

borders for wall papers, dyed flock, free from arsenic, is generally used; but emerald green or Scheele's green is often laid over it, to form raised figures of different shades of green.

It is generally easy to ascertain the presence of arsenic in the green colors by simple chemical tests, which the physician can apply. The readiest mode is to place a slip of the suspected paper, or pigment scraped from its surface, in a watch-glass or white saucer, with a little aqua ammoniæ. This dissolves the arsenical coloring matter and forms a blue solution, owing to the presence of copper. A few drops of a solution of nitrate of silver added to the blue liquid, or a stick of lunar caustic dipped into it, will now give the characteristic lemon-yellow precipitate of arsenite of silver. The one point requiring attention is to avoid excess of ammonia, which prevents the formation of a precipitate. When the quantity of pigment is small, it is advisable to dilute the aqua ammoniæ somewhat. The blue color of the ammoniacal solution is not a sufficient evidence of the presence of arsenite of copper; because other compounds of copper, partially soluble in ammonia, as green and blue verditer, are occasionally used on paper hangings. If an additional test is desired, a little pigment scraped from the paper, and laid on a piece of burning charcoal, will give the peculiar garlic odor of arsenic. Much size or other organic matter mixed with the pigment may produce empyreumatic odors capable of concealing the garlic odor, or even resembling it. This test may be useful as a corroborative one, but is not by itself reliable.

Papers colored by chrome green are recognized by dipping them into muriatic acid, diluted by three or four measures of water. Chromate of lead is quickly dissolved, leaving Prussian blue; and the paper assumes a bright blue color. On adding a small excess of aqua ammoniæ to the acid solution from a paper colored by chrome green alone, yellow chromate of lead is precipitated. If emerald green or Scheele's green is mixed with the chrome green, the muriatic acid dissolves it, and its presence is likely to be overlooked, unless the paper is previously treated by ammonia, which attacks only the arsenical pigments. Either hydrochloric acid or aqua ammoniæ removes Scheele's green and emerald green completely from papers colored by them alone, and restores the original color of the paper.

DIPHTHERITIS—A NEW PLAN OF TREATMENT.

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I do not claim that I have discovered an infallible remedy for diphtheritic disease; yet I do affirm that the plan of treatment that I shall propose in the following article has proved in my hands far

more successful as a therapeutic agent in its treatment than the "tonic course" that constitutes at present the popular remedy. In fact, since I adopted the plan of treatment advised in this article, my practice in diphtheritic disease has not been attended with a single fatal result, although it has been applied to some of the most severe cases that I have met with. Previously, while I pursued the usual "tonic course" of treatment, it was attended with the frightful mortality of 75 per cent. of the number of cases treated.

To enter at this time into an exhaustive discussion of the cause, nature and treatment of diphtheritic disease would make an article too cumbersome for the pages of your JOURNAL. To those interested in my plan of treatment I would say, that a volume embodying my views in full upon the subject will soon be issued. I will content myself at this time with giving a brief outline of my theory of diphtheritic disease and my plan of treating it. I would remark, however, that the proportions and symmetry of the theory will signally suffer in consequence of the brevity that I shall be obliged to use.

The remote or pre-germinal cause of diphtheritic disease I conceive to be a morbid condition of the circulating fluids of the body. This condition is probably produced by an obscure miasmatic atmosphere. The structure that becomes essentially the seat of the disease I believe to be the sympathetic nervous system. The portions of this system that are the most directly concerned in its manifestations are, I believe, the spheno-palatine or Meckel's ganglia. These ganglia, it will be recollected, distribute nerves that govern the functions of nutrition and secretion in the mucous surface lining the nasal passages, fauces and pharynx. The procatactic or exciting cause may be a common sore throat, or any cause that is in itself an irritant to the mucous membrane lining the nasal passages and throat. Through this irritation a morbid impression additional to the one produced by the diphtheritic poison circulating with the blood, is made through their afferent nerves upon the spheno-palatine or Meckel's ganglia, the two morbid impressions concurring to light up in the mucous tissue to which they distribute their nerves an exaggerated function of nutrition and secretion, the fruit of which is the characteristic deposit. That the ganglia of the sympathetic nervous system are independent of each other in the elaboration and transmission of nervous fluid, is an established physiological fact. It is also highly probable that when a single ganglion is stimulated or excited from any cause, it has the power of diverting from the rest belonging to the same system, and especially from those adjacent, the *spiritus vitalis* or their own proper secretions; diminishing, thereby, the functions of nutrition and secretion in those tissues they supply with nerves, while the same functions are exalted in those tissues that are supplied by the nerves of the dominant ganglion.

My theory of diphtheritic disease then, is, that the sphenopalatine or Meckel's ganglia, under the influence of morbid excitement, appropriate to themselves more than their proportion of the nervous fluid of the nervous system to which they belong, by the aid of which they are enabled to carry on a morbidly exaggerated function of nutrition and secretion in the tissue to which they distribute nerves. The morbid excitation is produced by two causes—one the general, the other the local. The general one I term the remote or pre-germinal; the local one, the exciting or procatarctic cause.

While this morbid excitement is present in the sphenopalatine or Meckel's ganglia, there is a diminished function of nutrition and secretion, from a lack of the normal supply of nervous fluid, in all the tissues of the body except those that are supplied by the nerves from these ganglia. This explains the diminished action in all of the important secretory organs of the body which characterizes a severe case of diphtheritic disease. To this obstruction of the secretory process may probably be ascribed the rapid deterioration of the blood that doubtless takes place in consequence of the failure of the appropriate glands to eliminate from it the poisonous qualities which it contains. The partiality of diphtheritic inflammation for the mucous surface lining the nasal passages and throat, is also explained by the fact that these tracts are more exposed than the rest within the body to the effects of irritating agencies. Thus it will be seen that the mucous surface lining the nasal passages and throat is the only one within the body that is exposed in any considerable degree to the exciting cause of the disease. A blistered or excoriated surface upon the periphery of the body becomes, from the same cause, a procatarctic agent, that may involve the nervous centre from which it receives its nerves of nutrition and secretion.

In the treatment of diphtheritic disease it is my aim to cut off communication in the sympathetic nervous system between its ganglia belonging to the trunk, and those belonging to the cranium. I effect this by applying a sedative agent to the site of the superior cervical ganglia. The sedative agent must be of such degree of power as to deprive, completely or in part, the nervous centres beneath it of the power of elaborating and transmitting the *spiritus vitalis*. The sphenopalatine or Meckel's ganglia being thus in a state of partial or complete isolation, will no longer be enabled to divert, from the ganglia belonging to the trunk, their normal secretion of nervous fluid, by the aid of which they are enabled in diphtheritic disease to produce a monstrosity in nutrition and secretion. In addition to this, I apply a stimulating agent to the site of the ganglia of the trunk situated in the dorsal and lumbar regions. This is done to increase the secretion of the nervous fluid in those ganglia, which is no longer diverted from its proper channels, in order to re-establish as soon and as completely as possible the functions

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of nutrition and secretion in the important secretory glands to which they distribute nerves. I also administer internally, iron in combination with nux vomica or its active principle strychnine, usually the combination known as the citrate of iron and strychnine. The iron supplies the blood with hæmatosin, which in the course of the disease is rapidly destroyed. The strychnia acts as a stimulant and tonic to the spinal cord. Such an action produced upon its tissue will probably produce the effect of counter-irritation upon that portion of its own system contained within the cranium. From such an effect, through the channels of communication that connect this portion with the sympathetic nervous system of the same region, there may be produced upon the sphenopalatine or Meckel's ganglia a similar though less decided result. I sometimes prescribe internally a mild diuretic, and always as nutritious a diet of animal food (usually broths) as the patient will accept. Diffusible stimulus, quinine, and all agents, except iron, that have a tendency to excite the cerebral functions, for obvious reasons I avoid.

My course of treatment, it will be seen, has not in view the elimination of the diphtheritic poison from the blood by the aid of neutralizing agents, but the restoration and stimulation of the functions of nutrition and secretion, from the tonic and curative action of which, it will rapidly disappear through the natural emunctories of the body. The *modus operandi*, with my plan of treatment, is as follows:—I apply ice, and in some cases a more refrigerant agent, to the site of the superior cervical ganglia of the sympathetic nervous system, or to a surface (in a child) about two inches square upon each side of the spine, about one inch below the occipital bone. At the same time I apply heat, either by the application of hot water contained in Indian rubber bags, or by napkins wrung out of hot water, to the site of the ganglia in the dorsal and lumbar regions, or to each side of the spine below the shoulders, its entire length. The applications of the refrigerating agent and of the heat *must be constant*, and the degree of each must depend upon the type of the disease. Internally, I administer the citrate of iron and strychnia, as already mentioned, sometimes combined with a mild diuretic. When the secretion of the skin is excessively deficient, I have used with advantage the nitro-muriatic acid bath.

The following case of diphtheritic disease is the last severe one that I have treated according to the above plan. I copy it *verbatim* from my record.

Bridport, Dec. 9th, 1863. Ten o'clock, P.M. Called to see a daughter of Mr. Rinaldo Kingsland. Disease, diphtheria; duration of same, 28 hours. Age of patient, 8 years. Pulse 175 per minute, very soft and irregular. Skin very hot and dry. Secretion of kidneys deficient, no urine having passed for ten hours. Respiration much oppressed and hurried; deglutition extremely difficult; the fauces and pharynx heavily loaded with a brownish deposit;

cough very croupy; nostrils discharging an amber-colored exco-riating secretion; the breath horribly foetid; the neck, in the parotid and sub-maxillary regions, badly swollen; the forehead and nasal regions pinched, the eyelids œdematous, and the cheeks puffed and shining. A physician was called in at 10 o'clock, who prescribed a tonic and diuretic, the patient rapidly growing worse under the effect. Prescribed ice for the back and neck, and napkins wrung out of hot water for each side of the spine below the shoulders; internally, two grains of citrate of iron, in combination with one twenty-fourth of a grain of strychnia, together with five drops of sweet spirits of nitre once in three hours.

Dec. 9th, 11 o'clock, P.M.—Respiration less hurried; pulse 160 per minute. Patient complains that the ice is not cold enough—that it is getting warm.

Dec. 10th, 9 o'clock, A.M.—Respiration much improved; pulse 130 per minute, and improved in tone; deglutition less difficult. Gave the patient some animal broth; same treatment. At 4 o'clock, P.M., patient was more comfortable. Pulse 120 per minute, and decidedly improved in tone; respiration free, and but little hurried; breath less foetid; discharge from the nostrils less, and not so exco-riating; skin moist; secretion of the kidneys increased. The pa-tient takes broth freely, and remarks that the application of heat and cold to the region of the spine feels grateful. Same treatment.

Dec. 11th, 10 o'clock, A.M.—Pulse 120, improving in tone; res-piration natural; breath less foetid; urine more plentiful; counte-nance assuming a natural expression. Same treatment.

Dec. 12th.—Patient improving. Pulse 110, quite firm; resolu-tion of the swelling in the neck taking place, the deposit becoming detached from the mucous surface of the throat; discharge from the nostrils ceased; breath but little tainted. The patient takes solid animal food, besides the broth. Same treatment.

Dec. 13th.—Patient better; strength and appetite improving; the deposit becoming rapidly detached; the breath sweet; the secre-tions of the skin and kidneys normal. Same treatment.

Dec. 14th.—All the symptoms better. Patient complains that the ice and heat applied to the spinal region feel disagreeable; dis-continue their application, but give the dose of my former pre-scription once in six hours.

Dec. 16th.—Patient sitting up, and improving rapidly.

Dec. 18th.—Patient gaining rapidly in strength.

Dec. 20th.—Patient enjoying an excellent appetite, and able to sit up most of the time. Discontinue the iron and strychnia.

Dec. 25th, 1863.