The amount of urine secreted is much less than natural, but contains so much albumen, that, on the application of heat, or nitric acid, the white flocculent precipitate renders the whole mass thick in the test-tube. The past history of this case, the present symptoms, and the condition of the urine, render it quite certain that the patient has granular disease, or degeneration of the kidneys, frequently called "Bright's disease." In such cases as this, the large amount of albumen constantly being excreted through the kidneys, soon reduces the relative proportion of albumen in the whole mass of the blood, thereby rendering it much less viscid than natural. When this process of lessening the viscosity of the blood is carried beyond a given point, the relation between it and the capillary vessels is so changed that the physical law of exosmose predominates, and effusion or infiltration of the watery element of the blood necessarily takes place. If, at the same time that the albumen is escaping through the kidneys, the amount of water eliminated through both the kidneys and cutaneous surface is greatly diminished below the natural standard, the relative proportion of the constituents of the blood is so rapidly altered that dropsical symptoms may be developed in twenty-four or thirty-six hours; as we see following sudden congestions of the secreting structure of the kidneys from exposure to cold and wet, and during the convalescence from eruptive fevers. But the viscosity or density of the blood may be as much diminished by a loss of red corpuscles as by the escape of albumen. Hence, excessive hæmorrhages, suppressed menstruation, diseases of the spleen, and the influence of malaria, are all capable

of so far diminishing the proportion of red corpuscles as to develop general dropsical effusions.

This next patient came into the hospital several days ago, presenting the appearance of general dropsy, with great dyspnœa, and swelling of the lower extremities.

It seemed that he had had several attacks of bronchial irritation, and asthmatic constriction of the bronchial tubes, with congestion of the capillaries of the tubes, and irritation of the pneumogastric nerve, causing great difficulty of breathing, imperfect æration of the blood, tightness of the chest, and more or less harsh, suffocating cough. With this condition of the bronchial tubes, he had decided pain in the left side of the chest; lips blue; face bloated; legs and feet very much swollen; and a general infiltration of the tissues; scrotum swollen, full, and affected with an eczematous eruption, accompanied with a burning, smarting, tormenting sensation; dullness over a larger space than normal in the cardiac region; and abdomen distended from the effusion.

On application of the stethoscope, we find that the heart sounds are distant and obscure, with hardly distinguishable impulse; and we are unable to make any distinction between the first and second sounds, the motion being tremulous and rapid. This, with excessive dullness, indicates pericardial effusion.

The first impression would be that we had albuminuria or organic disease of the kidney, giving rise to impoverishment of the blood, inducing dropsical effusion into the cavity of the pleura, pericardium, etc., which frequently supervenes during the progress of albuminuria; but upon examination of the urine this can not be detected.

Not being able to account for the effusion in this way, we might expect to find some enlargement and obstruction to the circulation in the abdominal viscera, as enlargement of the liver in persons who drink habitually, or the forma-

tion of fatty deposit in the liver, or in the muscular structure of the heart, which would give rise to dropsical effusion; and, in such a case, the abdomen would become greatly distended, and it would be some time before it pervades the extremities; the same is true of the spleen. If the liver was enlarged we could easily bring the fingers in contact with the enlarged organ, just below the margin of the ribs; and the same in regard to the spleen; also, by percussion.

In this case, instead of dullness below the margin of the ribs, this is the most resonant part of the abdomen, probably owing to the fact that the colon is distended with gas, in which case, however, if the organ above was distended, it would be crowded down, or overlapped, and we should get dullness on percussion; if from the spleen, the dull region would describe a curve on the left side.

If not albuminuria, enlargement of these organs, etc., how shall we account for the symptoms?

If true that it began with an attack of capillary bronchitis, in conjunction with pericardial irritation, continued so as to retard decarbonization of the blood, with sufficient pericardial effusion to embarrass the heart's action, combining to induce impairment of the vaso-motor nervous system, this might give rise to a loss of tone and relaxation of the capillaries, allowing a slow circulation of the blood through them, and exosmosis from a want of impulse, and reaction under the influence of the vaso-motor system of nerves upon the muscular fibres of the arterial system. The blood does not get more than one-half the normal amount of oxygen, and this condition acts as a sedative narcotic on the whole capillary system.

As I cannot determine the existence of any disease in the viscera of the abdomen that would account for this condition — though it is not usual to get dropsy so rapidly from obstruction in the air-passages, etc.—yet, from the weak

character of the pulse, blue lip, and general relaxation, as manifested by the effusion, I should be led to conclude that such was the case in the present instance.

There was, in the beginning, a stage that would admit of active antiphlogistic treatment, when, I have no doubt, a sedative and alterative treatment would have arrested its progress; but the time for arterial sedatives has passed away; we now have feeble capillary circulation, and a weak, tumultuous action of the heart.

The object in the treatment should be to give more force to the heart's contractions, reducing the frequency at the same time, and to produce efficient action of the kidneys, to carry off the water and prevent further effusion.

To accomplish this we rely upon digitalis and scutellaria to control the force and frequency of the heart's action; while the influence of the digitalis on the kidneys makes it very applicable in this case.

We shall, therefore, direct the following mixture:

℞.—Ext. scutellariæ fl.	℥ ijss.
Tinct. digitalis.....	℥ i.
Tinct. hyoscyami.....	℥ ss.
Potass. nitratis	℥ iij.

M. One teaspoonful to be taken every three hours.

For a further alterative influence we may direct, in addition, a powder consisting of pulv. Doveri, six grains; hydrarg. chlor. mite., one grain, to be given every night. We doubt, however, if the chloride had better be continued more than three or four nights.

If at any time the bowels should become so loose as to weaken the patient, the frequency of the liquid mixture should be reduced to once in four hours, and alternate with it a teaspoonful of the ordinary turpentine and laudanum emulsion.

Will also have a blister applied over the chest, followed by poultice.*

Thus far we have directed attention to the essential pathological conditions producing dropsy, either by obstructing the natural flow of the blood, or by changing the relative proportion of its constituents; but in a therapeutic aspect, it is almost equally important that we appreciate correctly the condition of the vital properties of the textures. Diminution of vital affinity—that property by which the organic atoms of the various tissues are held in proper proximity and relationship with each other—necessarily diminishes the tonicity and contractility of all the muscular, vascular, and secretory structures, and hence not only retards secretion, and capillary action, but directly favors permeation of tissues, or dropsical effusions. The presence of this pathological condition of the solids, in many cases of dropsy, led the older writers to divide all dropsical affections into two classes, viz.: sthenic and asthenic, or active and passive; and though subsequent pathological investigations have rendered the ancient classification obsolete, they have by no means diminished the necessity of appreciating the general condition of the vital properties as carefully as the mere local lesions, if we would direct the treatment with the highest degree of success. This was well illustrated in the treatment of the second case, already related. The dropsical effusions being regarded as dependent on the enlargements of the liver and spleen, coupled with considerable impoverishment of the blood, she was treated, for three

* Under the above course of treatment the dropsical effusion and difficult breathing were rapidly relieved; and on the third day the pulse became slower and more distinct; and on the fifth day it was so slow that the digitalis had to be diminished by lengthening the interval from once in three hours to every six hours; cough easier, but dry, so that we gave the muriate ammonia between the other. Makes water quite freely; breathing tolerably fair, but still indicative of bronchial tightness; and the heart's action, while slow, is irregular; impulse still deficient and hardly distinguishable.

weeks, by mercurial alteratives, iodine preparations, diuretics and quinia, with very little benefit; indeed, these remedies entirely failed, either to increase the secretion of the skin and kidneys, or to materially reduce the visceral enlargements. Suspecting the difficulty to arise from want of tonicity, or, more properly, vital affinity and contractility in the capillary and secretory structures, we directed her to be put upon the use of strychnia and citrate of iron, in doses of one-sixteenth of a grain of the first, with three grains of the last, four times a day. Very little change was observable during the first three or four days; but by the middle of the second week after commencing this treatment, it was found that the patient was urinating freely; the dropsical appearances were much diminished; and her strength improved. The same treatment was continued; and in four weeks the patient had entirely recovered, there remaining neither dropsical effusions nor visceral enlargements.

The important practical inferences to be drawn from the foregoing cases and observations are: First, that dropsy is, in a pathological sense, not a disease, but a symptom directly dependent on either inflammation, mechanical obstruction of blood-vessels, or altered composition of the blood; second, that these pathological conditions may arise from a great variety of primary pathological changes, both local and general; third, that all rational treatment of dropsical symptoms must depend on a clear appreciation of the primary pathological changes from which they have originated, compared with the general condition of the vital properties or forces.

LECTURE XIII.

CASES OF CARDIAC DISEASE. — DIABETES MELLITUS. — ANÆMIA
AND ANASARCA. — BILIARY CALCULI.

Gentlemen :—The patient who presents himself before you is a native of Ireland, aged about thirty-five years; a blacksmith by trade; and possessed of a well-developed physical frame. You observe that his breathing is short and hurried, much like one who has been running; his face and lips rather pale, and slightly bloated; his tongue covered with a whitish fur; his skin above the natural temperature, and dry; his pulse moderately full, hard, and 100 per minute; and he complains of a great sense of fullness or oppression in the chest, with a pretty severe, dull pain in the cardiac region, increased to a sharp or acute quality on taking a full breath, or coughing. He has severe paroxysms of coughing, and is unable to lie down in a horizontal position without producing a great sense of suffocation, and is consequently obliged to spend his nights with the body in an erect or semi-erect position.

The pain in the cardiac region, accompanied by some fever, commenced about two weeks since, and very soon after an injudicious exposure to wet and cold. These general symp-

toms, and especially the pain in the region of the heart, coupled with the disturbance of circulation and respiration, would lead us to suspect the existence of cardiac inflammation. To determine this with certainty, we must make a physical exploration of the chest, by means of auscultation and percussion. On removing the covering from the left side of the chest, and placing the hand over the cardiac region, the impulse of the heart was found much stronger than natural, and percussion showed that it occupied a larger space. Application of the stethoscope over the cartilages of the ribs covering the right side of the heart, revealed a well-marked friction, or rubbing sound, with each systole of the ventricles, and also a rough bellows murmur. On moving the stethoscope a little upwards, and to the left, so as to rest over the base of the heart, the bellows murmur became more plain, very rough and prolonged, so as to completely suppress the short, second sound. The signs thus elicited clearly indicate, not only the existence of cardiac disease, but its existence in a severe and complicated form. The friction sound indicates a recent and still existing inflammation of the pericardium, with more or less plastic effusion upon the surface of the membrane; while the rough and prolonged qualities of the bellows murmur, the dullness over a larger space than natural, with a strong and sustained impulse, certainly indicate considerable hypertrophy of the ventricles, with disease of the semi-lunar valves. From the loud and harsh qualities of the murmur, and the hypertrophy, it is evident that the disease of the valves has been existing a considerable time previous to the date of the patient's present illness.

He now explains this by informing me that he had a severe attack of rheumatism, accompanied by pain in his left breast, two years since, and that he has been seriously troubled with shortness of breath, and heavy, irregular beat-

ing of the heart, especially on taking exercise, from that time to the present.

From all these facts we infer that the patient was attacked with rheumatic endocarditis two years since, which resulted in thickening of the semi-lunar valves, and the consequent gradual development of hypertrophy of the muscular structure of the ventricles; while the injudicious exposure to wet and cold, two weeks since, caused the supervention of a sub-acute pericarditis, which still exists. Placing the patient in an easy position, each member of the class may take the stethoscope and listen to all the morbid sounds that the case presents.

The prognosis in recent attacks of inflammation of the heart, whether endocardial or pericardial, may be regarded as favorable. And so far as the pericardial disease is concerned in this case, we think it can be removed in a few days by appropriate treatment; though, as sometimes happens, the effusion of plastic lymph may cause adhesion of greater or less extent between the surfaces of the inflamed membrane. I have observed two cases, in which such adhesions existed so extensively as to unite the pericardium closely and firmly to the whole exterior surface of the heart, thereby completely obliterating the pericardial sac.

One of these was a recent case, and, in addition to the adhesions, there was present intense redness, and all the marks of acute inflammation, in all the structures of the heart. The other case had been one of long standing, and the adhesions were so firm that it was with difficulty that the pericardium could be torn from the surface of the heart. If we are right in the supposition that this patient was attacked with endocarditis two years since, and that the thickened condition of the valves which now give rise to the harsh bellows murmur to which you have listened, is the result of that inflammation, it is quite certain that such thickening,

and the hypertrophy consequent upon it, have become too permanent to admit of removal by any remedial agents known to the profession. On the contrary, the continuance of the valvular obstruction will cause a gradual increase of the hypertrophy, until at length the patient becomes wholly unable to exercise, dropsical effusions supervene, and life is cut short.

The first object to be accomplished in the treatment of this patient, is to remove the recent inflammation of the pericardial membrane. This must be done by a prompt and judicious use of sedatives, alteratives, and counter-irritants. Had the patient come under our care during the first two or three days after the commencement of the present attack, we might have deemed it necessary to have taken at least one free bleeding from the arm. But two weeks having now elapsed, and the patient feeling already debilitated, we do not deem venesection necessary. Consequently, we shall endeavor to control the circulation by the following, viz. :

℞.—Æther nit.	}	aa.	℥ ii.
Tinct. opii et camph.			
Tinct. verat. viridis.....				℥ i.

M. Give a teaspoonful every four hours, diluted with water.

To change rapidly the tendency to plastic effusion, and consequent adhesions, and destroy the inflammatory process, we shall also direct one of the following powders to be taken between each of the doses of the sedative mixture, viz. :

℞.—Hydrarg. chlor. mit.	grs. xv.
Pulv. opii.....	grs. xii.
Potass. nitratis	grs. xl.

M. Fiant pulveres vi.

By giving the opium in full doses, we shall not only relieve the pain and restlessness of the patient, but we shall overcome that important element in all inflammations

which we call irritability, or, more properly, an exaltation of the susceptibility of the inflamed structure, and thereby aid much in destroying the inflammatory process.

We shall continue these remedies until the hydrarg. produces a slight effect on the gums, and then interpose a cathartic.

After the bowels have been freely moved, the previous remedies may be resumed, with the calomel omitted; and a blister may be placed over the cardiac region.

It is probable that, under the influence of these remedies, the present pericardial inflammation will be removed in from four to six days; but the valvular obstruction and hypertrophy, with some general debility, will remain. If so, all active treatment by medication may be discontinued. The patient must be instructed to wear flannel next the skin; avoid sudden atmospheric changes; make his exercise, mental and physical, as quiet as possible; avoid the use of stimulants, and highly seasoned articles of food.

In addition to these hygienic regulations, the increase of hypertrophy may be retarded by a judicious use of the milder sedatives, such as digitalis, gelseminum, and acetate of lead.

This patient presents another phase of cardiac disease. Upon auscultation, we have no difficulty in locating the disease in the heart; but when we go back of that, and try to ascertain what particular valves are involved, it is not so easy. You will observe the patient is in a sitting posture, which seems to be his most comfortable position. The flush on the face and hands is not due to fever, as there is no perceptible increase of heat of the surface; but it is due to capillary congestion, and is sometimes of a purplish hue. If the patient were to go down stairs and return, or take any active exercise, the flush would become decidedly more venous, as well as the respiration more

labored and oppressed. There will be noticed, above the clavicles, slight pulsation in the jugulars, which is also much increased on exercise.

You could not, under any circumstances, have a patient in a more favorable condition to distinguish the exact condition of the heart's action, as he has been taking arterial sedatives for several days, and is now sufficiently under the influence of the medicine to render the sounds very distinct. A little below and to the left of the nipple, upon the application of the stethoscope, you will get a double murmur—one harsh, rasping, and loud; the other softer and shorter. The first is synchronous with the systole, and the second with the diastole. The first is heard over the whole cardiac space; the second only over the left side. This shows that the principal difficulty is in the auriculo-ventricular opening of the left side—the location of the mitral valves.

You hear the rasping sound all about the region of the heart; but, move which way you will, when you return a little to the left, and below the nipple, you hear it the loudest. The second sound you hear is due to slight regurgitation. Over the rest of the heart you get only one sound, occupying the entire time of both sounds of the heart. The hypertrophy in this case is well marked. When the patient was not under the effects of medicine, there was regurgitation on the right side, giving a strong pulsation in the epigastric region, through the ascending vena cava, and also the descending vena cava to the jugulars.

When I first examined the patient, there seemed to be a well-marked aneurismal tumor in the epigastric region, which was quite tender to the touch. This tumor was present two days ago, when I called the attention of the other division of the class to it; but I see it is absent to-day.

This man's heart is, probably, in the same condition as that of the man who died several weeks since, and whose

heart I exhibited to you, viz.: a dilatation of the right ventricle; contraction of the mitral opening, with thick, roughened edges, preventing a complete closure during the systole of the ventricles; and a general hypertrophy of the muscular structure.

When the patient is disturbed, the tricuspid valve is insufficient to close the auriculo-ventricular opening of the right side, because it is enlarged by the dilatation of the right ventricle. The apparent pulsating tumor in the right side of the epigastrium was, probably, caused by overfullness of the vena porta, from regurgitation through the auriculo-ventricular opening of the right side into the ascending vena cava.

If you notice the feet and ankles, they will be found quite œdematous—a condition which is present in most cases of cardiac disease, in the advanced stage. If the pathological conditions of the patient have been described correctly, the prognosis is unfavorable. To render the action of the heart slower and more uniform, constitute the principal objects of treatment. Just in proportion as this can be accomplished, will the patient be rendered more comfortable, and his life be prolonged. By rendering the action of the heart slower and more uniform, more time will be allowed, after each systole, for the blood to pass through the narrowed mitral opening from the left auricle; and hence the pulmonary circulation will be less obstructed, and the equilibrium between the fullness of the right and left cavities of the heart be better maintained.

To fulfill the indications just stated, the patient is taking one fluid drachm of the following prescription, before each meal, and at bed-time :

R.	—Ext. scutellariæ fl.	℥ iij.
M.	Ext. digital. fl.	℥ i.

Also, five grains of bismuth sub-nit., half an hour after each meal.

When the patient commenced the use of the scutellaria and digitalis, four days since, his pulse was 110 per minute, and irregular, with dyspnœa, epigastric distress, cool and purplish-colored extremities, and strong pulsation in the jugular and subclavian veins.

Now, his pulse is only 60 per minute, and regular, with a decided improvement in all his symptoms. His diet has been plain and nutritious. The same treatment will be continued, with careful attention, to prevent any excess in the action of the digitalis.

This next patient, a native of Ireland, aged forty years, has been affected with symptoms of diabetes about one year. Shortly previous to the appearance of these symptoms, he had two attacks of throwing-up blood to the extent of one pint, or more, at a time. Whether the blood came from the lungs or stomach is not very easily determined by the account given by the patient. He also suffered at the same time from loss of appetite and indigestion. The evacuations from the bowels have generally been regular once or twice a day.

During the last two or three months, his appetite has been good, thirst excessive, and yet he has steadily declined in flesh and strength, is morbidly sensitive to atmospheric changes, and voids from one to two gallons of urine per day. At present the patient's skin is harsh, rough, and dry, especially on the hands and neck; his pulse is soft, weak, and a little increased in frequency; moderately emaciated; muscular weakness; and mentally despondent. The taste of the urine at present is sweet, and its odor characteristic. It readily enters into fermentation by the yeast test. Trommer's, and other tests, might be applied, but the foregoing,

in connection with the general symptoms, are sufficient to render the diagnosis certain in this case.

The early symptoms of diabetes are generally obscure, and the disease is often associated with tuberculosis. The digestive function is generally impaired; for, though the appetite may be good, or even voracious, yet digestion is slow, and accompanied by fullness, eructations, and mental depression. The bowels are inactive, the skin dry, and a gradually increasing thirst. As the disease progresses, the dry and harsh condition of the skin, and the loss of flesh and strength, become more manifest, and the patient often complains of weariness and some pains in the back, and, sometimes, sharp neuralgic pains in different parts of his system. The existence of these symptoms, and especially the steady loss of flesh and strength, while the patient is eating and drinking, as well as urinating more than natural, should always cause us to suspect the existence of diabetes. And if, with these symptoms, the application of the proper tests shows the presence of sugar, the diagnosis is rendered certain. A mere excessive secretion of urine, however, is not sufficient to indicate saccharine diabetes. In certain paroxysms of nervous excitement, the kidneys will secrete double or triple the natural quantity of urine in a given time; but, in such cases, the urine is limpid, like spring water, and of low specific gravity; while in diabetes mellitus the specific gravity is high. In the case before us, the specific gravity of the urine, when the man first came under treatment, was 1040.

In albuminuria the urine is generally of high specific gravity, but the *quantity* is usually small, and the skin and countenance of the patient is pale and bloated, instead of corrugated and shrunken.

The tendency of diabetes, when left to itself, is to steadily increase until the patient becomes fatally exhausted; but

its progress is generally slow. In many cases, the symptoms are improved during the warm months of summer, and become aggravated by the cold and damp of autumn and winter. An atmosphere that relaxes the skin and increases the activity of its function, seems to lessen the activity of the kidneys, and thereby ameliorates the condition of the patient.

The pathology of the disease is still involved in obscurity. It was long since ascertained that the excessive quantity and saccharine quality of the urine did not depend on any specific or characteristic lesion of the kidneys. These organs appear to be only the outlet for an excessive quantity of glucose or saccharine matter, that finds its way into the blood from some other source; but from what other source is not yet fully determined. The experiments of Bernard and of Drs. A. Flint, senior and junior, seemed to establish the fact that the liver was an active sugar-producing organ, and hence it became probable that derangement of the functions of this organ constituted the true source of the diabetes. But still later experiments have, at least, rendered it doubtful whether the sugar detected in the liver is not from *post mortem* changes.

It has long been known that somewhere in the processes of digestion and assimilation, the starch and gum taken as food become converted into sugar; and, in health, the sugar is further converted into lactic acid and other products. But in diabetes this further change fails to take place, and the sugar remains in excess in the blood, stimulating the kidneys to excessive action, and consequently maintaining a constant drain upon the whole system.

The indications for the treatment of diabetes are, first, to exclude, as far as possible, all elements of food capable of being converted into sugar in the process of digestion; second, to so alter the processes of digestion and assimi-

tion as to complete the conversion of the saccharine products of digestion into lactic acid, or such other constituents as are capable of being appropriated to the tissues, or excreted without disturbing the function of the kidneys. To accomplish this purpose, there is probably no more efficient method than to keep the patient steadily on the use of skimmed milk, buttermilk, or milk-whey, bran bread, and lean meat. For fresh vegetables, onions and cabbages may be allowed, as they contain but little starch or sugar. As an occasional change, a porridge, made of roasted or scorched corn-meal, may be allowed. In addition to the regulation of diet, I have found much advantage in the use of a teaspoonful of the liquid rennet, immediately after each meal. In some instances, a pill containing pulv. opii, one-half of a grain, and cupri sulph., one-sixth of a grain, to be taken before breakfast and dinner, will also help to lessen the quantity of urine.

The wearing of flannel next the skin, and a warm bath two or three times a week, are also valuable aids. Diabetes is a very obstinate, and often incurable disease; yet I have seen a few cases cured by a persevering use of the foregoing means.

We have here a case of marked anæmia and anasarca, resembling, in many of its features, those described as leucocythæmia. The patient was admitted to the hospital three days since, presenting the following conditions: A bloodless hue of the surface; a considerable degree of œdema in the extremities; and general weakness. From the fact that this condition had remained for several weeks without improvement, and the secretion of urine being diminished, albuminuria was suggested. The urine was tested by heat and nitric acid, but no trace of albumen was developed, which would indicate that there was no granular disease of the kidneys.

The patient also complained of a tightness across the chest, and some cough, but was not examined for pulmonary or cardiac disease at the time.

On auscultation, we find in each full inspiration, coarse, rough, bronchial sounds; over the cardiac region we can distinguish no valvular roughness or murmur, but the sounds are short, quick, and distant. The systole is shorter than natural, yet distinct and clearly perceived; apex impulse absent.

On percussion, no marked dullness on either side, till we reach the cardiac space on the left side. Here dullness begins pretty high up, and extends to the bottom of the chest; and over the region of the spleen there is nearly double the normal extent of dullness. The intercostal spaces are well filled out, and both hypochondriac regions full. There is probably some pericardial effusion; but we may attribute most of the enlargement on this side to the spleen. On the right side, also, there is dullness over a little greater than the normal vertical depth, showing that there is probably moderate enlargement of the liver.

A combination of causes has apparently contributed to the development of a degree of fatty degeneration in the liver and spleen, and there may also be, to some extent, the same change in the structure of the heart, a slow change in the nutrition of these organs diminishing their ability to contribute their proper influence in the process of assimilation, which would account for his gradually assuming this anæmic condition.

There is not that degree of enlargement in the parts referred to which would produce effusion from obstruction to the portal circulation, in which case abdominal dropsy would precede general œdema.

The bronchial sounds are a part of an old, simple bronchial irritation, which many persons are subject to during the

cold season, but which involves no structural change, and is a minor matter.

On admission, observing the quick, agitated movements of the heart, oppression in the chest, and scanty urine, he was directed to have a combination of digitalis and scutellaria, as follows :

℞.—Ext. scutellariæ fl. ----- $\frac{z}{3}$ iij.
Tinct. digitalis ----- $\frac{z}{3}$ i.

M. One teaspoonful of this to be given four times a day.

To increase the amount of urine, and give steadiness and force to the heart's action, I would advise a continuation of the same; but for a further influence on the assimilative function, he should have, in addition, some tonic and alterative. A good addition would be—

℞.—Bismuthi sub-nit.----- grs. vi.
Lupulinæ----- grs. ii.
Ferri sub-carb. ----- grs. iv.

M. To be taken half an hour after each meal.

He should have a simple, easily assimilated diet.

Before dispersing for to-day, gentlemen, we would call your attention, briefly, to this patient, a female, aged fifty-five years, who has been suffering from biliary calculi.

She was attacked on the 21st of August last with violent pain in the epigastrium, near the lower margin of the ribs, and over the region of the gall-bladder. There was a quickening of the pulse, but no fever. The extremities soon became cool; the pulse quick, but small and weak; and acute tenderness was manifested over the course of the hepatic ducts. I feared a supervention of peritoneal inflammation; but expected that the severity of the pain would abate after a few hours. Chloral hydrate was ordered to be given, in large doses, together with some morphia;

also active narcotic fomentations were applied over the abdomen.

None of these measures, however, were successful in overcoming the pain. Two or three evacuations occurred, which were thin, and intermixed with mucus, but not of the clay-color, which would indicate a retention of the bile. The acute pain was overcome by keeping the patient stupefied with chloral hydrate; but for a week she remained in a critical condition. She then began to improve. The tenderness over the abdomen remained, however, with a slight tendency to diarrhœa, but hardly any evidence of jaundice.

On the 19th of September the patient was again attacked with the same symptoms, more violently than before. The warm fomentations were renewed, and chloral promptly given. She was also placed in a warm bath, and remained there until symptoms of faintness began to be manifested. On the second day a moderate laxative was given; and on examining the evacuations, the calculi here exhibited were obtained. There are thirteen of them, varying from two-tenths to four-tenths of an inch in diameter. They are of rather irregular outline, and many of them, having been apparently worn off at the corners, display very nicely the concentric layers of which they are composed.

Since the passage of these, the patient has begun rapidly to recover; but now, at the end of a week, there still remains some slight feeling of discomfort, nausea, etc., and the bowels continue irritable, but there are no signs of active inflammation. With a view of preventing the further formation of calculi, she has been taking six drops of nitric acid, well diluted with water, three times a day. This, however seems to irritate the bowels, and we shall therefore substitute liquor potassa, in doses of ten drops, at first, and gradually increasing to fifteen drops. To improve the condition of

the bowels, she may also have some powders consisting of bismuth sub-nit., six grains, and lupuline, one grain.*

Another somewhat similar case occurred in my practice some six or seven years ago. A Jewish lady had been subject to repeated attacks of severe pain, etc. Being called in the midst of one of the paroxysms, I was satisfied, from the character and situation of the pains, and from the marked jaundice, that it was a case of biliary calculi. The nitric acid was ordered for her, six drops to be taken at each meal-time, and continued for several weeks. She had one subsequent attack, a short time after commencing treatment, but has had none since.

I can recollect three other cases, where the re-formation of calculi has been entirely prevented. In two of the cases an opposite course of treatment was tried, an alkali, liquor potassa, being given instead of the acid.

Our aim in the treatment of these cases should be, first, to relieve temporarily the pain, by narcotics, warm fomentations, etc.; and, secondly, to so change the constitution of the bile as to prevent the future formation of new calculi. Their formation is probably caused by an excess of cholesterine in the bile, which becomes crystalized. The calculi formed are sometimes so large as never to pass through the ducts; but being retained, and blocking up the ducts, they produce permanent derangement, congestion, atrophy, jaundice, etc.

The treatment by either acids or alkalies seems to accomplish the desired change in the constitution of the bile.

* The patient soon afterwards went East on a visit, but had three repetitions of the attacks during her absence; a number of calculi being passed on each occasion, amounting to about sixty in all. Since her return home, however, during the past few weeks, she has remained perfectly well.

LECTURE XIV.

NEURALGIA.—AN OBSCURE CASE.—SCIATICA.—NEURALGIA OF
THE RECTUM.

The patient before you, gentlemen, is a fair representative of a class of cases, which, from their persistence, often tax the resources of the practitioner to the fullest extent. He states that, three years since, he was attacked with pain in the left hip, principally in the course of the sciatic nerve, though extending, at times, through to the groin, and a partial loss of motion in the limb. After a few weeks, the pain ceased, and he recovered nearly the perfect use of the limb. During the subsequent two years, he suffered occasional attacks of pain in the same parts, and the muscles of the left leg became weaker than those of the right. During the last year, he has been afflicted with neuralgic pains and morbid sensations almost every day, but extremely variable, both in their location and severity. The pains are more severe in the hips, and lumbar portion of the spine, than elsewhere; but they frequently change from one to the other, and to the shoulders, arms, legs, especially the heels, the neck, head, and face. In the head, face, and gums, the sensation is described as more of a burning and dryness than acute pain. These morbid sensations, whether of heat, dryness, or acute

pain, are extremely changeable, both in their location and severity. They appear to be influenced some by atmospheric conditions, but not in a marked or uniform manner. There is no positive paralysis of either sensation or motion, although the muscles of the left leg are weaker, and a little more attenuated, than those of the right. His appetite and digestion are good, his bowels regular, and his urine apparently natural in quantity and color. His countenance does not exhibit the physiognomy, or expression, of severe organic suffering, and his blood and tissues appear to be fairly nourished. I find no marks of disease in his fauces, or on his skin; but the Schneiderian membrane throughout his nostrils is thickened, redder than natural, and his nostrils constantly becoming filled with dry, hard, and black crusts. This condition of the nostrils, he says, has existed since his early boyhood, he being now over twenty years of age. He denies all knowledge of having had any form of syphilitic disease; but of his parents or ancestors I have learned nothing. Such is, briefly, the history of the case before you.

If the suffering of the patient is such as he describes, it is evident that the case must be classed among the neuralgias. To class it thus, however, does not explain its nature, or the essential pathological conditions on which the pains and morbid sensations depend. To aid in arriving at some definite conclusions in reference to this, we may state that all cases of neuralgia may be arranged, pathologically, into three groups:

First — Such as arise from disease, or injury, directly involving the trunk of one or more nerves.

Second — Such as arise from disease of some portion of the nervous centers.

Third — Such as are caused by morbid conditions of the blood.

In those cases belonging to the first variety, the pain is necessarily limited to the single nerve involved, and its branches, as we see in sciatica, tic-douloureux, etc.

In the second class of cases, where the seat of disease is in some part of the cerebral or cerebro-spinal centers, causing neuralgic pains in distant parts, such pains seldom follow the track of any one nerve; but they affect a particular locality or section, such as the forearm, the leg, the foot, the side, etc.

In the third class of cases, the pains are limited to no one nerve or part, but affect many nerves, and usually change with rapidity from one nerve, or set of nerves, to another, as illustrated in the history of the case now before you.

The morbid conditions of the blood, capable of causing neuralgia, may be either toxemic or spanemic. That is, poisoned by the presence of some virus, imbibed from without, or some effete or excrementitious matter, such as urea, the *materies morbi* of gout, etc.; or such an impoverishment of the blood, in relation to its corpuscles and nutritive constituents, as renders it incapable of affording the elements for healthy nutrition of the nervous structures. Those blood-poisons which, by their immediate or remote effects, are most apt to so modify the sensibility of the nerve-structures as to cause persistent and distressing neuralgia, are the syphilitic, the gouty, the uremic, and the koino-malarial.

The effects of these poisons on the properties of the several tissues, are not limited to the individuals primarily affected, but may be transmitted, more or less distinctly, to their offspring. This is particularly true in reference to gout and syphilis. Some of the most distressing and obstinate neuralgic affections of the heart, stomach, and extremities, accompany the hereditary diatheses transmitted by gouty parents. I knew a lady, in this city, who was subject to

sudden attacks of the most excruciating neuralgic pain, in the great toe of one foot. It was accompanied by no swelling, or redness, or other traces of inflammation. Her father had suffered many years from gout. It is, doubtless, true that a large proportion of the cases of neuralgia, arising from the syphilitic poison, are caused by a low grade of specific inflammation, either in the neuralema or in the periosteum lining the bony canals, or orifices, through which the affected nerves pass; but there are some cases that cannot be attributed to either of these pathological conditions, but, from their changeable character, are evidently dependent on some morbid condition of the blood, and nerve-sensibility generally. Although the patient before you admits of no known syphilitic influence upon his own person, yet the exceedingly erratic character of his neuralgic pains—the burning dryness of which he complains—in his head, face, and neck, in connection with the condition of the Schneiderian membrane of his nostrils, renders it quite probable that his condition is the result of hereditary syphilitic influence. The bridge of the nose is broad, and looks a little swollen; and, in examining the nostrils, the Schneiderian membrane throughout appears rough, thickened, and constantly secreting a morbid product, that dries into hard, black crusts.

That a certain degree of syphilitic influence is capable of being propagated to a very remote degree, we have abundant clinical evidence. Hence, we meet with it sometimes under circumstances where it would be least expected. It is not many months since I saw a lady—the mother of a family of children grown to maturity—who was laboring under such symptoms as had led her physician to confidently believe she had serous effusion into the ventricles of the brain. On placing my hand on her head, I discovered the existence of no less than three well-marked pericranial nodes; and all her symptoms of cerebral oppression dis-

appeared under the subsequent use of iodide of potassa and conium.

During the last year, a gentleman, over seventy years of age, was brought here from a neighboring city, where he had led an active business life, and enjoyed a high social position. Several months previously, he had been attacked with what was regarded as apoplexy, or, at least, dangerous congestion of the brain. He was treated actively by men of high standing in the profession, and the first severe symptoms of oppression and stupor were relieved. But he remained with partial paralysis of one arm and leg; severe pains in his head and extremities; impaired memory; frequent mental hallucinations; and almost entire sleeplessness at night. I was told that his case was regarded by his medical attendants as softening of the brain, and mostly beyond the reach of remedial agents. His head being partially bald, I thought one parietal region was more prominent than the other; and, on careful examination, a periosteal thickening, with some tenderness, was found to extend nearly the whole length of one parietal bone. The patient had noticed this prominence from the commencement of his attack, and it afforded strong evidence that all his cerebral symptoms had been the result of a corresponding disease, and tumefaction of the dura mater, pressing upon one hemisphere of the brain. All the cerebral and paralytic symptoms disappeared in a few months, under the influence of country air, the steady use of six-grain doses of iodide soda, combined with the thirty-second of a grain of bi-chloride of mercury; and bromide of potassa, at night, to procure sleep. If this old gentleman ever had syphilis (which I did not ascertain with certainty), it was, doubtless, more than forty years previously. Such cases, with many others that I might mention, are sufficient to show the necessity of inquiring carefully into the family history of patients laboring under

chronic affections of the nervous system, and of observing carefully all local developments that might afford any information concerning the constitutional condition of the patient. In the patient before you, the fact that the morbid condition of the membrane lining the nostrils, already described, has existed from childhood; the peculiarly changeable character of his neuralgic pains and morbid sensations; while the general functions of nutrition, secretion, etc., seem to be well performed, have led me to think that the constitutional vice, from which all his distressing symptoms have arisen, is a remote effect of the subtle poison about which we have been speaking.

If this view is correct, we need not expect any permanent advantage from the ordinary remedies for relieving neuralgic pains. His only hope of recovery must be founded on an effort to change his diathesis, or constitutional condition. The means best calculated to effect such a change are as follows:

First—Regular and judicious exercise in the open air, by moderate walking and riding, and, if possible, a change of climate.

Second—A plain, nutritious diet, chiefly of milk, farinaceous articles, and fruits; but from which must be rigidly excluded all fermented and distilled drinks, tobacco, and *strong* tea and coffee.

Third—The use of such alteratives as will be likely to effect a change in the elementary properties of the organized structures of the body, without materially impairing either the plasticity of the blood, or the general tone of the tissues.

The first two of these propositions need no comment. The advantages of moderate exercise, a mild and dry climate, plain food, and the exclusion of all nervous stimulants, are obvious to all of you. But what system of medi-

cation will effect the third indication? I shall, at present, direct a prescription consisting of—

℞.—Sodii iod.	.....	℥ iij.
Hydrarg. bichlor.	.....	gr. i.
Ext. conii fl.	.....	℥ j.
Syrupi simpl.,	} aa.	℥ iss.
Aquæ menthæ,		

M.—Take a teaspoonful before each meal, and at bed-time.

I will have this continued until it produces a change in the secretion from the Schneiderian membrane, or slight traces of the mercurial influence on the gums. When either of these effects are produced, the prescription should be discontinued, and the following given in its place:

℞.—Potass. iod.	.....	℥ iij.
Potass. bromid.	.....	℥ vj.
Ext. conii fl.	.....	℥ j.
Aquæ menthæ	.....	℥ iij.

M. Give a teaspoonful from three to four times a day.

This may be continued for six or eight weeks, unless some unpleasant effects are sooner induced. In the meantime, if the patient becomes in any degree debilitated, as indicated by a feeling of lassitude, diminished appetite, and paleness of the lips, some direct tonic should be given, conjointly with the treatment just mentioned. The best tonics I have used, in such cases, have been either a teaspoonful of the syrup of pyrophosphate of iron, given half an hour after each meal; or a pill, composed of citrate of iron, two grains, and strychnia, one-thirtieth of a grain, given at the same times.

A neglect to insist on good air, and a proper use of tonics, in conjunction with the usual alteratives, is one cause of failure in the treatment of such cases as the one under consideration.

Besides the hygienic and internal medical treatment which has just been mentioned, I shall direct, with a view of affording temporary relief, or mitigating the morbid sensations of the patient, anodyne frictions to the whole length of the spine, each night and morning. For this purpose, a liniment, composed of the camphorated soap liniment, four ounces, and veratria, four grains, is as effectual as anything I have used. Sometimes, the judicious application of electricity to such cases will produce beneficial results. It should be applied in such a manner, however, as to obtain its tonic effects, rather than irregular shocks.

In this adjoining ward we have present a case of sciatica, which it will be of interest for us to study in this connection.

The patient, Mr. M., a native of Ireland, aged about thirty years, was admitted into the hospital between three and four weeks since. He was thin in flesh, with a depressed and anxious expression of countenance; pulse frequent, but not full; skin hot; tongue coated with a thick, white fur; considerable thirst; bowels slightly relaxed; and a constant dorsal position. He kept the left thigh flexed upon the pelvis; complained of a very severe paroxysmal pain in the outer part of the left groin, extending at times down the anterior part of the thigh, which was greatly increased by every attempt to move the limb. The groin was tender to pressure, but not visibly swollen. Alteratives and anodynes were given internally, and cloths wet in the infusion of aconite leaves applied to the groin and upper part of the thigh. In three or four days the general febrile disturbance ceased, and the pain changed from the groin to the hip, or, gluteal region, extending from the left side of the sacrum to the level of trochanter major, and sometimes following the whole length of the sciatic nerve and its branches, to the toes. There was a constant dull pain, with frequent

paroxysms of great severity. The paroxysms were often accompanied by spasmodic action in the flexor muscles of the limb. The whole gluteal region, and especially the trunk of the sciatic nerve and its origins from the spine, was tender to the touch. The thigh was partially flexed upon the pelvis, and the knee turned in, resting against the knee of the opposite side, and every attempt to move it from that position caused the most excruciating pain. The skin was relaxed, and almost constantly bathed in perspiration.

The attention of the class is called to the symptoms of this case minutely, as it involves the diagnosis between psoas inflammation and abscess, hip-joint disease, and sciatica. It will be noticed that the pain, commencing in the groin, and the flexed position of the limb, with the knee turned inwards, corresponds with the phenomena of psoas abscess, or, at least, irritation along the upper part of the psoas muscle. But the sudden change of the pain from the groin to the upper part of the hip, leaving, in the iliac and psoas regions, neither pain, swelling, or tenderness, together with the absence of the rigors and hectic which usually mark the commencement of internal abscesses, renders it almost certain that no inflammation or suppuration exists in the iliac or psoas regions. Reviewing the symptoms of hip-disease, in comparison with this case, we shall find the following marked differences: In the ordinary coxalgia, or hip-disease, it commences very slowly, by a simple awkwardness in walking, and, generally, neuralgic pain, referred to the knee; and many months will elapse before the patient becomes wholly disabled, thus differing entirely from the progress in the case before us. However, we sometimes meet with cases of a more acute inflammation of the synovial membrane of the hip-joint, which may develop itself rapidly, characterized by great pain, increased by every

movement of the limb, and more or less general febrile symptoms. But in all such cases there is early and marked swelling, with acute tenderness directly in the region of the joint; while here there is no swelling, although the patient has been confined to the bed for several weeks, and no tenderness, except in the track of the sciatic nerve. Again, in hip-disease, whether acute or chronic, pressure on the trochanter major, in such direction as to press the head of the femur into the acetabulum, pretty uniformly causes pain; while here no pain is occasioned by such pressure. We thus find, by a close comparison, that some of the essential phenomena of both psoas abscess and coxalgia are absent, while the prominent symptoms actually present are such as might result from irritation of the sciatic nerve, or of that part of the spinal cord from which it originates. Hence, it would be called a case of sciatica. To get a rational basis of treatment, however, we must pursue the subject of diagnosis still further. For, at the bed-side, we have found *three* varieties of disease involving the sciatic nerve, not only differing in their pathology, but also in the therapeutic means required for their treatment. The first consists in an inflammation of the neuralema or fibrous sheath investing the nerve, and is, generally, of rheumatic origin. It is characterized by a dull, aching pain, extending from the lumbar vertebræ to the upper and outward part of the thigh, with irregular exacerbations of great acuteness, and extending through the whole length of the limb to the toes. There is acute tenderness over the origin and trunk of the nerve, but without swelling; and the pain is more severe at night, and greatly aggravated by any movement of the limb. In the early stage it is often accompanied by slight general fever, and sometimes by rheumatic inflammation in other parts of the body. The second variety is characterized by severe paroxysms of pain in the nerve,

generally commencing behind and above the trochanter, and extending more or less down the limb, but strictly periodical in their occurrence; that is, the paroxysms commence about the same time every day, or every second day, continue a given number of hours, and then cease, with as much regularity as the paroxysms of an intermittent. There is, usually, no fever, and if slight tenderness exists during the paroxysms, it entirely disappears in the intermissions. This variety is undoubtedly of malarious origin, being chiefly met with in districts where intermittents appear endemically, and may be properly styled periodical sciatica.

The third variety is characterized by irregularly recurring paroxysms of very acute pain in the course of the nerve, commencing as suddenly as a current of electricity, and ceasing equally sudden, and unaccompanied by either fever or tenderness to pressure. When it has continued for several months, the muscles of the limb are generally found to be more or less atrophied, and their contractility so much impaired as to produce a clumsy or awkward gait in walking.

Both the causes and the pathology of the third variety named are involved in obscurity and doubt; and the majority of cases seem to be but little influenced by remedial agents. The second class of cases more generally yield readily to a judicious use of anti-periodics and tonics. The first class of cases, to which the patient before us evidently belongs, are generally amenable to such remedies as relieve sub-acute rheumatism in other parts of the body. If we have correctly interpreted the symptoms of this case, it consists of a sub-acute rheumatic inflammation of the neurilemma, or sheath of the sciatic nerve, from its origin in the spinal cord to a point a little below the level of the trochanter major.

We have before explained, that all inflammations, when closely analyzed, are found to contain three elementary

conditions, namely: an exalted susceptibility in the structure, an altered affinity, and an accumulation of blood in the capillaries; and that these several conditions exist, in very variable degrees of intensity, in different cases, thereby causing the different varieties of inflammation. In all rheumatic inflammations, the first element, which we call exalted susceptibility, predominates, causing great pain and sensibility of parts, with comparatively little change either in the accumulation of blood or the nutrition of the part. This is pre-eminently true when, as in the present case, the inflammation is in parts immediately investing nerve-matter. Hence, in examining this man's hip, you do not find sufficient accumulation of blood in any of the structures to cause a perceptible degree of swelling, or even increased local temperature; and yet the sensibility is so much exalted that every motion or touch causes the most severe pain, while the spasmodic action of the muscles shows the same exaggerated influence of the motor filaments of the nerves.

These conditions have an important bearing on our therapeutic measures. If the inflammation was located in a highly vascular structure, like the lungs, for example, the accumulation of blood might be so great, that, with the altered vital affinity, a dangerous degree of engorgement and infiltration of texture would result. Hence, measures calculated to counteract or relieve such accumulation of blood, would constitute a primary indication in the treatment. But in the case before us, the small extent of the texture involved, and the little comparative vascularity, renders this indication of minor importance; while the extreme exaltation of susceptibility in the enclosed nerve-structure calls for the use of such agents as tend to subdue this, as a primary step in the treatment. You are already aware, from previous instruction in these wards, that rheu-

matic inflammation is very generally regarded as arising from the retention of some effete and disturbing element in the blood; and, consequently, that the first object of the physician should be, either to expel by elimination, or neutralize by chemical agents, this supposed irritant.

Without denying the correctness of this doctrine in relation to the essential cause of rheumatic inflammation, we must caution you against a prevalent tendency to restrict our attention entirely to this, and the remedial measures it suggests. You must remember that an inflammation, or any other morbid process, does not always cease with the cessation of the efficient cause which excited it to action.

Hence, though a removal of the cause may be a primary indication, it does not necessarily supersede all other indications for treatment. On the contrary, a morbid process, like inflammation, once established in any given structure, may persist, accompanied by great pain, until it results in serious change of structure by effusion, infiltration, and induration; or, in destruction by suppuration and gangrene.

For reasons already given, we have little to fear from any of these changes of texture in the case before us; consequently, it presents but two prominent objects to be accomplished by treatment: First, to remove the exciting cause; and, second, to overcome the extreme susceptibility and consequent pain which has been engendered in the affected nerve, and the parts on which it is distributed. On the first admission of the patient, we endeavored to accomplish these two objects, by using such remedies as promote excretion, in conjunction with such as directly diminish morbid susceptibility. We gave the following:

R.—Vin. colchici	ʒ i.
Tinct. cimicifugæ.....	ʒ ii.
Tinct. verat. viridis	ʒ i.

M. One teaspoonful every four hours, with the following powder at bed-time:

R.—Pulv. opii.....	grs. ii.
Potass. nitratis	grs. x.
Hydrarg. chlor. mit.....	grs. ii.

M.

At the same time, we kept the groin and hip covered with cloths wet in a warm infusion of aconite leaves. In less than forty-eight hours the general febrile symptoms had disappeared; the skin and kidneys acted freely; the tenderness of the nerve-tracks had diminished; but the paroxysms of pain and spasmodic action of the muscles of the thigh continued. The tincture of veratrum viride was now omitted from the first prescription, and, otherwise, the same treatment continued. The next day, the pain and tenderness had left the groin entirely, but remained severe in the origins and trunk of the sciatic nerve. The patient had sweat copiously, and the kidneys had acted freely during the whole of the past three days; and now, the colchicum began to move the bowels too freely. We continued the same applications externally, and gave, internally, the following:

R.—Pulv. opii.....	grs. x.
Potass. nitratis	grs. xxx.
Pulv. Doveri	grs. xxx.

M. Fiant pulveres vi. Give one every four hours.

The questions now arise, why does the pain continue? and what further remedial agents are called for? You have already been cautioned against relying too exclusively upon such means as are calculated merely to remove the exciting cause of a disease. The case directly before us proves the necessity for that caution. For three weeks, all the important excretory organs have been kept active; and for more than one week the fluids of the body have been freely saturated with alkaline salts. Hence, if the disease depended upon the presence of any acid irritant in the system, as the prevail-

ing doctrines of the profession claim, it certainly should have been either eliminated or neutralized. It is true that, under the past treatment, all general fever has disappeared, and the local tenderness has much diminished; but the pain and spasms, depending, as we suppose they do, on the irritation or morbid susceptibility of the nerve-structure, still continue. May not this continuance of nerve-irritation depend, in part at least, on too great a relaxation of structures, or, in other words, debility, favored by the excessive elimination of the past two or three weeks?

Whatever may be the theory we may adopt for explaining the condition of the patient, it is certain that he is now much debilitated, and all his structures relaxed; and yet, a fixed position of the limb, with frequent and excessive paroxysms of pain. Hence, the indication for further treatment plainly consists in the use of such agents as will strongly diminish nerve-irritability and pain, while they increase the vital affinity and consequent tonicity of the tissues. For this purpose, no more efficient combination can be found than that of opium, with quinia, given in moderately large doses. Sometimes, however, opium, when thus administered for several days in succession, checks too much the action of the kidneys. This can be prevented by adding nitrate of potassa to the other ingredients. We shall therefore direct, for this patient, the following:

℞.—Quiniæ sulph. grs. xxiv.
 Pulv. opii grs. xvi.
 Potass. nitratis grs. xl.

M. Fiant pulveres viii. Give one every four hours.

At the same time we shall cause a small blister to be made just above the left sacro-iliac junction, the cuticle to be removed, and half a grain of morphia applied to it each night and morning, with a dressing of mild mercurial ointment during the interval. If the pain becomes subdued,

and the patient sleeps, we shall gradually diminish the quantity of both quinia and opium, aiming to so adjust the doses as to keep the pain under control, without stupefying the patient. If necessary, a fresh blister will be made over the track of the sciatic nerve, every two or three days.*

Another case that occurred in my practice, a short time since, was that of Mr. M., a laborer, who was attacked rather suddenly with severe pain in the rectum, while at his work. I saw him on the following day, when I found him in bed, with no fever, only slight quickening of the pulse; no coating on the tongue, and temperature natural; but suffering excruciating pain in the rectum. It was accompanied by no tenesmus or straining at stool, and no outward swelling. The interior of the rectum was very sensitive to the touch, but there were no hæmorrhoidal tumors within reach of the finger, and no point of hardness and swelling, such as would indicate cellular inflammation tending to the formation of an abscess. Such acts as coughing, straining, or passing of wind from the rectum, rendered the pain more severe.

The patient was directed to remain at rest, and take eight grains of Dover's powder every three hours until the pain was relieved. The next day, I found him still suffering from the pain, unchanged, with the addition of nausea and moderate dysuria. I now directed warm narcotic fomentations to the perineum and hypogastrium, and, instead of the Dover's powder, gave sulphate of morphia, one-third of a grain, with bi-carbonate of soda, five grains, every four hours. The following day I found him still suffering paroxysms of extreme pain in the same locality as before, with extreme nausea and efforts at vomiting, cool extremi-

* Two weeks later, the patient was slowly recovering, without any material alteration in the plan of treatment just set forth.

ties, and great sense of prostration. Being satisfied that most of the nausea and prostration was occasioned by the opiates, I omitted their further use, and directed the following treatment :

R.—Æther nit. ʒ ij.
Tinct. belladonnæ ʒ ij.

M. Give a teaspoonful in sweetened water every four hours.

Also twenty drops of tincture of belladonna in half a teacupful of milk-warm water, to be used as an enema, and repeated every three or four hours, until the pain was relieved, or the pupils became dilated from the effects of the belladonna. This treatment has been followed by very prompt relief to both the nausea and the pain, and no further treatment is required.

Mr. H., a young man of good habits, but nervous temperament, the night after having sat on the damp ground, was attacked with extreme paroxysmal pains in the rectum, with tenderness to pressure at the lower end of the coccyx, but no swelling or redness.

The intestinal evacuations had been previously regular, and there was present no decided febrile disturbance of the system. Any motion of the body by which the rectum was disturbed, greatly aggravated the pain. The local tenderness near the lower end of the coccyx, led me to regard the case, at first, as one of cellular inflammation, such as usually results in the formation of an abscess, afterwards followed by a fistula. I consequently enjoined rest, narcotic fomentations to the anus, and gave pulv. Doveri internally, to procure sleep. After pursuing this treatment for two days, without any decided change in the symptoms, I caused the bowels to be moved by a saline cathartic, the operation of which was accompanied by severe rectal pains, and followed by no relief to the patient. Enemas, containing tincture

of opium, were used after the bowels had been evacuated, but afforded partial relief only so long as their effects were sufficient to stupefy the patient. After the patient had been under treatment three full days, finding the pain and morbid sensitiveness of the rectum nearly the same as at first, and yet no point of swelling and hardness in the vicinity of the anus, such as always indicates the approach of an abscess, I became satisfied that the case was one of neuralgia, and directed the following treatment :

℞.—Chloroformi.....	ʒ iij.
Tinct. belladonnæ	ʒ iij.
Syr. aurantii corticis.....	ʒ iij.

M. Take a teaspoonful every two hours, until the pupils become slightly dilated, when the interval between the doses should be increased to four hours.

He was also directed to have twenty drops of the tincture of belladonna, in half a teacupful of warm water, injected into the rectum each morning and evening. Under this treatment, the pain almost entirely subsided during the first twenty-four hours, and in three days the patient was able to leave the house, quite well. In two other cases, of similar character, relief was speedily obtained by the internal use of an equal mixture of tincture belladonna and tincture gelsemium, taken in doses of twenty drops every two or three hours.

LECTURE XV.

NERVOUS AFFECTIONS.—SPINAL IRRITATION.—HEMIPLEGIA.—
PARTIAL HEMIPLEGIA.—PARAPLEGIA.—PROGRESSIVE LOCOMOTOR
ATAXIA.

Gentlemen :—This man tells us that, some six months ago, while engaged in sinking a shaft in the vicinity of Morris, in this State, he was attacked with pain in the anterior portion of the thigh, stopping short above the knee. The pain, however, soon extended to the iliac and lumbar regions, and subsequently across to the epigastrium, which has continued since the last of July, with but little relief. He has been under treatment for rheumatism. I first saw him at my office one or two weeks since. I find, on examining the spine at the lower, or next to the lower, lumbar vertebræ, there is a little prominence. There is but little tenderness over the spinous processes, but directly along the right side of the vertebræ, for several inches, it is extremely sensitive, and seems to be almost exclusively limited to the right side. There seems to be a little swelling, which may be due to dry cups, that were applied two days since. He will allow any degree of flexion of his thigh; but if you extend the leg and carry it back of its fellow, the pain is reflected along the margin of the crest of the ilium and abdomen.

If he sits down, or stoops to pick up anything, instead of bending forward as a well person would, he squats down, endeavoring to keep his spine as straight as possible.

This symptom is of great value in forming a diagnosis, and raises the question as to what the disease is, and what has produced it? To the experienced observer, his symptoms immediately suggest one of the three following diseases: First, inflammation of the psoas muscle, or adjacent areolar tissue, tending to the formation of an abscess; second, disease of the vertebræ; third, inflammation of the right half of the spinal cord. Any one of these three diseases would be brought to mind in the investigation. First, we will take up affections involving the psoas muscle. Pain in the front part of the thigh and abdomen would first lead us to suspect that this muscle was involved. The first effect of inflammation in contact with a muscle, is to render it rigid. The tendency, if the psoas muscle is inflamed, is to relax the abdomen by flexing the thigh on the pelvis. If he puts his leg down straight, or stands square on his feet, he will lean his body forward, so as to still relax the muscle on the anterior part of the spine; and, if in bed, he will be found to have the thigh drawn up. The pain accompanying psoas abscess is dull and deep-seated, extending from the abdomen to the junction of the lumbar vertebræ, and across by the crest of the ilium. The most diagnostic signs are pain down the thigh, and in one side of the abdomen, and the flexion of the thigh. If asked to flex the thigh strongly, he cannot, the pain being much increased. If you examine the patient while on his back, you will generally find, on pressure, a degree of tumefaction along the inside of the anterior part of the crest of the ilium, or a sense of fullness and tenderness, which does not correspond to the opposite side. In the present case none of these symptoms are present, except the pain in the anterior part of the thigh, and pain

in extending the leg backward. Is the disease in the vertebræ? One symptom exactly corresponds with the early stage of spinal disease, viz.: the mode of stooping down, which may be noticed in children who have spinal disease coming on, even before they complain much. Instead of stooping over, they will squat down; and if they can reach anything to support them in rising, they will do so. This symptom, however, is not restricted to disease of the bones of the spine, but may be present in any affection that renders the spine sore.

Six months have elapsed, and there is no perceptible alteration, except in the one spinous process previously mentioned; hence, we are not justified in saying that he has disease of the vertebræ from the manner of stooping alone.

The tenderness along the sides of the vertebræ is acute; while in disease of the bone there is rarely any muscular soreness or neuralgic pains, until the disease has progressed to such an extent as to make some degree of deformity perceptible; then you have severe paroxysms of pain in the epigastric region, in the intercostal spaces, or horizontally around the abdomen. There is seldom any evidence, in the early stage, of interference with muscular action. But in this case, pain in the muscles was one of the first symptoms; and, taking this together with the facts that it is of six months' duration, and no deformity; while the pain follows certain nerves, with acute and severe tenderness along the right side of the spine; increased by exercise, and occasional cramps in the abdominal muscles; all of which point to the right half of the spinal cord, corresponding with the lower half of the dorsal vertebræ, as the seat of disease.

Both sets of nerves are involved—namely, those of sensation and motion. From a close investigation of his case, my opinion is that he has chronic inflammation of the membranes of the spinal cord, along the lower third of the dorsal

vertebræ. If that is the case, has it produced any disorganization of structure? We answer no, or it would have left him with paralysis; and, if there was effusion, this would certainly have produced paralysis in some degree. If it be simple chronic inflammation, involving the roots of nerves, what is the appropriate treatment? We answer, dry cupping, followed by belladonna plasters, or hypodermic injections of atropine; and, internally, we will first put him on the following treatment:

℞.—Tinct. cimicifugæ.....	℥ ij.
Tinct. stramonii.....	℥ ss.
Potass. iod.....	℥ iiss.
Syr. simpl.....	℥ iss.

M. Give a teaspoonful every four hours, and, three times a day, a powder, consisting of—

℞.—Potass. nitratis, } Pulv. Doveri, } aa.....	grs. viii.
Hydrarg. chlor. mit.....	gr. i.

The calomel to be discontinued as soon as its alterative effects are perceptible in the breath or gums.

These means, with rest in the horizontal position, will be likely to remove the disease in from four to six weeks.

Common tumblers form good cups for broad surfaces like the back, as was shown by their application in this case before the class.

This next patient had been in good health, and was attacked suddenly with violent and well-defined pain in one side of the head, followed by fever and continued pain, which caused it to be styled brain fever, and lasted for a week or more, at the end of which time she was found to have complete hemiplegia, and was brought to the hospital.

On admission, the pain had not entirely gone; pulse was

slightly accelerated, not full, but strong; heat of the surface slightly elevated, with somewhat increased sensibility in the paralyzed parts.

Paralysis was observed over one entire side of the body; one-half of the tongue being slightly affected; the arm and leg, on that side, utterly destitute of motion, but control of the sphincters was still perfect. It is the left side which is paralyzed, the pain in the head having been in the right side, at the junction of the frontal and right parietal bones.

The suddenness of the attack, the fever, and continued pain in the head, with hyperæsthesia and loss of motion, led me to attribute it to capillary congestion of the interior portion of the right anterior lobe of the brain, coming suddenly, developing severe pain, and leaving some degree of exudation; but probably not sufficient actual extravasation of blood to form a clot.

Either one prompt bleeding, or leeching, at the outset, before sufficient exudation had taken place to cause paralysis, would have exerted a good influence, especially if followed by sedatives to take off the increased force of the circulation, keeping the bowels open, cold to the head, etc.; but the time for these remedies had passed by, and the patient was already paralyzed. She was accordingly put upon the following course of treatment:

R. —Potass. bromid.	3 iv.
Potass. iod.	3 ij.
Aquæ	℥ iv.

M. One teaspoonful every four hours.

Directed her to be kept at rest; the bowels to be moved with laxatives, if necessary. In the first few days there was no change, except a gradual decline of the pain in the head.

The next improvement observed was diminished hyper-

æsthesia, but without much indication of change in the motor power. In about ten days, however, she was able to stand, and from that began to walk, but in a very awkward manner, characteristic of this form of paralysis, carrying the foot forward by means of the muscles in the upper part of the thigh; the outer muscles seem to be more paralyzed than those of the inner side of the limb, so that in walking the toes turn outward.

After she began to walk, from some cause unknown, probably over-excitement of the mind, the pain came back in the head, which was subdued in two or three days by giving in addition to the other medicine, twenty grains of bromide potassa with a little chloral, and directing her to be kept perfectly still. Yesterday, for the first time, she was able to raise the arm.

The patient is a little too anxious, and will be apt to overdo; but if we can keep the nervous system composed, and induce regular and systematic exercise, she will doubtless gradually regain the use of the parts. Our success in the management of these cases depends upon the proper adaptation of treatment to the successive stages of the disease. In the use of the bromide and iodide we bring in an alterative, combined with a moderate sedative and quieting influence, allaying morbid sensibility, and promoting absorption; when this has been accomplished, we shall begin, very cautiously, little by little, with another class of remedies, viz., nerve-tonics, of which strychnia stands at the head.

The great thing is to know when to leave off the alterative and begin with the tonic treatment; if we commence the latter too quick, it will bring on a return of the pain in the head, prostration, fever, and loss of power; if deferred too long, the patient will cease to improve and become exhausted, grow pale and feeble.

Treatment should be so conducted as to remove the inflammatory action, and get rid of the exudation; then, and not before, commence giving the other class of remedies. I have usually withheld tonics as long as hyperæsthesia or muscular rigidity remained.

You will notice in the early stage of paralysis, from inflammatory action especially, that hyperæsthesia will be the rule, with more or less actual stiffening or rigidity in the paralyzed part. As long as these conditions exist, you are safe in acting upon the rule, that no benefit will be derived from the use of strychnia, or the different varieties of electricity, galvanism, and other stimulating agents.

When hyperæsthesia ceases, and there is flaccidity of the muscles, you will find it advisable to gradually diminish the sedatives and alteratives, and commence the use of nerve-tonics; feeling your way carefully by introducing the battery very lightly at first; giving moderate doses of strychnia, one-sixtieth of a grain, morning and noon, while you continue the bromide and iodide after breakfast and at bed-time. If this is well borne, the potassium mixture may be limited to supper and bed-time, giving the strychnia three times a day, afterwards increasing the dose to one-fortieth of a grain, and giving the solution of the bromide at bed-time only, which will contribute to sleep, and keep the secretions free. In this way a full restoration to power and normal sensibility may be brought about, usually in from one to three months.

We shall continue to pursue the present order of treatment in the manner alluded to. The question as to the probability of a full and perfect recovery, depends on whether positive sanguinous extravasation has taken place; if not, the mere inflammatory exudation can be made to be re-absorbed, and function restored. If sanguinous, we shall be unable to bring about re-absorption

of the fibrinous material, the brain in the vicinity will remain hardened, and its functions permanently suspended, ultimately proving fatal from altered nutrition and disintegration of brain substance.

The next case to which I propose to call your attention to-day is one of partial hemiplegia. The patient is a carpenter, and says that, two or three months before the attack, he was at times light-headed and dizzy, and was afraid to venture upon the scaffolding, and consequently went to work in the shop.

It seems that, the night of the attack, the patient was out later than usual with some friends, and during the evening had indulged in a glass or two of stimulants, but not enough to feel the effects to such an extent that he did not know all that occurred. After parting with his friends, he started for home. Before he proceeded far, however, he says that he was gradually taken blind and dizzy, and finally fell on the sidewalk, and became partially unconscious. When he recovered himself, he found he had no power in his right arm nor leg, but succeeded in dragging himself to a doorway.

Until within the past week, he has been under treatment at Madison, Wis., where he was living at the time of the attack. At present, you would hardly know that his leg was affected in walking; but, on closer observation, you would notice that he raised it with difficulty when attempting to step over anything. His face has improved equally with his leg, but his arm is still nearly useless. Can shut his hand quite tight, and has a good degree of power in the flexor muscles; but the action of the extensors is much impaired, and supination is also rendered imperfect. This shows us that the whole set of extensors, from the shoulder down, are more feeble than the flexors.

The first item which we wish to investigate is the seat of

the disease. The paralysis of the arm and leg are but symptoms, and may arise from three sources: first, the muscles themselves, as in lead palsy; second, the spinal cord; third, the brain itself. The symptoms of giddiness and the paralysis, extending to the face, must necessarily involve the nerves within the cranium; hence we refer it to the brain. If there had been no paralysis of the face and tongue, we might have presumed it was in the spinal canal. The patient's mind being clear, while there is giddiness and dimness of vision at times, we refer the seat of disease to the base and central portions of the brain.

In determining the nature of a disease like this, it is essential to get as accurate a history of the case as possible.

First, we may have paralysis come on suddenly, with severe pain, as in the case of the patient up-stairs, to which your attention was a few days since directed, indicating a pathological change of an apoplectic character. In this case it has come on gradually, and became fully developed when under the effects of stimulants. Rest improves his muscular power, while exercise uniformly exhausts it. This would indicate the existence of some gradual change at the base of the brain, like syphilitic thickening of the dura mater, the growth of a tumor, or gradual softening of brain substance. We will endeavor to draw the line of distinction between these pathological conditions. The symptoms of white atrophy or softening do not correspond to those of the case before us. That disease comes on insidiously, by simple impairment of the muscular power, the legs or arms requiring an extra exertion on the part of the patient to use them. It is a gradual weakening, which, when once begun, continues on worse and worse, and involves loss of co-ordinating power and strength, without complete paralysis, until the last stage of disease.

Now this man was not progressively losing the strength and co-ordinating power of his muscles, but merely giddiness and headache, and instead of steady increase of his disease under treatment he has been decidedly improving, and now only complains of paralysis of the right arm, with pain in the shoulder of the affected side, and occasional darting of pain up the back part of the head.

It seems that, several years ago, this patient contracted syphilis; and he now has maculæ on the skin, and what he calls catarrhal disease in the nostrils. And it is highly probable that his giddiness and paralysis arise from thickening of the dura mater over the sphenoid bone.

It is of the utmost importance to ascertain the cause, in such cases as this, in order to know how to treat the disease intelligibly. He has been taking iodide of potassium and strychnia; and I think, had the iodide been combined with minute doses of the bi-chloride of mercury, it would have benefited him still more. The question is, has the disease involved the bones — either the ethmoid and palate, or any portion of the sphenoid? If it has, the prognosis will be unfavorable, although it may not terminate fatally for three or four years. If it is confined to the soft parts, we would expect a recovery.

Viewing the case in this light, we will put him on the following treatment, with an occasional intermission of a week:

℞.—Sodi iod.	3 iij.
Hydrarg. bichlor.	grs. j.
Syr. et aquæ	℥ iv.

M. One teaspoonful four times a day.

We will also use a weak solution of carbolic acid as an injection, which may be applied by means of a curved syringe through the posterior nares. We may derive some benefit from muscular tonics when the muscles are flaccid;

but strychnia and electricity should never be used to any extent, if there is rigidity of the muscular fibres.

Under the foregoing treatment, we may expect the patient to recover a good degree of health, and the use of his arm, in from four to six weeks. It will depend, however, upon whether the bones at the base of the brain are affected or not.

This next patient is a man about forty years of age, native of Ireland, and has been in the hospital two or three months. He is thin in flesh; pale or anæmic; his eyelids affected with chronic inflammation; tongue clean; respiration and pulse natural; skin rather cool; appetite and digestion moderate; bowels nearly regular once a day; and urine also nearly natural in quantity. But the patient has only partial control over the passage of either urine or fæces, and can exert only a very limited motor influence over the lower extremities, merely being able to draw up the feet a little and extend them again when lying down. The lower extremities are also extremely emaciated and nearly destitute of sensibility, yet subject to frequent spasmodic twitchings.

At the time the patient was first admitted to the hospital, all the parts below the crest of the ilium and the junction of the lumbar vertebræ with the sacrum, were completely paralyzed, both in regard to the sensation and motion. The fæces and urine passed without the knowledge or control of the patient, and the lower extremities were entirely motionless and anæsthetic.

He is a man who has long been addicted to the use of intoxicating drinks, and had been under treatment by some physician for a chronic affection of his eyelids some time before he was attacked with the paraplegia. This case is undoubtedly one arising primarily from morbid nutrition of the lower third of the spinal cord. This class of

patients, by using such drinks as interfere with the natural metamorphosis of tissue and excretion, especially of the waste carbonaceous matter, thereby encourage fatty degenerations of structure in various parts of the body. In most cases these structural alterations take place most prominently in the liver and kidneys; but in others the change appears to affect the coats of the vessels in the brain and spinal cord, weakening them by the deposit of fat granules, until, in the brain, they yield to the pressure of the contained blood, permitting extravasation and apoplexy, or hemiplegia. The same process in the spinal cord would result in the production of various morbid sensations and weakness of the lower extremities, and when the extravasation takes place, more or less complete paraplegia. The prognosis in such cases is decidedly unfavorable. Under the influence of proper nourishment, good air, and the judicious use of tonics (not exhilarants), they will often slowly improve, until, as in this case, they regain some sensibility and a very limited power of motion in the paralyzed parts. At that point the improvement usually ceases, and the patients remain apparently almost stationary for weeks and months; but in truth the nervous centers involved are undergoing atrophy, or softening from defective nutrition, and eventually the patients die from asthenia.

This patient has been taking a combination of citrate of iron, quinine, and extract of nux vomica during most of the time that he has been in the hospital. When the spasmodic twitchings have been troublesome, and his nights restless, he has had from fifteen to twenty grains of either bromide of potassa, or of hydrate of chloral, at bed-time. His diet has been plain and nutritious; and constant attention given to cleanliness and proper ventilation. Close attention to the hygienic management of such patients is of the highest importance; otherwise their imperfect control

over their evacuations will keep the bed foul, the air of the room impure, and speedily induce large and tormenting sloughs or bed-sores on the hips and sacrum, and materially hasten the final exhaustion of the patient.

This patient that we now bring before you presented himself a few days ago at the dispensary, for treatment, and the physician in attendance, finding it a case of unusual interest, has brought him in for your inspection to-day.

Rather more than a year ago, the patient was attacked with a sensation of weight or bearing-down in the left groin, and extending around to the lumbar region, especially troublesome when he walked or attempted to go up-stairs. A short time after the commencement of these symptoms, he had a sudden attack of blindness.

The blindness was partially relieved in a short time, although the sight has never been fully restored; and the bearing-down sensation, with some twitching, jerking in the muscles, has continued, more or less up to the present time. The course of the lower two-thirds of the spine, the region of the left groin, and the entire surface of the lower extremities, you notice, is very sensitive to the touch. The slightest touch at any of these points causes quite as much or more pain than is produced by more decided pressure, showing plainly that there is a mere morbid sensibility of the parts, and not an inflammation in them. As the patient entered the hall you noticed that he was somewhat uncertain in his movements, and inclined to steady himself by the table, chairs, or whatever was within his reach. When we requested him, however, to walk a short distance before you, by directing his course to a certain point and fixing his attention upon his movements, he controlled them sufficiently so that there was no apparent unsteadiness in his gait; but, had his attention been suddenly withdrawn, he would probably have reeled, and been inclined to fall. There is,

evidently, no paralysis present here, but the difficulty is owing entirely to an impairment of the power of co-ordination.

The impairment in this case is so slight that the unsteadiness of the movements would not ordinarily be noticed without the attention was directed specially to them. In cases further advanced, the gait becomes unsteady and reeling, as that of an intoxicated person. Special difficulty is experienced in mounting stairs, on account of an inability to raise the feet from step to step. The patients frequently complain of acute pains, of a variable character, like those of rheumatism, moving from one organ or portion of the body to another. Perverted sensations, not actual pains, are also experienced, such as thrills and jerkings in the muscular structures, like shocks from a galvanic battery. These alterations of sensibility are derived from the nerves of sensation, and are associated particularly with this condition of failing co-ordination.

Should pain in the head and dizziness be complained of among the prominent symptoms, some disease in the cerebrum or cerebellum should at once be suspected. When, however, the first and most prominent symptoms are a morbid sensibility of the extremities and impairment of co-ordination, we may be pretty sure that we have a case of progressive locomotor ataxia.

The progress of the disease is slow at different stages of its course; it may even remain stationary for considerable periods. Its progress is always resumed, however, and generally continues to the end, in spite of any course of treatment which has, as yet, been discovered.

Sudden attacks of blindness, either partial or total, almost always occur in connection with the disease. Frequently, dark spots are perceived, apparently floating before the eyes, and the pupils are largely dilated. Where oppor-

tunity has been offered for examination after death in these cases, the optic nerve has been found to be more or less atrophied. The principal lesion, however, consists of an alteration in the deposit of nerve structure in the lower spinal cord. This alteration may be limited to a space of not more than two or three inches in length, and consists in a deficiency of nerve substance, and a substitution for it of amylaceous or fatty matter. The fibrous or connective tissue of the cord is not atrophied, but rather increased or thickened. This atrophy extends also to the roots of the spinal nerves.

The direct cause of the disease is involved in obscurity. All the cases that I have met with have occurred in persons addicted to the immoderate use of tobacco, and I am inclined to consider this a predisposing cause, although it cannot, of course, be considered a direct exciting cause. I think the excessive use of tobacco retards nervous growth and nutrition. Other influences have also been assigned as predisposing causes, such as excessive sexual excitement, either solitary or social. It would be logical to suppose that everything which exhausts and impairs nervous nutrition, would act as a predisposing cause — a damp, changeable climate, and occupation in damp, unhealthy rooms, would be classed among these causes. It is probable, however, that there is something in the system of the patient which acts as the direct exciting cause.

As regards the possibility of checking the progress of the disease by any course of treatment, we must confess that experience has not given us the best encouragement to hope for favorable results. It used to be the custom to blister, cauterize, introduce setons, etc. These measures were found, however, to only hasten the development of the disease. Alcoholic stimulants, recommended by some authorities, are also contra-indicated, on account of their action in

retarding healthy nutrition, and promoting the tendency to fatty degeneration. What we wish to accomplish is, to bring back a healthy nutrition of the nerve-structures. Phosphorus is well known to be an abundant element in nerve-structures; and we may expect, therefore, to derive some benefit from the administration of phosphoric acid and the phosphites. We generally prescribe phosphoric acid, combined with compound syrup of the hypophosphites; a teaspoonful before each meal. To lessen the morbid sensations, we think that fluid extract *cannabis indica*, ten to fifteen drops, three times a day, is the most appropriate in these cases. The opiates produce too much general derangement. *Belladonna*, *hyosciamus*, and *ergot*, all tend to produce the quieting effect desired. The *ergot* is liable, however, to produce too much capillary contraction. If digestion is not good, should prescribe liquid rennet; a teaspoonful after each meal.

The patient should be allowed a good, plain, substantial diet, plenty of milk, milk-whey, buttermilk, etc. No tea or coffee should be allowed, or at least only a single cup, very weak. Alcoholic stimulants, and tobacco, should be rigidly excluded. The patient's chances of recovery will be greatly increased, if he will leave off the use of tobacco entirely. He should be encouraged to take a moderate amount of exercise in the open air, every day, but not enough to produce excessive weariness; must be careful not to overtax the strength. Such a course, if followed out, offers a better prospect of benefit than any other.

Another case was treated in the hospital, about one year since, in which all the characteristic symptoms of progressive locomotor ataxy were strongly developed. The power of co-ordination of muscular movements was so impaired that, for several weeks, the patient could not walk, or maintain the upright position, without assistance. He was treated

with quinia, iron, and strychnia, for many weeks, aided by good food, frictions, and some use of electro-magnetism; but with very little improvement. He was then put on the use of Liebig's extract of malt, and the comp. syrup of the hypophosphites, plain, nutritious food, and allowed to rest. After some time, he began to gain gradually; and in about four months, had so far recovered that he walked well, and left the hospital in fair health.

LECTURE XVI.

AFFECTIONS OF THE BRAIN.—EPILEPSY.—PROBABLE SOFTENING OF THE BRAIN.—CHRONIC HYDROCEPHALUS.

Gentlemen:—The patient before you is a woman aged forty-five years, the mother of several children. The countenance has a slight expression of sadness, coupled with sufficient paleness to indicate some deficiency of red corpuscles in the blood, though no marked emaciation. She represents her appetite as fair; her circulation and respiration are undisturbed; and her secretions and excretions are represented as natural. But she has been subject to paroxysms of epilepsy—or falling sickness, as it is sometimes called—during the last three years. With her, the paroxysm comes suddenly, without any premonitory symptom, or peculiar warning. The head begins to swim, with dimness of vision, and, in a very few seconds, she falls unconscious, in whatever place she may be standing or sitting at the time. The fall is accompanied by general muscular spasms, contorting the features, suppressing respiration, and stiffening the muscles of the trunk and extremities, until the face becomes very turgid and purple, from the unoxygenated blood. In a few moments, the spasmodic action ceases; the respirations are resumed—at first very irregularly, with the forcible ejection

of saliva, often mixed with blood, from the biting of the tongue or lips—and afterwards more regular and quiet, like one in sleep. This period of quiet, or apparent sleep, continues from fifteen to thirty minutes, when she awakes with an expression of surprise, coupled with a feeling of weariness, but is soon able to go about as usual. She usually has one or two paroxysms each day, for two days in succession, and then is exempt from their return for twelve or fourteen days. The marks of recent injury, which you see on her forehead and nose, were produced by falling, in one of her paroxysms, just before her admission into the hospital, some four days since; and these extensive cicatrices on her forearms, were occasioned by her falling upon the hot stove, in her family, several months ago. The frequent repetition of her paroxysms, for three years, has perceptibly impaired her mental faculties, including the memory. The failure of the last-named faculty is the first to be noticed by the friends of the patient. She says her family often “scold her” for forgetting everything. This case illustrates one of the most common forms of epilepsy originating in adult life.

Here is a case from another ward in the hospital. It is a man near forty years of age, who has had epileptic paroxysms ever since he was fourteen years old. You see in his expressionless face and undeveloped forehead, unmistakable evidences of imbecility, and impaired cerebral nutrition. Now, when he should be in the vigor of manhood, he is a mere indolent child, caring for nothing but food and tobacco.

The nature or pathology of epilepsy is involved in much obscurity. It occurs in both sexes, and at all periods of life, though it more frequently commences in childhood and youth. Its paroxysms exhibit every degree of severity, from mere momentary giddiness, and arrest of mental action, to the most violent and general convulsions.

They may vary from once in one or two years to five or six times per day. The disease affects persons of widely diverse temperaments or physical conditions, and may be excited by a great variety of causes. The latter, however, may be divided into two classes, viz.: those that establish the primary seat of irritation in some part of the periphery or sentient extremities of the nervous system, and those that act more directly on the brain, or cerebro-spinal nervous centers. Hence, many modern writers have divided all cases of epilepsy into two classes—the one called centrifugal, or peripheral, and the other centripetal, or concentric. To the first class belong such cases as arise from primary irritation in the alimentary canal; in the uterus; in the sexual organs of both sexes, more especially from masturbation and excessive sexual intercourse; and in the wounded or mechanically injured nerves of the extremities, or any part of the body. To the second class belong those cases that arise from causes acting directly on the brain, or nervous centers, such as mechanical injuries of the brain, depressing mental emotions and passions, alcoholic and other cerebral exhilarants, etc. None of the causes belonging to either of the classes mentioned are sufficient to induce epilepsy, without the pre-existence of a peculiar morbid excitability of the cerebro-spinal centers, favorable to the development of spasmodic paroxysms. This morbid excitability is, indeed, the only pathological condition that appears common to all cases of epilepsy.

This, with the special physical condition of the patient, and the nature of the exciting cause, must determine the indications for treatment in each case. To ferret out and remove the exciting cause, more especially in those cases classed as *peripheral*, is a step of primary importance. To expect a cure of the disease by any of the supposed specific or empirical remedies, while the reflex influence of a dys-

menorrhœa, a gastric or intestinal irritation, over-excited genital organs, or an injured nerve, is constantly radiating a morbid impression upon the nervous centers, would be unreasonable. After due attention to all matters of this class, the next step is to regulate the diet, exercise, and mental habits of the patient. In all cases, except such as exhibit evidences of positive impoverishment of the blood and tissues, I think it important to exclude meat altogether, as an article of food. Milk, farinaceous articles, tuberous roots, and fruits, may be taken freely. In all cases, all kinds of fermented or distilled spirits, together with *strong* tea and coffee, should be rigidly avoided. It is more safe to wholly exclude tobacco also. Moderate daily exercise in the open air, and, if possible, some congenial regular mental occupation, is important.

Without careful and persistent attention to these hygienic regulations, the most appropriate administration of medicines will fail to produce any permanent effect in the cure of epilepsy. To aid in overcoming the morbidly excitable condition of the nervous centers, we probably have no remedies more reliable than the bromides of potassium and ammonium, aided, in some cases, by gelsemium, and, in others, by belladonna.

For the immediate relief of a convulsive paroxysm, the bromide of potassium should be given, in doses of twenty grains, or thirty grains combined with ten or twelve drops of tinct. belladonna, and repeated every two hours, until the paroxysms cease. But, for more permanent effect, it should be continued steadily, for a long period of time, in doses of ten grains, morning and noon, and fifteen grains at bedtime. The sedative influence, in cerebral excitability, will be increased by adding to each dose eight drops of tincture gelsemium; or, if there appears to be much tendency to vascular fullness of the cerebro-spinal centers, the same quan-

tity of tincture of belladonna may be substituted for the gelsemium. The female patient to which we have just directed your attention, affords nothing in her history calculated to explain the cause of her disease, except the fact that, for a little time before the occurrence of the first paroxysm, she had been separated from some of her relations, and yielded to an inordinate degree of grief and despondency. Since her admission into the hospital she has taken ten grains of bromide of potassium before each meal, and at bed-time, and has had no recurrence of the paroxysms since the first twelve hours after her admission. We shall continue the same treatment, and, as she is somewhat anæmic we shall give her, in addition, one teaspoonful of the syrup of pyrophosphate of iron after breakfast and dinner, each day. Before leaving this case, I cannot impress upon you too strongly the necessity of long-continued perseverance in the treatment of epileptic cases. The patient and friends should be informed at once that no treatment will have any prospect of permanent success that is not continued faithfully, in all its details, for from six to eighteen months.

This next case, to which we would ask your attention, is one of interest, more especially in regard to its pathology and diagnosis. The patient is a native of Ireland; about forty-five years of age; naturally muscular and strong; by occupation a laborer.

As you look at him in bed, you readily recognize a vacant, staring expression of countenance; a dorsal position, with limbs extended; not a tremulous, but an unsteady and awkward movement of the hands; and, in answer to my questions, you notice his speech is slow, hesitating, and he frequently stops in the middle of a sentence, apparently losing the connection of thought. His mind often wanders, and his sleep is disturbed. He complains of no pain, and exhibits no sign of fever—not even increased heat in his head.

The pupils are slightly dilated, and the vessels of the conjunctiva free from congestion. He protrudes his tongue readily, giving it a narrow and pointed shape; and you see on its surface a thick, moist coat, particularly along its middle line. You find his skin soft, temperature natural, and sensibility good. While lying in bed, he can move all his limbs, and in any desired direction; and yet he can neither get up, nor stand erect, nor walk. He has only a partial control over the sphincters, both urine and fæces being passed in bed. His pulse is soft, and rather slow, but not intermitting; and, when awake, his respirations are nearly natural.

He was admitted into the hospital only two days since, and his history, so far as I can obtain it, is as follows: About six months since, his friends began to notice slight indications of failure in his mental faculties, and some unsteadiness in his walk. These indications gradually increased, without the supervention of any sudden or severe sickness, until he has arrived at the entirely helpless condition, mentally and physically, that you see before you. For several years previous to the supervention of his present sickness, he had been addicted to the intemperate use of alcoholic drinks; and the same were continued for two or three months after his health began to fail.

With this review of the history and present symptoms, where is the seat of disease, and what the nature of the pathological changes which have taken place? The inability to maintain an upright position, or to control the sphincters of the bladder and rectum, taken in connection with the impaired state of the mental faculties, show plainly that the seat of the disease is within the cranium.

We may have inability to walk, with loss of control over the sphincters, from the disease of the spinal cord, or its membranes; but, in such cases, the mental operations would

not be impaired. But, conceding the seat of disease to be the brain, or its covering, what is the nature of such disease? Is it a chronic inflammation of the cerebral substance? Or is it a slow atrophy, from defective nutrition? Or, again, can it be a mere functional derangement, consisting of impaired cerebral sensibility? To answer these questions reliably, requires close examination of the patient, and an accurate knowledge of the symptoms that distinguish one pathological condition of the brain from another. Inflammation, either acute or chronic, involving the membranes or convolutions of the brain, causes increased heat, pain, restlessness, acuteness of sensibility, with positive mental derangement, in the first stage; followed by effusion, paralysis, and coma, or continued insanity, in the second. If the inflammation involves the interior of the brain, there may be less evidence of mental derangement; but there will still be pain, indisposition to move the head, increased temperature, altered pupils, and more or less rigidity of the voluntary muscles, either of the neck or extremities.

At no period in the history of the case before us, were any of those symptoms, characteristic of cerebral inflammation, present. On the contrary, the head has been free from heat or pain, and the muscular system more and more flaccid and feeble in contractility, from the commencement of ill health to the present time.

Mere functional disturbances of the brain are usually variable in the symptoms, and rarely cause a steadily progressive loss of flesh, or of muscular strength. But when the nutrition of the brain has been impaired, by the long continuance of slowly-acting causes, and the texture begins to soften, or atrophy, from deficiency of atoms, the symptoms are those of simple impairment of function.

The patient is not, at first, either delirious or paralyzed. He becomes forgetful; is unable to maintain continuous

thought and expression, often losing the thought in the middle of a sentence; while his gait becomes unsteady, and all his muscular movements enfeebled. The symptoms thus begun generally increase steadily, until the mental manifestations become simple, imperfect, and sometimes incoherent, and the muscular action so impaired as to render the patient incapable of walking, or even of maintaining the erect position. Only a few weeks since, a young man occupied a bed in this ward, who had been employed as a clerk in a grocery store, and had been regarded as a reliable and correct young man. He was first noticed to be despondent, without any known cause. Soon he became forgetful; then slow in his movements; and, after some weeks, wholly incapable of doing business. When admitted into the hospital, his face was pale; expression downcast, and vacant; skin cool; pulse slow and soft; bowels inactive; and entire loss of all disposition to either mental or physical exertion. It was difficult to induce him to answer a question, and when he did, his voice was weak, and his expression slow and interrupted. He neither asked for food or drink, but would sit in a chair, or lie in a bed, from morning until night, almost motionless. It was necessary to feed him, in the same manner as a young child, and, at suitable intervals, call his attention to the necessity of evacuating the bladder and rectum. He complained of little or no pain; exhibited no spasmodic action of muscles, or rigidity; but sometimes, especially in the night, under some mental hallucination, he would attempt to wander about the house.

After observing him for some time, and trying, without benefit, several items of treatment, I became satisfied that the condition of the brain was that of anæmia and deficient nutrition, but not yet advanced to the degree of actual softening, or disintegration. He was, consequently, put upon the use of syrup of pyrophosphate of iron, in doses of a tea-

spoonful, three or four times a day; a diet of plain, nutritious food, such as milk, bread, rice, tender meats, etc.; and the use of an electro-magnetic battery, once or twice every day. He was also encouraged to make efforts at walking, and, as soon as possible, to get out in the open air daily.

This course of treatment was carried out faithfully several weeks, and resulted in a slow recovery of the patient, who is now at his previous occupation. All the symptoms of the case before you have been, and now are, of such a character as to indicate a similar arrest of nutrition of the brain, more especially of the internal parts. But in this case, the morbid process has, probably, been continued until the texture has become so far changed as to be unable to perform its functions. In other words, some parts of the brain are in a state of *ramollissement*, or softening. If so, the prognosis is exceedingly unfavorable; and there would be little benefit from any kind of medical treatment. So long, however, as we cannot know positively that cerebral disorganization exists, it is our duty to prescribe such treatment as would be most likely to restore the patient, if the structural changes had not reached a stage incapable of repair. The indications are, to increase the sensibility and activity of the nervous centers, thereby restoring more steady and efficient muscular action, especially in the involuntary muscles, and to improve the nutrition of the brain. Probably, small doses of strychnia would fill the first indication, and some one of the phosphatic salts of iron the second, as well as any remedies that we could select. Hence, we will direct the following prescription:

R.—Strychniæ	gr. i.
Acid. nitr.	ʒ j.
Syr. simpl.	ʒ j.
Aquæ	ʒ iiij.

M. Give a teaspoonful every six hours, diluted with sweetened water.

Also, one teaspoonful of the syrup of pyrophosphate of iron, every six hours; making the medicines come alternately, three hours apart. We will have him fed regularly with milk, bread, rice, etc.

This little child has been brought in for your inspection, to-day, as presenting a very good example of chronic hydrocephalus, or dropsy of the brain. The entire head, you perceive, is enlarged to nearly twice the normal size, the bones being widely separated at the sutures. The occipital bone forms a firm, fixed base, while the upper part of the cranium, yielding easily at the ununited sutures, gradually enlarges as the effusion increases. There is a peculiar bulging appearance of the eyes, caused by the pushing forward and downward of the frontal bone, decreasing the orbital space, thus crowding the eye-ball outward, and turning the axis of the eyes somewhat downward. The scalp is quite tense over the separated sutures, and the fluctuation very distinct upon pressure. The general nutrition of the body and limbs is better than is usual in these cases.

This child is now about a year old. Its head was first noticed to be enlarging after an attack of fever, accompanied by derangement of the stomach and bowels, which occurred when it was three months old. The enlargement had been progressing about a month, when the case was first brought to my office. From the rapid rate at which the disease was progressing, I judged that the child would live but a short time. It was, however, placed under treatment, and seen several times, at short intervals. I then lost all track of the case, and supposed the child had died. A few days ago, however, it was again brought to me, in the condition in which you now see it. During the interval since I had seen it last, the mother stated that it had been kept constantly upon the treatment that I had directed. The size of the

head has increased some, but the enlargement has not been so rapid as previously.

The cases of chronic hydrocephalus may be distinguished into three classes. The first class includes the cases in which the disease is congenital. The child, in these cases, usually lives but a few days, although life may occasionally be prolonged for several months.

In the second class of cases, the child is apparently healthy at birth, and continues so until between the second and third months. It is then attacked with acute symptoms of restlessness, and crying out in sleep. The discharges from the bowels are variable in character, frequently of a greenish color. Vomiting is frequent, if the child is raised up. These symptoms continue for two or three days, when there supervenes an attack of convulsions, and the child will now be found to be laboring under all the symptoms of effusion on the brain. Previous to the occurrence of the convulsions, the pupils are usually contracted; after their occurrence, however, the pupils will be found to be widely dilated, and a want of co-ordination will be noticed in the eyes, the axis being turned in different directions. There may be but a single attack of convulsions, or they may be repeated several times. Some cases terminate fatally in a very short time—the fever increasing, the pupils becoming more widely dilated, the face pale, and coma and death supervening.

In young children, where the sutures are still ununited, the head easily expands, as the exudation increases. The inflammatory stage, and active symptoms, then pass off; some restlessness, and starting in sleep, continue. The child cannot hold up or steady the head well. The muscles of the extremities are also weak, so that it cannot stand. The parents may, very likely, suppose for four or five weeks, that the child is improving and getting well, considering the

debility and muscular weakness as merely the effects of the previous disease; but, as time passes on, the head is observed to be enlarging; the urine is scanty, and the bowels deranged; passages variable in character. In two or three months, the head will sometimes have attained the size of this one.

The third class, of which the case before you is a very good example, are of more obscure origin. There are no active symptoms to commence with. Slight fever and restlessness, the stomach and bowels deranged, and urine scanty, as in the other cases. The child acts as if in pain, every time it is moved. No convulsions, however, supervene. In six to ten days, the fever disappears, and only slight derangement of stomach and bowels remains, the food frequently passing through undigested. Occasionally, the bowels are constipated. In this way they will continue for perhaps a month, when it is noticed that the head is enlarging, and the child is growing weaker. It cannot hold up its head, and is averse to the upright position. The surface generally is pale; the veins passing over the head are enlarged, and blue. When the head is examined, the sutures are found to be wide open. The intelligence is, apparently, unimpaired; there is generally considerable weakness of the extremities, so that it cannot stand, or attempt much use of its legs.

The pathology of this disease, except in the congenital cases, seems to consist of a low grade of inflammation in the pia mater, and arachnoid membranes. Hereditary tubercle frequently forms the starting-point of the disease. When not traceable to this tuberculous origin, it usually originates from simple sub-acute inflammation. The inflammatory stage lasts but a short time. The effusion, however, continues.

The large majority of these cases terminate fatally,

although some of the children live for a considerable time. In a case to which I directed the attention of the class, some years ago, the child had lived to be four years old. The head had expanded, until it had become heavier than all the rest of the body; and the child could not be supported in an upright position, for even an instant, without fainting. Another case, about the same age as this one, was brought before the class last winter, and was placed under treatment, although without any expectation of a favorable result. It soon began, however, to improve, and continued to progress favorably for three months, when I lost sight of the child, and do not know whether it finally recovered or not.

The books give no encouragement for the treatment of these cases. There are two methods, however, that have been proposed, the one surgical, the other medical. The late Prof. Brainard was one of the first, I believe, to attempt the cure of these cases by the insertion of a small trochar, allowing a little of the fluid to escape, and then injecting a weak solution of iodine and iodide of potassa into the cavity. The theory was, that the contact of the iodide with the surface of the membranes would stop further effusion. Some considerable disturbance, nervous twitching, etc., were produced at the time of the injection. These symptoms passed away in a short time, and no further effects were manifest from it. In one case, I think, he repeated the injection as many as six or seven times. No case of successful result from this operation has, however, been recorded.

The objects that I have attempted to accomplish by treatment, in these cases, has been, first, to allay the morbid excitement of the cerebral structures; and, second, to exert a gentle, persistent, and long-continued alterative and diuretic influence, avoiding carefully any impairment of the digestive organs. I have succeeded in accomplishing these purposes by the following prescription :

R̄.—Ext. scutellariæ fl.	$\frac{z}{3}$ ii.
Tinct. digital.	$\frac{z}{3}$ ss.
Potass. iod.	$\frac{3}{3}$ ij.
Ext. hyoscyami fl.	$\frac{z}{3}$ ss.

M. Dose, twenty drops, four times a day, in sweetened water.

If the digitalis is found to be exerting too much influence, the dose must be diminished.

Mercurials are of no advantage in the chronic stage. During the early inflammatory stage, mercurials, combined with mild laxatives, might check the progress of the disease; and, if promptly followed by efficient doses of the iodide of potassa, any considerable effusion would be prevented, except in such cases as are complicated with tubercular deposits. If effusion does take place, and the case becomes chronic, it will be better to unite the iodide with the digitalis, scutellaria, etc., as in the formula already given to you.

LECTURE XVII.

CEREBRO-SPINAL DISEASE.—SYMPTOMS, PROGRESS AND TREATMENT.—SOME REMARKS REGARDING ITS EPIDEMIC PREVALENCE IN CHICAGO, DURING THE MONTHS OF FEBRUARY, MARCH, AND APRIL, 1872.

Gentlemen :—This patient is just recovering from a severe attack of cerebro-spinal meningitis. About six days ago, on returning from his work at evening, he was suddenly attacked with chilliness and violent pain in the forehead, temples, and occiput. This was soon followed by febrile reaction and vomiting. I did not see him until the afternoon of the following day, when he was brought to the hospital. I then found him in bed, with the head drawn firmly backward; face flushed; head hot; expression anxious; pupils nearly natural; pulse 100 per minute, soft; respiration hurried and irregular; mouth moist, but tongue covered with a white fur; urine scanty; bowels quiet, but promptly rejecting by vomiting whatever drink was given him, and making efforts to vomit whenever he was raised up; his mind wandering, and almost constantly crying out with the distracting pain in his head. Cloths, wet in cold water, had been kept to his head; and I directed the same

to be continued, and immediately ordered the two following prescriptions:

R.—Tinct. physostigmæ..... $\frac{3}{4}$ iss.
 Ext. ergotæ fl..... $\frac{3}{4}$ iiss.

M. One teaspoonful to be given every two hours, in half a table-spoonful of water.

R.—Acidi carbolicæ cryst..... grs. vi.
 Glycerinæ $\frac{3}{4}$ ss.
 Tinct. gelsemii..... $\frac{3}{4}$ ss.
 Aquæ $\frac{3}{4}$ iii.

M. One teaspoonful to be given every two hours, alternately with the other, making the medicines come only one hour apart.

Directions were given to have the medicines and drinks given without raising the patient's head from the pillow, to avoid the danger of vomiting. The directions were faithfully executed, and the following day all the symptoms were moderately improved. The treatment was continued, with no change, except to extend the time between the doses to three hours instead of two.

The same treatment has been continued for the past four days, the interval between the doses of medicine being lengthened one hour each day. We now find the pain in the head, the muscular rigidity, and the febrile symptoms, entirely relieved. The carbolic acid mixture will be omitted, and the calabar bean and ergot continued three times a day. If the patient continues to improve, he will probably be entirely convalescent in a few days more.

Both personal observation and the statistics of mortality furnished by the board of health, show an unusual prevalence of cerebro-spinal disease of a serious nature, in this city, during the past two months. For instance, the certificates of death returned to the health office, show thirteen deaths from cerebro-spinal meningitis in February, forty-four in March, and twenty-two during the first week in

April. This not only indicates an unusual prevalence of cerebro-spinal disease in the city but also that it is rapidly increasing. The first case that attracted my attention was that of a young man employed as a clerk in a store, who sent for me on the first day of February. He was boarding at 810 Michigan avenue.

He had been attacked two days previous with chilliness, and a severe pain in the head, for which he went to a physician, who gave him some cathartic medicine. It operated freely on the bowels, but afforded no relief to his head. I found him in a reclining position; some flush of redness in his face, and an expression of suffering; averse to free motion, especially of the head; some general increase of sensibility or hyperæsthesia; temperature moderately increased; pulse 90 per minute, firm, and moderately full; respirations 20, and a little unsteady; tongue covered with a white coat, but moist; urine free; abdomen natural; mind despondent; and complaining of an intense pain, mostly in the lower part of the anterior region of the head, and extending, at times, to the occiput. The temperature of those regions of the head, and the pulsation in the arteries, were greater than in the other parts of the body. The pupils were small, with slight photophobia. The assemblage of symptoms was such as caused me to think there was positive inflammatory hyperæmia in the base of the brain.

The following day the pain was less intense, but in all other respects the symptoms were unchanged, except the addition of slight stiffness of the muscles of the neck, and complete aphasia. The patient understood whatever was said to him, but, in reply, repeated a number of meaningless words, mostly monosyllables, and often appeared vexed that those around him could not understand him. He was now moved to the house of a friend on Cottage Grove avenue. There, for three days, he claimed to be each day better. He recovered

the power of expressing his thoughts, and had less pain in his head. But his neck remained stiff; his pulse variable; mind more dull and wandering, especially during the night. There was less febrile heat; the tongue more clean; the urine more abundant; and he insisted on sitting in his chair and taking some food every day. On the night of the 6th, his symptoms became more aggravated; his head was more retracted; mind more dull; pupils considerably dilated; pulse slow and intermitting; respirations very variable; and urine more scanty. On the 8th there was evident hemiplegia, with divergence of one eye; and entire coma followed, ending in death on the morning of the 11th. No *post mortem* examination was allowed.

Since the 1st of February, a period of seventy-two days, there have occurred in my own practice forty cases, sufficiently well characterized to render the diagnosis reasonably certain.

I have seen several other cases, in consultation with other practitioners, during the same period of time. Of the forty cases here alluded to, twenty-one were in the south division, fifteen in the west, and four in the north division of the city. Six were adults, between the ages of twenty and thirty years; ten were between five and fifteen years; and twenty-four were between six months and five years of age. Of the whole number, seven have died, twenty-seven recovered, and six remain under treatment. Of the latter, one will probably soon terminate fatally, and the other five have a fair prospect of recovery. Of seven deaths, three were of adults over twenty years of age; one was five years, one was three years, and the remaining two six and seven months, respectively.

The duration of the disease has varied much. Of the seven fatal cases, one continued twelve days, one seven days, one five days, one six days, one four days, one twenty-eight

days, and one only twenty hours. Three of these cases were brought under treatment at the commencement of the attack; the other four were seen so late as to admit of only from one to three visits each. The cases that recovered have required treatment from one to four weeks each.

Four-fifths of the cases coming under my observation have occurred among the poor and laboring classes of people, and in a territory or part of the city bounded by east and west Harrison street on the north, south by Twenty-sixth street, east by State street, and west by Center avenue. Yet, one of the most rapidly fatal cases in the list was a little German boy, five years of age, living on Wabash avenue, near Fourteenth street, who died within twenty hours from the attack.

In many instances only one child or member of a family has suffered from the disease; while in a few cases, three or four in the same family have been prostrated within twenty-four or thirty-six hours. In one small house, on the rear end of a lot on State street, north of Sixteenth, three children were attacked within the same twenty-four hours; another was attacked in the house on the front end of the same lot; another in the adjoining house south; and two others, in the care of another physician, in the adjoining house north. I have been unable to gather any evidences of the contagiousness or communicability of the disease. The cases have varied much, both in the severity and variety of symptoms, and yet have preserved enough of uniformity to identify them as belonging to one group, and dependent on some common pathological conditions. For instance, in all the cases the access of the disease is sudden or abrupt. They all give evidence, at first, of unusually severe pain in the head, with very variable neuralgic pains in distant parts, especially in the abdomen, thighs, and legs; and in from one to three days, rigidity of the neck, with some retraction

of the head, and general hyperæsthesia sufficient to cause even the youngest child to manifest signs of distress on being touched or moved. In nearly all the cases there has been, during the first twelve hours, active vomiting, increased by raising the head to the erect position; and, in some, co-incident purging. These gastric and intestinal symptoms have seldom continued beyond the first one or two days. The temperature is generally increased, especially in the back of the head; the pulse frequent and firm; respirations increased in frequency, and, in most cases, panting, like one excessively fatigued from severe exercise; face flushed, and expression excited and anxious at first, but subsequently dull, with dilation of pupils; urine generally scanty and high-colored, but in some cases abundant throughout the whole duration of the disease; tongue covered with a white fur; mouth moist; and, after the first one or two days, bowels inclining to constipation, with the abdomen flaccid, and entirely free from tympanites. About one-third of the cases present some red, erythematic spots on the skin, between the third and seventh days of the disease. These spots vary much in size and number, as well as in shade of color. In the milder cases they are bright red, and often so few in number as to attract no attention unless looked for particularly; and in others they are so numerous as to create the impression that the case may be one of scarlatina. In the more severe cases, the spots are darker in color, larger in size; and in two cases they were accompanied with tumefaction, from subcutaneous infiltration, as in erysipelas. In a young woman who died on the fifth day after the attack, but whom I did not see until the day previous to her death, there were numerous large, purple, hæmorrhagic spots on the lower extremities, and an oblong, elevated, purplish-red spot, from one to two inches long, and from half to three-quarters of an inch wide, on the front part of each ankle, and the

outer face of each wrist. The head was held rigidly to one side, eyes divergent, pupils dilated, and mind entirely unconscious. In the majority of cases, however, I failed to discover any special eruptions or spots on the surface. Nearly all the cases manifested, during their progress, paroxysms of excited delirium; and in the children, the first turns of vomiting would be followed by protracted turns of wild screeching and crying, and sometimes trembling, as if under the influence of terrible fright. In only four cases were there general convulsions, three of which died, and one recovered.

In regard to the actual pathology or nature of this form of disease, there is still much obscurity. That it differs from *simple* inflammation of the brain and its membranes, is evident both from the symptoms during life and the *post mortem* appearances after death. I have had the privilege of making only one *post mortem* examination this season. It was a case that died in the Mercy Hospital, an adult, brought in already unconscious, with rigidity of the muscles of the neck, and all the evidences of cerebro-spinal disease strongly marked. He died on the third day after admission, being about one week after the attack. Autopsy revealed a few ounces of reddish serum between the arachnoid and pia mater, and in the lateral ventricles, with the most intense and beautiful injection or turgescence of the vessels of the pia mater covering the base of the brain, medulla oblongata, and upper part of the spinal cord. The vessels of the brain substance were also fuller than natural; but there was no exudation of lymph or plastic material, and no other morbid appearance apparent to the eye. In a case recently alluded to by the editor of the *Buffalo Medical and Surgical Journal*, the autopsy revealed no morbid appearances in the brain or its membranes.

Most of the autopsies reported have given serous, sero-

sanguineous, and sero-purulent effusions, in moderate quantity, and vascular turgescence, with only slight appearances of plastic exudation. As a general rule, the more rapid the progress of the case—that is, the earlier the patient dies—the less are the visible *post mortem* changes. I have been led to regard the disease as consisting in an exaltation of the susceptibility or irritability of the structure of the cerebro-spinal axis, including the whole base of the brain, with diminished tonicity or contractility of the blood-vessels. If the alteration of the property of susceptibility is intense, and extends directly to the center of the excito-motory system, it cuts short life very speedily—sometimes in a few hours—without leaving visible alterations in the brain or its membranes. But if the morbid action be less intense, or involve less directly the chief excito-motory center in the medulla oblongata, life may be prolonged until either recovery takes place or the vascular engorgement ends in effusion of serum, etc.

The first few cases coming under my care were treated with leeches to the temples and mastoid spaces; cold applications to the head; a mild cathartic, and full doses of the bromide of potassa, aided by hydrate of chloral, to procure rest at night. After two or three days iodide of potassa was added to the bromide; counter-irritation applied to the neck. The results of this kind of treatment were not satisfactory.

The cephalalgia, muscular rigidity, etc., continued, and though the febrile action was less, there was no sign of convalescence. The first case died at the end of ten or eleven days. Another, a girl about eleven years of age, had lain with the head firmly retracted to a right angle with the shoulders; the hearing dull; mind wandering; sleepless; and often screeching with pain, for more than a week; and the foregoing remedies, with the addition of alterative doses

of calomel and Dover's powder at night, had exerted no marked change in the progress of the case.

Recollecting that the calabar bean had been used with apparent success in tetanus, and that I had used it with benefit in several cases of muscular rigidity from irritation of the nervous centers, I made the following prescription :

℞.—Tinct. physostigmatae ----- $\frac{3}{4}$ i.
 Ext. ergotæ fl. ----- $\frac{3}{4}$ iss.

M. Gave half a teaspoonful every two hours, and omitted all other medicines.

At the end of twenty-four hours the patient was found simply more quiet, the pulse a little slower, and the respiration more regular. The treatment was continued without change. At the end of the second day the patient had ceased to complain of pain in her head; had slept several times for half an hour to an hour; the retraction of the head was decidedly less; mind was clear; the mouth moist; and the urine free; but she seemed feeble. More simple nourishment was ordered, and the medicine continued at intervals of three hours. The case continued steadily to improve; and on the fifth day after the commencement of the use of the calabar bean and ergot, the muscular rigidity had entirely ceased, and the patient was convalescent, though emaciated and feeble. The medicine was continued three times a day several days longer, and a combination of extract of malt and the compound syrup of hypophosphites, in addition to nourishment, were given to aid in restoring nutrition and strength. Since that time, I have used the calabar bean, either alone or in combination with ergot, in nearly all the cases that have come under my care, and certainly with more apparent effect in controlling the disease than by any other remedies I have tried.

If our views in regard to the essential nature of the

morbid action constituting this form of disease are correct, we may expect such remedial agents as have the power to diminish excitability, and at the same time increase the vascular tonicity, to exert the most favorable influence over the active stages of its progress. Such are the calabar bean, *cannabis indica*, gelsemium, ergot, etc. If the disease co-exists with the prevalence of erysipelas in the community, it is probable that the free use of the sulphite of soda, in addition to other remedies, would be beneficial. I have noticed in several of the patients coming under my care, a tendency in the disease to assume a chronic form. The constant pain in the head, the muscular rigidity, and the general febrile symptoms, gradually disappear during the first week or ten days; but the patients have continued pale, weak, subject to transient but severe neuralgic pains, ever changing in their locality, but most frequent at the head of the *gastrocnemii* muscles, the abdomen and the head; a very peevish, fretful condition of mind; variable appetite, and disturbed sleep. In two or three cases of this kind, a mixture of the tincture of calabar bean and camphorated tincture of opium, given each morning, noon, and tea-time, and a moderately full dose of Dover's powder and quinia at bed-time, appeared to produce very decided and permanent relief.

In the active stage of the disease, I have not found either opiates or quinia to produce any favorable effects. Such, briefly, gentlemen, are the results of my observations in regard to the prevalent cerebro-spinal disease, which may be said to constitute a moderate epidemic.

LECTURE XVIII.

CUTANEOUS DISEASES.—THEIR CLASSIFICATION AND DIAGNOSIS.—CASES OF PSORIASIS.—PRURIGO.—PARRIGO.—ECZEMA, ETC.

Gentlemen:—Before subjecting to your examination the case before us, your attention will be occupied a few moments with some comments on the general subject of cutaneous diseases. To most practitioners this is an uninviting topic, and students rarely give it that attention which its importance demands.

This class of diseases, although seldom dangerous to life, are nevertheless of frequent occurrence, many of them protracted in duration, some of them contagious or communicable, and all of them more or less annoying to the patient. Hence it is very important for every student to give them such attention that he may be able to promptly distinguish one class from another, and to give such as may apply to him for relief the most efficient treatment. Modern writers on dermatology or cutaneous diseases appear not to agree on any common principle of classifying the diseases in question; but some are grouped together from a supposed analogy in causation, as when they arise from *parasitic* influence; others from a common property of communicability or contagiousness; and still others from something

common in the form of the eruptions. As an aid in the work of diagnosis, we think no better principle of classification has been discovered than that which was adopted many years since by Willan and Bateman, and was founded on the anatomical structure of the different varieties of cutaneous eruptions.

If we omit the modifications dependent on constitutional syphilis, and the morbid growths, such as tubercle and molluscum, we may arrange all the ordinary cutaneous eruptions into five classes. The first will embrace all those in which the inflammation is so superficial as to produce only a red spot of greater or less size, without any appreciable exudation either into the cutis vera or between it and the cuticle, consequently there is neither elevation, induration, nor vesication, in this class, but simple red spots. These spots may be very small and generally diffused over the surface, as in scarlatina; or they may be small and grouped in clusters, as in measles; or they may be larger and more isolated, as in roseola and erythema. These form the *exanthematous* class. The second will embrace all those eruptions in which the inflammation is sufficient to cause a serous exudation between the cutis vera and the cuticle, simply elevating the latter into the form of a vesicle filled with lymph or serum, but without any plastic exudation sufficient to give hardness or thickening of the cutis vera. The vesicles may be very small, as in scabies and eczema, or larger, as in varicella, herpes and pemphigus. These are called vesiculæ, or the vesicular class.

The third will embrace those in which the inflammation is sufficiently intense not only to cause an exudation of lymph or serum between the cutis vera and cuticle, forming a vesicle, but, in addition, sufficient plastic exudation into the true skin and the subjacent tissue to furnish a more or less elevated and indurated base on which the vesicle will

rest. Suppuration or the formation of pus in the vesicle, during some stage of its progress, is also a constant occurrence in all the varieties included in this group. Hence they are called pustulæ, or the pustular class. The more important examples of this class are ecthyma, impetigo, mentagra, porrigo, and the pustules of variola and vaccina.

The fourth embraces those eruptions in which the inflammation causes a minute amount of plastic exudation into the cutis vera, causing a slight induration and elevation, but without either vesication or suppuration. The small indurated and elevated spots thus formed are called papules; hence the group are called papulæ or the papular class. The chief varieties of disease included in this class are lichen, strophulus and prurigo.

The fifth and last class embraces those affections of the skin characterized by such a chronic grade of inflammation as causes spots of variable size, in which the cutis vera is more or less thickened, and from which the cuticle is constantly being exfoliated in the form of laminæ or dry scales. This latter circumstance has caused this group to be called squamæ or the squamous class. The varieties of disease properly belonging to this class are pityriasis, lepra, psoriasis, and perhaps the leprosy of the ancients. Ichthyosis, or fish-skin, which has sometimes been included in this class, is generally a congenital defect, rather than a cutaneous inflammation.

With these general remarks you will be prepared to proceed with the examination of the case before you. The patient is a young man of foreign birth, a sailor by occupation, and apparently in fair general health, but presents spots of cutaneous disease on his legs, thighs, arms, and a few on the trunk of the body. The first step in the matter of diagnosis is to determine to which of the classes we have named the case belongs. As you individually proceed to

examine carefully those spots on the uncovered parts of the patient's legs, you will readily see that they are not made up of minute red points, like the rash of measles or scarlet fever, and cannot, therefore, belong to the exanthematous class. Neither can you find any vesicles either filled with lymph, or broken and weeping a serous fluid, as in the vesiculæ; nor any pustules filled with pus, and standing on a hard base, as in the pustular class. You look equally in vain for the small, hard elevations, or papules, which characterize the fourth or papular class.

What, then, have you in this case? Simply scattered spots, varying in size from the circumference of a pea to that of a silver half-dollar, of irregular outline, deep red color, slightly elevated, and rough, and on the surface of which appear dry, white, thin laminæ of exfoliating cuticle. These characteristics place it directly in the class of squamæ, or scaly diseases. Having designated the class to which it belongs, the next step is to ascertain which variety of that class it represents. There being but three varieties of this class met with in this country, the identification is easy. The *ptyriasis* seldom if ever exists on any part of the skin except that covered with hair, as the scalp, arm-pits and pubes. It is accompanied by only slight redness, and the exfoliating cuticle is in the form of very small scales, like dandruff. None of these circumstances apply to the case before you. *Lepra* may come on any part of the surface in red, dry, rough spots, at first the size of a half-dime. They spread regularly on the circumference, and heal in the center, and thereby soon assume a circular or ring form; hence the popular name of "ring-worm." The spots before you have no such regular ring form; although some of them have existed, and been slowly increasing, for many months. The only remaining variety of the squamous class is *psoriasis*, of which the spots on the legs before you are perfect examples.

You see them variable in size, irregular in outline, dry, rough, deep red, with large, thin, white laminæ of cuticle on the surface. The disease is chronic, the spots generally increasing in size slowly, and continuing for months and years, unless interfered with by remedies. Sometimes the spots come in the palms of the hands, and present a very hard, rough, and sometimes fissured appearance. It is then called psoriasis palmaris, or "baker's itch." The disease does not appear to be dependent on any particular constitutional derangement, though often connected with constitutional syphilis. In the latter case, the spots have a more livid or coppery color. Except in the latter class of cases, the most important part of the treatment consists in proper local applications. If there is any manifest derangement of the digestive or other important functions, it should be corrected. In the absence of any special indications, it may be advantageous to give small doses of some one of the arsenical preparations. We shall give this man eight drops of Donovan's solution three times a day, for the first ten days, and have the spots rubbed thoroughly night and morning with an ointment of iodide of sulphur, twenty grains, to the ounce of cerate. After the first ten days, we will substitute an ointment of ammoniated mercury, twenty grains; pulv. gum camph., eight grains; tinct. bloodroot, half drachm; rubbed together and mixed with simple cerate, one ounce. Let this be applied every night, and the surface wet with glycerine in the morning. A full alkaline bath should be used twice a week; the diet plain, exercise in the open air moderate, and all stimulants avoided.

This next patient, Mr. L., aged twenty-five years, has just been admitted into the hospital. His general health appears good, but he has been for a considerable time excessively annoyed with an itching eruption on the skin. For three or four years it has made its appearance with the cold and wet

weather of autumn, continued through the winter, and disappeared with the coming of warm weather in the spring. It shows most on the nates, inner and posterior part of the thighs, legs, and forearms. It is in the form of small, scattered elevations in the skin, only slightly redder than natural, and with no vesicle or tendency to suppurate. In other words, it consists of small, isolated papules, many of them having thin, black scabs on them, produced by the patient having torn them, by scratching, until the blood started. The itching, in these cases, is entirely disproportioned to the external appearances of disease.

It is increased by warmth, and is generally worst when the patient gets warm in bed, often making the night as restless as if the bed had been sprinkled with cowage or nettles. The fact that the disease makes its appearance in this patient uniformly in the autumn, shows that it is dependent on the retention of some effete matter that ought to be eliminated through the skin, but which is prevented by the influence of cold and damp on the surface. The disease is strictly papular, and is usually called prurigo. Cases of this kind are often very persistent, yielding but slowly to the influence of remedies. The treatment most likely to cure the present case would be such as would first restore a free action of the skin and kidneys, until all retained effete matter had been eliminated; and then, perhaps, a cautious use of some arsenical preparation for two or three weeks. This patient has been using sulphur vapor-baths and liquor arsenicalis, until symptoms of œdema have supervened, and yet without benefit. We will direct him to take a warm alkaline bath every second day, and to apply to the itching surface the following ointment every night:

℞.—Potass. iod.	3 i.
Cerati simpl.	℥ ij.

M.

Internally, also the following :

℞.—Vin. colchici	$\frac{z}{3}$ i.
Potassæ acetatis	$\frac{z}{3}$ ss.
Syrupi simpl.	$\frac{z}{3}$ i.
Aquæ	$\frac{z}{3}$ ij.

M. Take a teaspoonful four times a day.

Should the colchicum affect the bowels too much, half a drachm of camphorated tincture of opium can be added to each dose.

If, after the ointment of iodide potassa has been used four or five nights, it is found to create too much irritation in the skin, as it sometimes does, it may be omitted, and the following wash substituted in its place :

℞.—Hydrarg. bichlor.	grs. x.
Aquæ camph.	$\frac{z}{3}$ viij.
Glycerinæ	$\frac{z}{3}$ ij.

M. Apply, as a wash, every night and morning.

In most cases like this, the foregoing treatment will afford relief in from ten days to two weeks.

The next case to which I will call your attention is one affecting the scalp. This boy, aged about seven years, has an appearance of fair general health. His appetite is good; bowels regular; secretions natural; and nutrition active. He complains of nothing but two or three large patches of eruption on his scalp. One, you see, occupies the vertex, and is an inch and a half in diameter. Another, nearly as large, over the posterior part of the temporal region of the left side; while a third, a smaller spot, is found over the lower part of the occiput. These several places are occupied by thick, light-brown, and perfectly dry crusts or scabs.

If you examine this on the vertex closely, you will find most of the hair gone, the scab continuous or unbroken,

and its surface presenting numerous dimples or slight concavities, and emitting a peculiar odor. The crust is thick, firm, and closely adherent to or imbedded in the skin, being in all respects wholly unlike the patches of psoriasis in the first patient, and still more unlike the papular eruption in the second. If we should remove one of these crusts, and examine the exposed surface of the scalp, we should find the primary form of the eruption from which they have been slowly formed. And even without this, you can see, here along the margin of the crust, above the ear, several small, flattened, yellowish pustules, imbedded in the skin. They are not larger in circumference than the head of a pin, and contain a minute quantity of yellowish or purulent fluid. These are good specimens of the primary form of the eruption, and the surface under each of these crusts is thickly studded with the same minute, flattened pustules. The latter being only slightly elevated, and the quantity of matter in them very small, they do not break, but the matter dries into a small scab closely adherent, and which grows gradually thicker and more elevated, from the constant accretion of more matter to its under surface; and as the pustules are closely aggregated, the resulting scabs soon touch and unite at the edges, forming continuous thick crusts, as you see in this case. As the outer layers become more dry and contracted than the inner part, it causes the depressions or little concavities you see on the surface of the crust.

I have seen a few cases in which the eruption occupied the whole of the hairy part of the scalp, causing the whole to be covered by a thick crust, like a cap. On the other hand, the simplest form of the disease is seen in nursing children, consisting of a single patch, covered by a thick, dry scab, from half an inch to one and a half inches in dia-

meter, generally over or near the anterior fontanelle. The nurses will call it "milk-crust."

From the language already used in describing this case, you will infer that it belongs to the class of pustulæ. Its special name is *porrigo*.

There are three varieties described by authors, called *porrigo favosa*, *porrigo scutulata*, and *porrigo granulata*. All the varieties attack, chiefly, the scalp; are chronic, often continuing several years; but with little or no impairment of the general health. If the scab is examined microscopically, it will appear to consist of an immense growth of vegetable sporules or fungoids. The disease is not generally contagious.

The most efficient treatment that I have tried consists in the application of an emollient poultice, on the surface of which must be sprinkled some bi-carbonate of soda, and letting it remain from six to ten hours; then remove it, and thoroughly wash the affected part with slightly warm water. By this process the scab will be so softened and dissolved as to be readily washed off, leaving the surface naked and clean. To this clean surface the following ointment may be applied each morning and evening:

℞.—Hydrarg. ammoniatæ.....	3 i.
Camph. g. pulv.....	grs. xx.
Tinct. sanguinariæ.....	3 ii.
Miscæ et add	
Cerati simpl.....	3 iii.
M.	

After using this eight or ten days, we may sometimes substitute the ointment of iodide of sulphur with advantage.

Another application, which has succeeded in rapidly curing some cases, is ointment containing *tobacco*. It may be prepared by simmering common chewing tobacco in lard; or by mixing the oil of tobacco with cerate, in the propor-

tion of one or two minims to the ounce. This remedy must be used cautiously, however, as it may be absorbed in sufficient quantity to induce strong sedative effects with vomiting.

The case before you has just been admitted to the hospital; and after removing the crusts by the alkaline poultice, we will apply the ointment first named, and you will be able to note its effects at your subsequent visits. No internal treatment is needed in these cases, unless there is manifest some special derangement of the digestive or excretory organs.

I will detain you to examine only one more case to-day. The patient is a female, aged fifty-six years; rather anæmic in appearance; thin in flesh; and suffering some from indigestion. The chief complaint, however, is an exceedingly annoying eruption on both legs, covering the greater part of the surface from the knees to the ankles. As she takes off the cloths, you see them stained and stiffened by the absorption of a yellowish serous fluid, which has oozed from the sore surface. The latter looks red and inflamed, almost continuous from an inch below the knee to within two inches of the foot, with a few thin, small scales or partially formed scabs on it. Around the margin of the inflamed surface are numerous distinct, small, pointed vesicles, which show the primary form of the eruption. It is these small vesicles, closely aggregated, with the cuticle rubbed off, that cover the whole red and inflamed surface, and from which oozes the yellowish serous fluid by which the cloths were stained, and by the evaporation of which the thin, dry scales, seen on the surface are formed. This eruption is accompanied by such a degree of itching and burning that the patient can hardly refrain from violently rubbing and scratching it; and yet all such friction only increases the torment. The character of the primary vesicles, seen along the margin of the diseased surface, show the case to belong to the

class called *vesiculæ*; while their small size, acuminate shape, and close aggregation in large red patches, identify it as the variety called *eczema rubrum*. This variety of *eczema* is one of the most common and most troublesome of the non-contagious cutaneous diseases. It may attack any part of the surface, but is much the most frequently seen on the face, scalp, legs, hands, and scrotum. It may run its course as an acute disease, and in from seven to ten days dry up and disappear, leaving no cicatrices; or it may only partially disappear in the time specified, when a fresh eruption, as itching and fiery as ever, will appear; and by these successive eruptions be perpetuated indefinitely months or years. It may be limited to one or more small patches, or it may extend over the whole cutaneous surface. But wherever it appears, and whatever its duration, it is always characterized by small, closely aggregated vesicles, accompanied by itching and burning, and the weeping of a yellowish serous fluid when rubbed or scratched. In children it most frequently attacks the scalp, mastoid spaces, and ears; while in adults, and especially in old persons, it is seen most frequently on the legs and external genitals. In recent acute cases the treatment may be very simple, consisting in the use of saline aperient and diuretic remedies internally, and soothing emollients or cooling applications externally. But when it has assumed a chronic form, as in the case before you, it will seldom get well without a continuous and protracted use of some one of the arsenical preparations internally. The liquor potassa arsenici (Fowler's solution) is the one generally used, and may be given in doses of six drops, gradually increased to ten, just after each meal. Whenever these doses nauseate the stomach, or induce colic pains, it will be better to use the ter-chloride of arsenic, as in the following formula:

℞.—Liq. arsenici chloridi.....	℥ ii.
Acid. hydrochlor. dil.....	℥ ii.
Syr. simpl.....	℥ ss.
Aquæ.....	℥ iii.

M. Give one teaspoonful in sweetened water, just after each meal.

While using either of these preparations of arsenic, if an œdematous swelling appears, either in the face or extremities, or both, the medicine must be omitted, and an equal mixture of tincture of digitalis and wine of colchicum, in doses of twenty minims, given three or four times a day, in a little sweetened water. In old and anæmic subjects like the present patient, tonics and nutrients may be required. And of these, none are better than cod-liver oil, or the mixture of two parts of extract of malt and one of the compound syrup of hypophosphites. All alcoholic drinks, whether fermented or distilled, must be entirely avoided. In the majority of cases, the best local applications are the benzoated zinc ointment, applied two or three times a day, and a wash of sulpho-carbolated zinc, twenty grains to the ounce of water. In some very chronic cases the following, applied night and morning, has afforded much relief:

℞.—Hydrarg. ammoniatæ.....	℥ i.
Tinct. sanguinaræ.....	℥ iss.
Miscæ et add	
Cerati simpl.....	℥ iii.

M.

But the clinic-hour has passed, and I will detain you no longer.

LECTURE XIX.

MANIA A POTU AND CHRONIC DISEASE OF THE BRAIN.—
DELIRIUM TREMENS WITH FATTY DEGENERATION—CHRONIC DIS-
EASE OF THE BRAIN—ANOMALOUS NERVOUS SYMPTOMS.

Gentlemen :—Delirium tremens, or that form of temporary mental derangement caused by the use of alcoholic drinks, is, unfortunately, of frequent occurrence in almost all populous communities; and the wards of our hospital are seldom entirely free from cases of this class. The subject from which these morbid specimens were taken, was a man of intelligence, between twenty-five and thirty years of age, naturally strong, and well formed, but who had accustomed himself to the use of alcoholic drinks for many years. It was stated by his friends, that for three weeks before his admission to the hospital, he had been almost constantly intoxicated, much of the time taking from one to two pints of brandy per diem, while during the same time he took very little food. At the time of his admission, and for three or four days previous, he had been exhibiting all the phenomena of *mania a potu*, or the delirium of the drunkard. When first seen in the ward, his face was pale, or rather of a purplish color; eyes sunken; the vessels of the conjunctiva distended with blood; and pupils large; the expression of countenance haggard; the extremities cool and blue; the pulse small, weak, and frequent; the stomach so irritable that almost

everything swallowed was quickly rejected by vomiting, accompanied by a dark greenish fluid, mixed with mucus; and motions indicating great epigastric distress.

His mind was constantly occupied with all sorts of horrid images and phantoms, and he was much of the time engaged in a struggle to get out of bed and away from his attendants. There was constant vigilance, and much muscular agitation, or tremor. He could not be kept sufficiently quiet to permit a direct physical examination of the cardiac and hypochondriac regions; but the general symptoms justified a very unfavorable prognosis. And yet, up to that time, his friends continued to give him the alcoholic drinks.

Their further use was forbidden; the attendants were directed to use no more force in restraining him than was absolutely necessary to prevent him from doing injury to himself; and the following prescriptions were ordered:

℞.—Acid. carbolic. cryst.	grs. viij.
Glycerinæ	ʒ ss.
Tinct. digitalis.....	ʒ i.
Tinct. opii camph.....	ʒ ijss

M. S. Give one teaspoonful, in a tablespoonful of water, every two hours. It was hoped that this might allay the gastric irritation, steady and strengthen the heart's action, while the camphorated tincture of opium would lessen the morbid vigilance, without impairing the action of the kidneys, or endangering excessive narcotism. In the evening, the narcotic effect was to be increased by a single dose of fifteen grains each of bromide of potassium and hydrate of chloral. Tablespoonful doses of milk with lime-water, were also directed to be given every two hours, alternately with his medicine.

On the following day, the condition of the patient was in no respect improved. The attendants had succeeded only very partially in carrying out the directions, the patient resisting

the taking of either nourishment or medicine; while one of his friends had smuggled in a small bottle of what he called "good brandy," some of which had evidently been used. The matters vomited were becoming more dark and grumous, his pulse more feeble, and he died on the evening of the third day after admission. A *post-mortem* examination revealed no important morbid appearance visible to the unassisted eye, except in the stomach, duodenum, liver and kidneys. These organs are before you, fresh as they were taken from the body. The stomach and duodenum are laid open; you see the mucous membrane, in its whole extent, presenting an intensely red and tumefied appearance. In some places, where most intensely injected with blood, the surface is dark brown, and; apparently, softened. These appearances are the result of severe inflammation in the gastro-duodenal mucous membrane. And this inflammation was probably the direct cause of death.

The kidney is seen to be moderately enlarged, rather soft or flabby to the feel, and, on being laid open, the cortical, or secreting structure, is pale, and several small masses of fatty tissue at different points are observable. No analysis of the urine was made.

The liver is seen to be greatly enlarged, being more than twice its natural size. Its color is light olive, both internally and externally, and its increased bulk is plainly owing to infiltration, or deposit of fat globules, constituting the most common form of *fatty liver*. The heart is also loaded with fat; and its muscular tissue paler than natural. These morbid specimens fully illustrate the two leading effects of alcoholic drinks on the physical organization of the human body. The fatty degenerations in the liver, heart, kidneys, etc., are the result of the slow, long-continued, moderate influence of alcohol, in retarding the oxydation of the carbonaceous matters of the system, and allowing them to

accumulate in the form of inert fat; while the acute gastro-duodenitis is the result of the direct irritating influence of strong distilled spirits, taken in large quantities, without ordinary food.

Some have expressed doubts as to whether alcoholic drinks were capable of producing direct inflammation of the mucous membrane of the stomach; but such inflammation is certainly a frequent complication of delirium tremens, and adds greatly to the danger of that disease. It is very generally supposed that the delirium and trembling result from the sudden withdrawal of the so-called stimulating drink, and the consequent anæmic condition of the brain. And it is certainly true, that, in many cases, the first indications of delirium occur from one to five days after the inebriant has been discontinued. But it is equally certain that, in two-thirds of all the cases that have come under my observation, the symptoms supervened while the patients were still in the full supply of their accustomed drink. Whenever the alcoholic solution is kept in contact with the brain structures, constantly retarding the molecular changes for a considerable time, while the supply of nutritive matter through the digestive organs is suspended, or greatly deficient, that perversion of function which is styled delirium tremens ensues, whether the drink is continued or not. In simple, ordinary cases of delirium, not complicated with any serious disease in the chest or abdomen, the indications for treatment are simple, and easily fulfilled. The patient should be kept at rest, with kind, persuasive, encouraging words, and as little physical or forcible restraint as possible. All alcoholic drinks should be entirely discarded, and, in their place, such medicines given as will exert a soothing, tranquilizing influence, favoring sleep at night; and such bland nourishment as will be most readily retained and assimilated. From ten to fifteen grains of bromide of potassium, given in solution

with the same number of minims of the tincture of digitalis, every two or three hours, according to the degree of excitement, and from fifteen to twenty grains of hydrate of chloral, between eight and nine o'clock in the evening, will be all the medicine needed in most of these cases. Nourishment is of even more importance than medicine. At first, the patient should be induced to take two or three tablespoonfuls of milk, beef-tea, or other simple liquid nourishment, between each of the doses of his medicine; and after he begins to recover, the food may be more varied, and given in larger quantities. In cases accompanied by paleness, constant sweating, a small, weak pulse, and scanty urine, the following may be given between each of the doses of the bromide and digitalis:

℞.—Ammon. Carb.....	ʒ ij.
Tinct. opii camph.....	ʒ ij.
Syr. simpl.....	ʒ ss.
Aquæ camph.....	ʒ iss.

M. Give one teaspoonful every two or three hours, in a tablespoonful of water.

In cases accompanied by such persistent vomiting of thin mucus, of a green or brownish color, as indicates special gastro-duodenal inflammation, a powder containing one grain of calomel and one-quarter of a grain of sulphate of morphia, given every three hours, and tablespoonful doses of cold milk and lime-water, have often succeeded well in gaining control over both the delirium and gastric irritation. After the first day, the calomel should be omitted, and its place supplied by five grains of subnitrate of bismuth, or three grains of oxide of zinc, with the same quantity of morphia as before. In a few instances, after the mental excitement and gastric irritability had much abated, a troublesome hiccough has supervened, which has yielded to five grain doses of monobromated camphor more readily than to any other

remedy. There has been, and still is, a tendency to treat delirium tremens too heroically; that is, to give too large doses of medicine, either by the mouth or hypodermically.

We cannot but regard twenty, thirty, or forty grain doses of chloral, half-grain, and grain doses of morphine, or fluid drachm doses of tincture of digitalis, as dangerous and unnecessary. I have never resorted to such doses; but several cases have come under my observation in which they have been resorted to, some of which suddenly terminated fatally. About two years since, a case was admitted into this hospital, in the early stage of delirium tremens. He was a middle-aged man, of good physical development; and one of the assistants in the hospital gave him, at once, about *fifty grains* of hydrate of chloral. It was followed, in a short time, by narcotism, so profound that artificial respiration had to be maintained for three hours before he regained a condition of safety. In a disease involving so much impairment of nutritive and molecular changes, a milder medication, and more attention to nourishment, is the safer course.

Your attention is next invited to the patient occupying this bed. This is a laboring-man; aged about forty years; native of Ireland. He was admitted to this hospital eight or ten days since. He had previously been in the county hospital for a considerable time, and had complained of ill-health for several months. At the time of his admission here, his countenance wore a dull, dejected expression; the surface was pale and cool; pulse soft, regular, and 75 per minute; respiration regular, but less full than natural; tongue clean; appetite variable; and urine natural.

When first visited, after his admission, he was lying in bed, on his back, with limbs extended, motionless, and apparently unable to speak. After repeated questions, and some shaking, he uttered, slowly, a few words. It appeared, from what could be gathered of his history from his friends,

that, several months since, he began to complain of an almost constant pain in the region of the occiput and posterior fontanelle, with depression of spirits, mental apprehension, and, often, sleeplessness at night. These symptoms increased, until he was wholly unable to work, and was sent to the county hospital for treatment. In addition to constant pain in the posterior part of his head, and mental depression, he would have periods, lasting from an hour to a whole day, in which he would neither move nor talk, nor pay any heed to the fullness of his bladder, as though he was in a profound stupor; and yet, his respiration and circulation continued quiet, and he evidently heard much that was said to him. Almost every night he had one or more paroxysms of suddenly crying out with barking, or very unusual sounds, ending in alternately opening wide the mouth, and shutting it, with a few rapid protrusions of the tongue. These paroxysms generally lasted but a few minutes. He also complained of frequently seeing objects or persons in the room, and feeling the apprehension that the latter were coming to injure him. He was disposed to remain in bed; and, when induced to get up, his muscular movements were slightly unsteady, with occasional sudden contractions. There was some hyperæsthesia of the scalp, over the seat of pain in his head; and the pupil of the left eye was one-third larger than that of the right.

The patient had been accustomed, for years, before getting sick, to more or less use of alcoholic drinks, and tobacco. The pathology of the case was seen to be obscure.

But the pain in the upper and posterior part of the head, the dilatation of the left pupil, the paroxysms of irregular muscular motion in the extremities, etc., suggested the idea that there was a low grade of inflammation or irritation in the membranes covering the cerebellum, and extending to the tubercula quadrigemina. This suggested an alterative

and mildly anodyne treatment. He was required to avoid all stimulating drinks; live on milk and farinaceous diet; and to take a teaspoonful of the following prescription each morning, noon, and tea-time:

R.	Sodii iod.	.....	3 iij.
	Hydrarg. bichlor.	.....	gr. j.
	Ext. conii fl.	.....	3 iv.
	Syr. prun. virg.	.....	$\frac{2}{3}$ ij.
M.	Aquæ	.....	$\frac{2}{3}$ iss.

He was also directed to take from fifteen to twenty grains of bromide of potassium, at bed-time, to secure better sleep.

He has now been under the influence of this treatment about ten days, and is certainly much improved. He complains of much less pain in his head; sleeps better at night; and his periods of mental abstraction and irregular muscular movements, are less frequent and less severe; there is also a little less dilatation of the pupil of the left eye. The same treatment was continued.*

We have here another patient, a boy aged ten years, who has been brought in from the country, and is presented to the clinical class by the request of his attending physician.

History.—Up to the time he was eight years of age (two years since), he is represented to have been a healthy, robust boy, physically, and bright and active mentally.

About two years since, while attending school, he began to exhibit certain nervous symptoms, or singular mental traits, that soon developed into incoherent laughing, which, after a few days, was followed by equally incoherent or un-

* NOTE.—The patient has now been under the above treatment for five or six weeks, and is up, going in and out, with the appearance of being well, although he still has spells of strange feelings, and fearful apprehensions, especially in the night.

controllable crying, with wringing of the hands, pulling and twisting of the clothes, etc. These symptoms were followed by some irregular muscular movements and facial contortions, resembling slight chorea, which still continue.

After a few weeks he was found to have, almost every night, one or more paroxysms of suddenly crying out, with strange sounds, and muscular contortions, though not like ordinary spasms or convulsions, and not followed by any period of unconsciousness. About two months after the boy was noticed to be unwell, a slight swelling was discovered by his attending physician, in the right inguinal region, which, the boy said, was tender, and sometimes painful; and the doctor found that pressure with the finger on the swelling, uniformly caused symptoms similar to his nightly paroxysms. After the use of some alterative and cathartic remedies, this swelling, and all local symptoms in the inguinal region, disappeared. The nightly paroxysms, however, have continued, with gradually increasing frequency, until, at present, they average six or seven each night. They consist in starting suddenly from sleep, with crying out, and, generally, violent swinging out of his arms, kicking with the feet; sometimes bending the body forward, followed by violent extension, and reckless tossing, but no frothing at the mouth, stertorous breathing, or stupor. The individual paroxysms last but a few minutes, at most; and the boy retains a good appetite—a good degree of general nutrition; but his gait, in walking, has become awkward, his nervous system impaired, with little power to fix his attention, and little apparent inclination to talk. He is very restless during the day, moving about almost constantly, but to no definite purpose. His bowels are nearly regular; but there occurs, about once in six or seven days, a mucous or slimy discharge, as though there was still some point of irritation in the mucous membrane of the colon.

Pathology.—From the preceding history, it will be conceded that the nature of this case is somewhat obscure. As is usual in such cases, the boy has been treated by several medical men, and subjected to a great variety of medication. The gradual impairment of his mental faculties, and altered muscular movements, with the nightly paroxysms, are sufficient to show, not only a morbid condition of the brain, but that long continuance of such irritation or condition has induced morbid or defective nutrition of the cerebral substance; and, unless it can be removed, it will end in arrest of cerebral growth, and dementia. In its commencement, the grade of morbid action appeared to be intermediate between that of chorea and epilepsy; but, in its progress, it has approximated more and more to the latter disease.

If this view of its pathology be correct, the question would still arise, whether the cerebral irritation was primary, or reflex from some point of disease elsewhere, more especially in the cæcum, or some part of the ileo-cæcal junction, as suggested by the swelling and tenderness discovered over that region, about two months after the boy began to complain. As a general rule, reflex irritation in the nervous centers does not lead to as marked evidences of impairment of nutrition, and of mental faculties, as is presented in this case; yet, the fact that indications of special local disease in the right inguinal region were noticed early in the case, and that there still occurs, every week, a single mucous discharge from the bowels, should not be entirely overlooked.

Treatment.—There are three leading ideas that should govern our treatment of the case, in its present stage: one, to remove, as far as practicable, any present existing local disease in the mucous membrane of the intestines; another, to overcome the morbid sensitiveness, or irritation, in the cerebral center; and the other, to restore a healthy, active,

nutrition of the brain substance. To meet the first indication, the following prescription was suggested :

℞.—Argent. nit. gr. x.
Ext. hyoscyam. gr. xv.

M. Fiant pilulæ xxx. Give one pill before each meal.

At the same time, for the second indication, the following was directed :

℞.—Potass. brom. ʒ iv.
Tinct. digitalis ʒ iv.
Ext. scutellariæ fl. ʒ j.
Syr. prun. virg. ʒ iiss.

M. A teaspoonful to be given half an hour after breakfast, and dinner, and at bed-time, in a little water.

The dose at bed-time might be increased to a teaspoonful and a half, if found necessary, to interrupt the night paroxysms. The first prescription might be discontinued, after the first two weeks, and a teaspoonful of the compound syrup of the hypophosphites, with an excess of the phosphorous acid, given instead of the pills, which would meet the third indication named. To have a fair chance of success, the second prescription and the hypophosphites should be continued several months, with a diet of milk, farinaceous articles, vegetables, and fruit, but without either *meat or stimulating drinks*. He should be allowed to take a fair amount of out-door exercise, daily, and be subjected to mild, cheerful, mental discipline.

LECTURE XX.

PNEUMONIA.—DOUBLE PNEUMONIA—STHENIC AND TYPHOID
PNEUMONIA.

Gentlemen: Mr. G——, a laboring man, aged about 30 years, was admitted into the hospital November 3d, 1873. He informed the house physician that he had been attacked, only three days previously, with headache, pains in the back and limbs, followed by fever, some cough, with soreness in the chest and a loose condition of the bowels. At the time of his admission his expression was dull, with slight flush on the cheeks; tongue slightly coated; skin but little above the natural temperature; respiration short and quick; pulse too, soft and weak; bowels moving at the rate of eight or ten times in the twenty-four hours; abdomen moderately full and tympanitic; expectoration scanty and tinged with blood, though the cough was not severe. He was directed a teaspoonful of the emulsion of turpentine and laudanum every three hours, and wheat-flour and milk-porridge for nourishment.

The same evening, however, he became extremely depressed; his skin cool; lips bluish; breathing short, hurried, and accompanied by a great sense of oppression; pulse small, frequent and feeble; and his expectoration

bloody mucus. Percussion revealed almost entire dullness over the greater part of the right side of the chest, with a lesser degree of the same at the lower, lateral part of the left side. There was also strong vibration of voice, or bronchophony, over the right side, and tubular, respiratory sounds. These symptoms and physical signs indicated extensive and rapidly-increasing pneumonic exudation: so extensive, indeed, as to threaten speedily fatal results. Sinapisms were applied freely, both to the chest and extremities; and six grains of carbonate of ammonia dissolved in camphor-water, with the addition of a little camphorated tincture of opium, were given between each of the doses of the emulsion. He also took, during that night, a few times, small doses of brandy in sweetened water.

At my visit on the following day, which was yesterday, the surface and extremities had become warm, but the countenance was still depressed, and lips leaden-hue; the pulse soft and frequent; breathing short and imperfect; mind dull and drowsy; bowels loose; some cough, and expectoration composed of frothy mucus mixed with blood, with the physical signs the same as just described. The carbonate of ammonia mixture, alternately with the emulsion, was directed to be continued, with two grains of sulphate of quinine added to each dose of the latter, and a blister-plaster applied to the right side of the chest. To-day you find him still with a depressed, dull expression of countenance, probablia not quite so bluish, and the respiration a little more full; pulse still soft and weak, but less frequent; expectoration more free and less bloody, with nearly the same physical signs as yesterday. After the members of the class had examined the patient, it was stated that the principal objects of further treatment were to sustain the patient—more especially the tone of the vascular system—and to promote the re-absorption of the pulmonary exudations. As the

looseness of the bowels had ceased, the emulsion of oil of turpentine and laudanum was omitted; but the two grains of quinine was continued, in connection with the carbonate of ammonia solution, every four hours, and a teaspoonful of the ordinary muriate of ammonia mixture given alternately with it. The regular administration of simple nourishment was also enjoined, as of equal importance with the giving of medicine.*

This case presents strongly-marked typhoid or asthenic symptoms, which are increased by the unusual looseness of the bowels, and consequently cannot be regarded as a fair representative of ordinary pneumonia. In such cases as this, the first stage, characterized by exalted susceptibility or irritability of the structure with intense congestion of the blood in the capillary net-work surrounding the air cells, is generally of very short duration. Exudation takes place early and copiously, sometimes, as in the present case, threatening to suffocate the patient, and giving rise to that purplish or leaden hue of countenance; soft, quick pulse; oppressed breathing, and rapidly increasing dullness on percussion, that was seen in this patient at the time of his admission. In the more common and active or sthenic cases of pneumonia, the attack is generally ushered in with a decided chill, followed by high febrile action; deep-seated and severe pain in one side of the chest; a rapid increase of temperature, often reaching 102° F. by the end of the first twenty-four hours; the face suffused with redness; respiration short and frequent; pulse from 90 to 110 per minute, and moderately full; some cough, with a scanty mucous expectoration, afterwards becoming more in quantity and mixed with blood; urine scant and high-colored, with deficiency of the chlorine salts; tongue covered with a white

* This patient continued to improve slowly until convalescence was established.

coat, and bowels either natural or slightly costive. During the first twenty-four hours auscultation reveals a fine, dry, crepitant râle over the affected part of the lung, with only slightly diminished resonance. But during the next three days the crepitant râle gradually disappears and is replaced by a mucous rhonchus, and the dullness becomes more strongly marked. During the same time the temperature usually increases to 104 or 105; the expectoration more copious and bloody; the urine more scanty, with greater deficiency of chlorides, and often containing some albumen. In most cases of active pneumonia the fever and other active symptoms reach their climax between the fifth and seventh days after the initial chill, and from that time the temperature begins to decline; the expectoration is less bloody; the skin often a little yellow; the bowels more free, and the urine more natural in quantity, with less deficiency of the chlorides. The shortness and frequency of respiration, and the dullness on percussion generally continue, and sometimes even increase for two or three days after the temperature abates and the secretions have become more free. Most recent writers describe three varieties of pneumonia—the *croupous*, the *catarrhal*, and the *interstitial* or *chronic* form. The second variety differs from the first chiefly in the fact that the inflammation involves the smaller bronchial tubes and air vesicles, as well as the structure of the lung.

The third is a sub-acute grade of inflammation in the connective tissue, capable of persisting in a chronic form, and inducing either carnification or caseous degeneration. Clinically, we have thought it of much greater practical importance to group or classify our cases of pneumonia in accordance with the accompanying state of the system and the grade of fever. In one series of cases we find the accompanying fever active; the pains acute; the flush of the face red;

pulse firm; the temperature high; the crepitations sharp and dry, and the sensibilities of the patient acute. In another series of cases, the febrile reaction is less acute; the pains more dull and obscure; the flush of the face purplish or dingy; pulse frequent, but soft and weak; mind dull; and the expression of countenance dejected and careless. The first of these series we call active or sthenic pneumonia, and the second, typhoid or asthenic. But in the more malarious districts of our country, another class of cases are frequently met with, which differ from the first series chiefly in the more decidedly remitting character of the fever; the more rapid exudation into the lung tissue; thinner and more copious bloody expectoration, and the earlier and more decided appearance of yellowness of the skin and eyes. The essential pathological changes which take place in the lung are the same in kind in all these classes of cases, differing in degree and in the rapidity of their progress on account of the coincident condition of the blood and properties of the tissues generally.

During the first stage, lasting from one to three days in different cases, there is intense congestion of the capillaries, with increased irritability of the inflamed structure, compressing the air-cells and giving rise to the characteristic crepitant râle. The continued vascular distension is soon accompanied by exudation, more or less rapid, both into the air-cells and the interstitial spaces of the tissues. Some of this exudative material passes from the air-cells into the bronchial tubes, and appears in the expectoration, while the remainder accumulates in the tissue, rendering it dense, partially impermeable to air, deep red color, and two or three times as heavy as natural. This is the second stage of the disease, and reaches its climax, generally, in from three to five days, or in from five to nine days from the initial chill. Early in this stage the crepitant râle is superseded by the

sub-mucous and mucous rhonchi, with decided dullness on percussion. When this stage is completed, and no further exudation takes place, the temperature of the body begins to decline; the restlessness and pain diminish; the expectoration continues free, but less bloody; the chlorides soon begin to increase in the urine, and the dullness on percussion also slowly diminishes, until, in about one week from the end of the second stage, in favorable cases, convalescence is established. This is the third stage or period of resolution, during which the exudation taking place in the second is removed by re-absorption and expectoration. In such cases as are not tending towards a favorable result, the commencement of the third stage is marked by great oppression of breathing, the respiratory movement being mostly abdominal and accompanied by coarse mucous rhonchus; a soft, weak and frequent pulse; a leaden or purplish hue of the face and lips; often profuse sweating; and more or less delirium. The expectoration in some cases becomes purulent; in others, thin, dark red, and copious; and in still other cases the lung tissue becomes rapidly filled with a semi-œdematous infiltration, with only a scanty expectoration of frothy mucus. In these unfavorable cases, the dullness on percussion is not only persistent, but generally increases, both in extent and completeness, and the urine remains scanty, deficient in chlorides, and containing more or less albumen during the second week after the attack.

While the essential changes taking place in the inflamed pulmonary tissue, such as morbid sensitiveness of the structure and accumulation of blood, with some degree of exudation, are the same in kind in all cases, there are certain other morbid processes or changes that are determined by the co-existing conditions of the general properties of the solids and fluids of the system, and the sanitary influences surrounding the patient.

Thus, the rapidity and extent of the exudation; the tendency of the exudative material to plastic organization and subsequent resolution, or to purulent or caseous degeneration, will depend on the condition of the blood and vital properties of the patient at the time of the attack, and the sanitary influences that had surrounded him. Therefore, no plan of treatment can be devised that will be applicable to all cases of pneumonia. The leading indications to be fulfilled, are the same in the first and second stages of the disease in all cases, it is true; but the means best adapted for fulfilling them may differ much in different cases.

To lessen the irritability of the inflamed tissues; to relieve the intense vascular fullness, and thereby limit the amount of exudation, are the special objects to be accomplished in the first stage. If the patient, previous to the attack, has been healthy, his blood plastic, and his sanitary surroundings free from the causes of typhoidal diseases, one prompt, free bleeding from the arm, followed by arterial sedatives sufficient to control the circulation, united with just enough anodynes to lessen irritability and pain, will constitute the most efficient treatment that can be devised for checking the progress of the disease, and limiting the amount of exudation. The earlier these means are employed the better will they succeed in the accomplishment of their object. In most cases of pneumonia, exudation from the congested pulmonary capillaries begins early, and reaches its full completion by the end of the third, or during the fourth day after the attack. Practically, therefore, bleeding and direct sedatives must be limited mostly to the first three days of the disease. That a prompt and free bleeding in the first or congestive stage of active pneumonia, followed judiciously by sedatives and anodynes, is capable of greatly lessening the tendency to exudation, and favorably

modifying the whole subsequent progress of the disease, even to the extent of materially shortening its duration, I have no doubt. I have seen it demonstrated so frequently at the bed-side in former years, when practicing in a rugged, non-malarious district of country, that to doubt is to distrust the evidence of my senses. That many cases, even of the active class, can be treated safely without bleeding, is true. But it is equally true that to omit it in the first stage of the more active and severe cases, is to greatly increase the danger and protract the sickness of the patient. It must be admitted that the chief danger in pneumonia arises from the extent of the exudation, filling up the pulmonary tissues, and obstructing the respiratory function. If, by taking sixteen or twenty ounces of blood from the arm during the first day or two, we can prevent half that quantity of exudation from the capillary vessels of the lungs, we shall both conserve the strength of the patient and shorten the duration of the third stage of his sickness. For the lodgment of half a pint of blood in the form of exudation, will result in a much greater tax upon the patient's strength during the second and third stages, than the abstraction of three times that amount from the arm in the beginning. You will bear in mind, gentlemen, that all my remarks in reference to bleeding and arterial sedatives, such as *veratrum*, *aconite*, *gelseminum*, etc., are applicable to active sthenic pneumonia in its first stage only. When the disease is associated with a typhoid condition of the system, as is often the case in densely populated cities, manufacturing towns, etc., these remedies (and especially bleeding) are not well borne, and may be injurious. I have seen a patient of this class bled during the first stage of the disease, who fainted before a teacupful of blood had been obtained from the arm, and who required the prompt use of diffusible stimulants, as carbonate of ammonia, camphor, and nourishment, to prevent fatal exhaustion. In this class

of cases I have succeeded best by giving, during the first two or three days, the two following prescriptions :

R.—Ammon. hychochlor.	℥ iii.
Antim. et potass. tart.....	grs. ii.
Mophiæ sulph.....	grs. iii.
Syr. glycyrrhiz.....	℥ iv.

M. Take one teaspoonful every four hours.

R.—Hydrarg. chloridi mitis.....	grs. vi.
Ipecac. pulv.....	grs. vi.
Opii pulv.	grs. iii.
Sacch. alb.	grs. xxx.

M. Fiant pulveres vi. Give one powder every four hours alternately with the preceding prescription. At the same time cover the chest with emollient poultices.

At the end of twenty-four hours the powders should be omitted, and if the bowels have not been moved a mild laxative should be given, sufficient to procure one or two intestinal evacuations ; but the hydrochlorate of ammonia mixture may be continued every three or four hours for several days. If the symptoms are not favorably modified by the third or fourth day, a blister from three to six inches square should be drawn on the side of the chest most affected. If the pulse becomes soft and frequent, the breathing abdominal, and the lips leaden hue, two-grain doses of quinine with carbonate of ammonia or camphor, or both, may be given with advantage between the doses of the other medicine. If delirium or morbid vigilance becomes troublesome, as sometimes happens, ten or twelve minims of chloroform added to each dose of the hydrochlorate of ammonia mixture will generally procure sleep, and greatly improve the condition of the patient.

Those cases of pneumonia that occur in patients influenced by malaria, may be treated in the same manner as the active sthenic cases, except that bleeding must be restricted

more rigidly to the first or second day, and fair anti-periodic doses of quinine should be given during the time of each diurnal remission in the fever.

The hour will not permit me to pursue the subject further at present. If you remember that pneumonia may attack persons presenting widely different conditions of the solids and fluids of the system, and in the midst of equally different sanitary surroundings, and that each stage of the disease has its special indications for treatment, you will not find it difficult to treat each case on its own merits rationally, and avoid that blind routine which is the bane of clinical medicine.

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