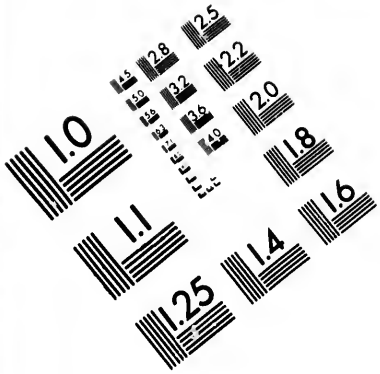

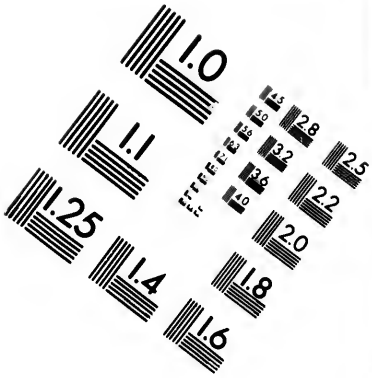

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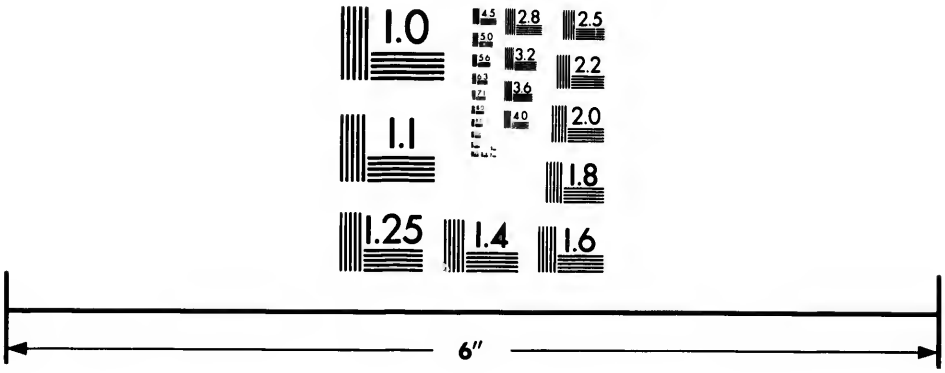

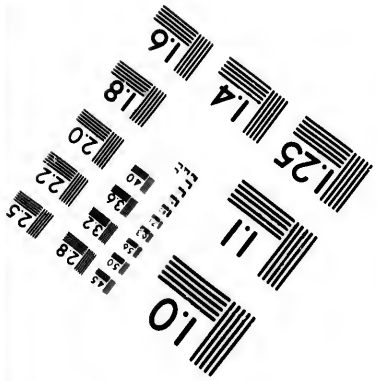

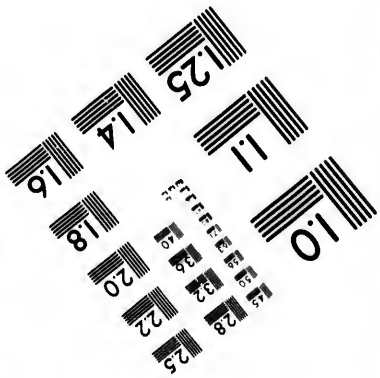

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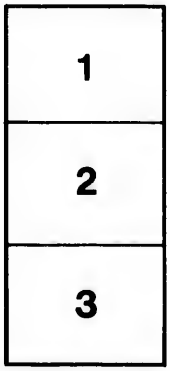

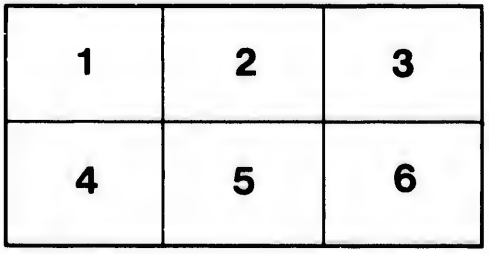

DIPHTHERIA. --- DIPHTHERITIS.

A LECTURE BY

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BLISSFIELD, NORTHUMBERLAND CO., N. B.

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DIPHTHERIA.--DIPHTHERITIS.

A Lecture by Rev. W. M. Edwards, Blissfield, N. Co., N. B., Delivered at Doaktown, N. Co., June 15th, 1882, and Published by the Unanimous Request of the Audience.

The domain of Science lies open to all who will enter in and take possession. What we chiefly need in this branch of study is to stimulate each other to greater effort to clearly investigate the causes of this disease, and by scientific research to overcome the difficulties that obstruct the way, and let the light of knowledge shine out on the public mind, &c.

True scientific men should be public benefactors, seeking truth in a spirit of entire disinterestedness; they should hold in view the good of all mankind, without distinction of class, color, nature or creed. Any estimate of the function of science which falls short of this, is too low and unworthy of the matter to which it is applied.

Ira Warren, M. D., says, We have much need of liberality. That medical progress may be real, physicians must be free from bigotry. They must have no narrow prejudices against any man, or class of men; but be ready to examine candidly any new thought or new remedy brought to their notice, from whatever source it may come.

They should not hedge themselves about with such restrictive by-laws and societary rules as are calculated to fetter their thoughts, and turn their investigations, by a sort of moral necessity, into the narrow channels of party conservatism; remembering that he who is once enclosed by such restrictions, must have a path for his feet through bigotry, and even malevolence itself, before he can escape them or be a free man in any noble sense.

The members of medical societies do themselves no credit, in the nineteenth century, by putting on airs and telling others to stand at a distance. This would do better, had medicine become an exact science; but while the primary effects of even *opium* are not settled—some physicians considering it as primarily stimulant, others as sedative, others as stimulant to the nerves and sedative to the muscles, others as neither, and still

others as alterative, such exclusiveness seems neither wise nor modest. When the professors of the healing art can hoard medical knowledge as misers hoard gold, and can submit its purity to equally certain tests, it will appear in better taste for them to grow exclusive. Until then, the most becoming badge they can wear is the christian direction, "Let each esteem others better than himself."

Medical societies with liberal by-laws, are fitted to do good; but it would be hard to show that those with stringently restrictive rules can operate otherwise than as checks upon progress. In truth they are apt to become mere catacombs in which to embalm dead ideas. They are very liable to be made the instruments for accomplishing the ambitious purposes of a few leading men. They tend to suppress all sympathy with everything outside their organization; and they beget a feeling like that which would forbid the fixed stars to drop their light into our atmosphere without first coming down and joining our solar system.

How different the character of the true man and physician! He is genial in his disposition. He has no dislikes and antipathies, and hates no man except tyrants. He accepts knowledge, though it come from the humblest source; believing there is no experience but will repay a study of it, and no husbandman's ploughshare but turns up a soil worth analyzing. He belongs exclusively to no party, and can be approached easily by respectable men of every stamp.

Whether belonging to the same society with him or not, you may take hold of his nature and draw him out, without having it slip from your fingers, and spring back from your presence into a thousand kinks, like a twisted thread. He is a whole man. God made him for the world and not for a party. By some strong influence you may possibly, for a time, draw him from the world into some narrow sphere, but not only will his reluctant nature, like a retiring tide, run back continually to embrace the continent, but will soon break from its confinement, and like a full sea, come back, boiling and running over to bless the world.

What is now wanted, that medical knowledge may increase, is *liberality*, in the true and full sense. We want true men in high places, who will not only LET THEIR OWN LIGHT SHINE EVERYWHERE, but WILL CEASE TO HINDER OTHER MEN'S LIGHT FROM SHINING.

Beyond this, and of nearly equal importance with it; WE WANT MEDICAL KNOWLEDGE DIFFUSED AMONG THE PEOPLE. We want—what the world has never seen—A POPULAR MEDICAL LITERATURE. We want the temples of Esculapius pulled down, and the priests turned into the streets to become teachers of the multitude, rather than worshippers in the inner sanctuary.

I know this will be stoutly denied, but not, I think, on well-considered grounds. We do not think it necessary to confine a knowledge of the soul to the ministers of religion. There is no branch of theology, which we do not deem it proper for Laymen to study; we even popularize it for our children. In the most obscure districts of the Dominion of Canada, Laymen who follow the plough or push the plane, become, in many cases, eminent theologians. Why should they not study the Lower science which relates to the body? They have not been able to heretofore, because its mysteries have been properly hidden under technicalities. These coverings should be torn off.

Physicians oppose the popularizing of this kind of knowledge too often, I fear, upon the sordid ground of self-interest. They think their own services will be less sought for.

We do not dispense with the service of ministers, because the people study theology, neither shall we cease to employ teachers and practitioners of medicine, when each man and woman is wise enough to study the healing art. The principal change we shall witness, will be much larger attainments in knowledge among practitioners,—just as the ministers of religion now know, and are obliged to know, ten times as much as in those darker periods, when the people received all spiritual knowledge from their mouths. The teachers of any art or science are obliged to keep in advance of their pupils. Let medicine become a popular study, and we shall have very few ignorant physicians, and quackery will become one of the impossibilities of the age; when no man will be allowed to treat any disease without he is able to show what that disease is—its causes—and its causes intelligently, even to the most common mind.

DIPHTHERIA.—DIPHTHERITIS.

Diphtheria is from a Greek word, signifying skin; Diphtheritis means inflammation—peculiar inflammation. Diphtherite means a membrane, &c., &c. This was a name given by Mr. Bretonneau to a class of diseases which are characterized by a tendency to the formation of false membranes, and affect dermoid tissue—as the mucous membranes, and even the skin.

Diphtheritis, then, is an inflamation of the throat, in which a sweating discharge of humors or moisture from animal bodies, or false membranes, are thrown out during the inflammation of the mucous membranes.

Here then we have a peculiar affection of the throat in which a disposition to the formation of false membrane is a prominent feature. The formation of these membranes however, in this disease, is not limited to the throat, but may occur on mucous surfaces elsewhere. In this disease, the local affection

is but the expression of a specific morbid condition of the system, which closely resembles that present in the severer forms of Scarlet Fever. But wherein you will inquire is the resemblance? First; in scarlet fever, the tongue is covered in the middle with white mucous; the tonsils are swollen, and the throat red; so we have the same in diphtheria. It is peculiar to scarlet fever, inasmuch as the inflammation of the throat almost always runs into a state of ulceration; as far as can be seen on pressing down the tongue the throat is swollen, and of a deep florid red; and on the tonsils may be seen white or grey ulcers,—the very same in diphtheria. In Scarlet Fever Typhoid symptoms show themselves; so they do in diphtheria; thus we trace a **STRONG RESEMBLANCE.**

We have this specific morbid condition of the system also in croup. Croup is an inflammation of the mucous membrane of the larynx and wind-pipe. It causes to flow out upon the surface of the membrane a peculiar fluid, which stiffens into a membrane, or skin-like substance, and adheres to the inner surface of the wind-pipe, and sometimes extends through the whole of the Bronchial tubes. This is membraneous croup,—the worst and most fatal form of the disease. But one asks, from whence does this film arise? I answer, it is formed of a congealable semi-fluid exudation from the mucous membrane itself, on being brought to the surface, and into contact with the inspired air. This substance grows thick and tough or leathery as we find it upon the mucous surfaces. The very same substance in a degree that we find in Diphtheria.

Diphtheria, then, says one of our best medical writers, is evidently a contagious epidemic, and it would not perhaps, be far out of the way to call it by either of the following names:—Epidemic Croup—Contagious Croup; Malignant Croup.

This disease is not a new one, it has existed since the Israelites left Egypt, in the year 1491, B. C. Spain, Italy, and Sicily felt its ravages in the sixteenth and seventeenth centuries. England, France, Germany, Holland, Sweeden, and the United States about the middle of the eighteenth century.

Many men of this generation will not acknowledge God to be the Supreme Governor of the Universe, but regard the whole as a matter of mere chance, and tell us that disease and death are subject to no rule or law whatever, there always was just about so much disease in the world, in some form or another, and there alway will be. That in particular localities, and for a time we may have fewer diseases, or they may change their appearance, or be less or more fatal, but taking a thousand years together, things remain about the same.

Now I will not stop to oppose the statements thus made, by counter statements of my own, it is, perhaps, sufficient to say

that such a belief belongs to a species of fatality alike common to Mahometanism and Paganism, but utterly unworthy of the sunlight of Christianity, and Christian Science. FOR EVEN CHANCE ITSELF IS SUBJECT TO LAW. We believe that God has established certain laws within the organic domain, as well as without it, which are all fixed and immutable as those which were given at Sinai. We believe that obedience to all laws, whether natural or moral, has its appropriate reward here or hereafter, or both. We also believe, that disobedience to all law, whether natural or moral, has its fixed, and except in the case of special remission by special provision, has its appropriate and irrevocable, penalty. Thus we gain the connecting link between the natural and super-natural. It is a most remarkable fact, that the progress of diphtheria is always from the upper breathing passage, downward; never from the lower passage upward.

NATURAL CAUSES.

What I mean by natural causes, is, that produced or coming in the ordinary course of things, produced or affected by nature, or by the laws of growth, formation, or motion impressed on BODIES by DIVINE POWER.

Owing to the great obscurity which has long enveloped the study of this disease, a great deal is left for the inquirer of the present day to clear up. Of late, much has been expected from the employment of the microscope, in discovering its nature. Our expectations have not been disappointed. By its aid, much valuable information has been gained. One important fact has been fully attained. The discovery of a vegetable production, a cryptogamic plant, is present on the mucous surface, is evidently intimately connected with pathology, whose object is the knowledge of disease. The day has come when this must be admitted by all. Old superstitious ideas must give way before the increasing light of this new discovery, and consequently believe in the existence of these vegetable growths.

Sycon, means a fig, from which we have the name of a disease called Sycosis, a tumor of the shape of a fig, also a fungous ulcer, or horny excrescence about the eyelids. Dr. Bateman defines it—an eruption of inflamed, but very hard tubercles, occurring on the bearded portion of the face, and on the scalp in adults, and usually clustering together in irregular patches. As it regards the appearance of the irruption on the face, in one of its stages, it certainly bears a strong resemblance to diphtheria. The inflammation on the skin is the result of irritation caused by the existence of a parasitic vegetable production, first described by M. Gruby to the French Academy of Science. His discovery of the existence of a cryptogamic plant, (this class of plants includes

ferns, mosses, seaweeds, mushrooms, etc.,) surrounding the roots of the hair and the beard, in Sycosis, and he believed that its presence constituted a previously undescribed variety of the disease. Since the publication of his observation in 1842, many others have given us the result of repeated microscopic examination. J. Moore Neligan, M. D., M. R. J. A., says, "I fully coincide with M. Gruby, and Dr. Hughes Bennet, as to the existence of this parasitic cryptogamic plant in Sycosis. In some diseases we have the fern growth, the moss growth, the seaweed growth; in diphtheria the mushroom growth." Vogel corroborates this view, as to the existence of these growths in the human body, the correctness of which has been denied by many, who dwell in classic ignorance, and tell us its causes are unknown.

1. Let us see what this plant is:—Fungus a mushroom. Order of plants classed.—Cryptogamic Ficus.—A fleshy excrescence, often soft and reddish. Fungosity or fungus, as a fungus wound. M. Breschet has proposed to restrict the term fungosity to vegetation, which arises on denuded surfaces, such as mushrooms, etc. Medical Lexican, page 408.

2. Let us take up the history of this plant and see from whence it comes. The whole history of this mushroom, which, if only for the curious and highly interesting stages of its progress, merits a brief notice here. The chief source of failure in the investigation of this subject has been, that observers have fixed their attention on some one stage in the development of the fungus, and ceased to push their inquiries further. There are three successive stages, in each of which the plant presents a peculiar form. It has already been largely developed, when it begins to project beyond the glume, (the husk or chaff) which has protected its early growth; but there are usually other flowers at the same time which present it in a rudimentary state. It begins with a structure which M. Tulasne calls the *Sphacelia.* (An excresence which coats the diseased grain.) This appears on the outside of the ovary of the flower, and is intimately attached to it. Its development commences with that of the pistil, which serves as a soil for it. The ovary of the rye consists of a cellular membrane of two coats, the outer of which has a thick parenchyma, (a spongy substance) white and gorged with juice, the inner is very delicate and green. The sphacelia, when it takes possession of the ovary, identifies itself with the outer parenchyma and in some measure replaces it, being as it were, borne by the inner membrane. It rapidly increases, taking the form of the ovary, and almost obliterating its cavity. The ovule is either entirely wanting, or may be seen on a careful examination, in an imperfect form. For some time the parasite is represented entirely by the sphacelia, which is an oblong fungus mass

almost homogenous, soft and tender, marked on its surface by numerous sinuous furrows, and having within many irregular cavities, which, as well as the outer coat, are uniformly covered with linear parallel cells. From the summits of these peripheric cells, internal as well as external, issue oval corpulces, (small particles) from the 5 to the 7 thousandeths of a millimeter (the least measure of length) in length, which spread upon neighboring objects, and especially the glumes of the flowers they inhabit. They are a kind of reproductive cells, called conidia, which are produced by many fungi, long before the perfect plant is developed. M. Tulasne calls them "*Spermatic.*" In the early stage, the sphacelia respects the top of the ovary and the stigmas attached. The stamens often abort; but the filaments and anthers may sometimes be seen buried in the tissue of the sphacelia and altered by its action. Sometimes the ovule is not completely aborted, but it is certainly never developed into a monster grain. In all ergotted plants the top of the pistils and stigmas, when they remain, are often covered with a mouldiness, consisting of spores and entangled filaments which end by covering the parts with an abundant ashy or sooty powder. This is a different fungus, and was confounded by M. Quekett with the ergot plant. It is found as well in the non-ergotted as the ergotted flowers, and in those of plants which do not bear ergot. At a somewhat advanced period of the development of the sphacelia there exudes, especially from the summit, a very adhesive juice, which spreads over that structure bearing along with it an immense number of the seedlets or "spermatics,"

This leaves on the surface when dry an oily appearance, and afterwards the spots, where it remains, become brownish or blackish. But this exudationdoes not appear until the sphacelia has ceased to constitute the whole plant.

At the base of the sphacelia is produced a compact body, violet-black without, and white within, which is the ergot in a rudimentary state. With this commences the second stage in the development of the fungus. The young ergot is everywhere invested by the tissue of the sphacelia (which Tusane calls also spermogonia, from its office) but, as it increases it seems to be placed below the *spermatopherous apparatus*, and raises it steadily out of the floral bractes which concealed it, ending by supporting it wholly at its summit. Sometimes are carried with it the atrophied ovary, which still shows the hairs that crowned it. and some remains of the stigmas. It results that the ergot, which is technicaily the sclerotium of the fungus, remain for some time concealed in the sphacelia, so that this seems to constitute the whole plant. But when the function belonging to this has been fulfilled, which is apparently to impregnate the

sclerotium, it begins to become dry, and is much deformed. The ergot, on the contrary, increases in all directions, and some appears above the glume. As it augments, the thin coating which it has received from the spermatopherous tissue, especially below, gradually becomes thinner and seems to disappear; so that its surface, instead of being uniformly violet-black, is only here and there covered with the remains of the tissue, or by a deposit of the conidia or "spermatie." Nevertheless, the sphacelia, deformed, shrunken, and worn away by rains and other causes,remains long at the top of the ergot, along with the abortive ovary &c., and may even continue to adhere when the ergot is detached from the plant.

The time required for the full development of the sphacelia and the ergot or sclerotium varies, no doubt; but a rapidity of growth has been claimed for it which the truth will not warrant. The period has even been estimated at three days; but this is much too short. In an example under the observation of M. Tulasne at least a month elapsed after the appearance of the sphacelia before the growth was completed.

Apart from an obscure resemblance to the seed of the plant supporting it, the ergot has absolutely nothing in common with the normal grain, and it is surprising how it should have come, after investigation, to be considered as the hypertrophied seed. The anatomical structure and all the physical characters of ergot are those of mushrooms, or rather of a sclerotic mycelium (a firm body from which a mushroom is developed.) The parenchyma, which is white, dry and brittle, consists in all its parts of minute utricles, (little bags or bottles) globular, with rather thick walls, intimately united and filled with a limpid oil, but feebly colored with iodine. The superficial utricles, which alone are colored, have an outer wall thicker than the inner, and the color of these is what gives its characteristic hue to ergot. Not the least trace of starch is to be detected.

The germination of the ergot, and the growth of a minute mushroom, are the last stage in the developement of this fungus. About three months after ergot has been planted in a suitable soil, evidences of germination are seen in the sprouting of little globular prominences at points on its surface, which gradually enlarge, and raise themselves from the surface upon cylindrical stems, imitating in a diminutive way, the growth of ordinary mushrooms. These little fungi, belong to the genus *Spharria*. As they increase, the interior of the ergot becomes exhausted, no doubt by contributing to their growth; so that this product seems to act the part of certain tubers, in the higher forms of vegetation, containing germs and nourishment for their development. Falling to the ground in its natural course, the ergot in

the soil germinates and produces mushrooms, the spores of which, carried up with the juices of rye, become lodged in the ovary, where they begin the course of life and progress. These seeds have been constituted so minute and light, that they rise in the atmosphere, and are conveyed by the winds across seas, oceans and continents.

(Annales des Sciences Naturelles, 3 e ser.,xx. 5, A. D., 1853) and by Rev. Herbert W. Morris, A. M., on microscopic seeds.

When wheat, rye, etc., are just about to bloom in all their loveliness, they are stricken with a disease that bears a strong resemblance to diphtheria. Wherein is that resemblance ? It exudes certain moisture; this exudation, by the influence of the atmosphere, thickens and hardens into a substance resembling the spurr of a cock, something similar to the false membrane found in the throat in diphtheria.

As sycosis is the development of the seed on the outside, so diphtheria is the development of the seed on the inside. The seeds of this cryptogamic plant being carried by the currents of the atmosphere, meet us in a morbid condition to receive them, find a lodgement in our throats, and when fully developed are one of the causes of diphtheria. Another cause, is DAMAGED FOOD. Vast numbers of these seeds are not fully developed when the grain is gathered in, and it is eaten by us in our daily food. Fatal epidemics, in different parts of the continent of Europe, particularly in certain Provinces of France, have long been ascribed to the use of bread made from rye contaminated with this fungus, etc. This also is the reason why it breaks out in healthy localities, where there has not been a case for years.

Why some take it and others do not. There must be a constitutional peculiarity to receive this seed, and also to permit the little seed to germinate and grow; some morbid state of the system. If this state does not exist, it still retains its vitality, waiting to have its day. When that day comes this disease will be fully developed, and the community will be affrighted by diphtheria breaking out among them.

What kills the fish in the rivers of Great Britian and British Columbia? Professor Huxley informs us, that it is a fungus matter that forms on the skin, eats into the flesh, poisons the blood, and kills the fish. It is similar to the disease of the potato, or the diphtheria in human bodies.

Another cause of this disease may be clearly shown to come from the medicine manufactured by us during the past and present generations. Let men of science stand in the light of this subject, and consider well their own work. Does not a supernatural power call into existence the seeds we have been considering ; the development of which is purely natural. With-

out nature's predisposing causes, they may exist any length of time before their development; to prove this, please look at the longevity of seeds in general. The longevity of seeds may be reckoned among the greatest marvels of creation. Grains of wheat, after having lain buried with mummies for twenty-five centuries when moistened in the soil, and warmed by the sun, have germinated and reproduced as vigorously as if they had been the product of last harvest. Seeds that grew, long ages before Adam woke to consciousness, may at this day be found in the ground, possessing their original vitality undiminished and uninjured. A few years since, earth was brought up in England from a depth of 360 feet, and carefully covered with glass to prevent the possibility of any blown or floating seeds being deposited upon it; yet, in a short time, plants vegetated from it. Indeed alluvial and diluvial soils appear to be full of seeds to unknown depths, the produce of ages long gone by, and which need but to be brought to the surface, to sprout and thrive, as if they had but yesterday dropped from the parent plant.

In the time of the Emperor Hadrian, a man died soon after he had eaten plentifully of raspberries. He was buried at Dorchester. About thirty years ago, the remains of this man, together with coins of the Roman Emperor, were discovered in a coffin at the bottom of a barrow, thirty feet under the surface. The man had thus lain undisturbed for some 1700 years. But the most curious circumstance connected with the case was. that the raspberry seeds were recovered from the stomach, and sown in the garden of the Horticultural Society, where they germinated and grew into healthy bushes. What a wondrous creation, then, have we in a grain of seed! What a mystery is its life, that can thus well nigh immortalize its tiny and delicate organism, preserving it uninjured and unchanged through the lapse of hundreds and thousands of years! As plainly do the small and dusky seed in the soil, as the most brilliant orbs in the heavens, proclaim, "The Hand that made us is Divine." (Benedicite).

Let us ask a few more questions:—Are not medicines subject to chemical changes during their passage through the system in the human subject under treatment? Are not these chemical laws disturbed and varied to some extent by the law of vitality just as the needle in the compass of the mariner is made to vary by disturbing forces? If Doctors will give medicine intelligently, they must know the effect that medicine will produce on the living subject; if not, they may set all these disturbing forces in motion, which may run through the whole period of the natural life; yea, even before the day of birth, be made to suffer by planting in the unborn infant the seeds of the very disease we are considering.

This fungus is brought into the human body by medicines prepared from excrescences found on plants sick and dying from mildew, mould and smut. Thus the seeds of this disease are planted in the human body, as surely as the seeds of the mushroom are planted in the bed of manure, or in any moist place, and upon putrifying substances awaiting development. De. Pharm. Sept., 1861, page 196. This development is made, setting all these disturbing forces in motion by the manufacture of ergot into medicine, and given to the mothers of the past and present generations, under peculiar circumstances, placing in the infant the seeds of this disease before it is born, which is soon developed into croup. Proof of these statements is not wanting, for by microscopic examination, it has been found on mucous membranes of babes who only opened their eyes in this world and died. Thus we have the first development of diphtheria.

General effects of ergot on the human body:—When taken in the quantity of half a drachm or a drachm it often occasions nausea or vomiting, and in still larger doses produces a sense of weight, and pain in the head, giddiness, dilatation of the pupils, delirium, and even stupor, proving that it possesses narcotic properties. It is said also to excite febrile symptoms; but our own observation coincides with that of authors who ascribe to it the power of reducing the frequency of the pulse. We have seen this effect produced by it in a remarkable degree, even without nausea. A case is recorded in which it produced great prostration, with an almost absent pulse, paleness and coldness of the surface, partial palsy, with pricking of the limbs, and great restlessness, without stupor or delirium. (Gazette Med. de Paris, Juilett 25, 1857.)

Its long-continued and free use is highly dangerous, even when no immediate effects are perceptible. Death from single doses, in inferior animals, is preceded by symptoms indicating irritation of the stomach and bowels, great musclar prostration, loss of sensation, and sometimes light spasms. A case of acute poisoning from ergot is recorded by Dr. Pratschke, in which uneasiness in the head, oppression of stomach, diarrhœa, urgent thirst, burning pains in the feet, tetanic spasms, violent convulsions, and death, ensued upon eating freely of ergotized grain. (Lond. Med. Gaz., Oct. 1850, p. 579.)

We have shown that from the same cause we have the second development of this disease, which is membraneous croup, the worst and most fatal form of the disease. We have shown in scarlet fever, that the mucous membrane as well as dermoid tissue suffer, for we have the same ulceration of the throat as far as can be seen. On pressing down the tongue the throat is swollen, and of a deep florid red; and on the tonsils may be seen

white or grey ulcers, the very same as in diphtheria, now called ulcerated sore throat, which is nothing but another form of this disease.

We now come to the second thought on this subject, and we will show that diphtheria, not only comes, in the first place, from these minute microscopic seeds, but from a germ of a living insect which dwells within them. The presence of a parasitic animalcule, very much like that found in scabies, commonly called itch, of the class Arachnida. This insect is much more minute than the one we find in the itch, always taking up its abode on the mucous membrane. This accounts for its existence being overlooked by so many careful investigators. As seen through a powerful microscope when fully developed it looks white, shining and globular in form. The microscope faintly brings into view a head not unlike that of a tortoise, and a pair of strong legs on each side of the head. The general outline—a little longer than broad. The germ of it is found in the seeds of this cryptogamic plant we have been considering. It is found in the form of a minute worm on the interior of the grain. When we consider the incomprehensibly delicate contrivance and exquisite beauty which enter into the frame of an animated being, over a thousand times less than a mite, we cannot but be filled with adoring wonder in view of these living productions of the Creator's hand. (American Pharm. page 382. L. Homme, Paris, 1847. p. 8.)

Dermoid tissue covers the whole outside of the body; we call it the skin or cutis. It is similar in structure to the mucous membranes, which are a mere continuation of it; the mucous membrane protecting the internal parts of the body, while the skin protects those that are external. There is consequently a remarkable agreement between them. The skin is our medium of communication with external bodies—is the seat of Touch—by which we have the sense of feeling or common sensation, we say a thing is cold, or warm, to the touch; silk is soft to the touch; the touch of the loving hand is delightful.

The skin is harder than the mucous membrane, because more exposed to injury. In deranged conditions of the skin from not keeping this fine net work clean, the mucous membrane becomes more or less engaged; and in diseases which effect the mucous membrane, the functions of the skin, as it regards absorption and excretion, are also effected to a greater or less degree. In health it never ceases to secrete and throw off a fluid which we call insensible perspiration, while it is in the form of an invisible vapor, and perspiration, or sweat, when it is increased so as to be seen. So great is the sympathy between this covering of the body and the muscous membrane, that when it is chilled so as to

stop the invisible perspiration the internal membrane becomes effected, that we have a sore throat, or diarrhoea, or running at the nose, that is to say when the skin cannot sweat, the mucous membrane begins to sweat.

You will see the importance of keeping the skin clean. R.V. Pierce, M. D., says: "Cleanliness is indeed next to Godliness," and is essential to the health and vigor of the system. Its importance cannot be over-estimated, and it should be early inculcated into the minds of the young. Cleanliness is the reverse of filth and slovenliness, and has been described as analogous to purity of mind. "Even from the body's purity, the mind receives a secret sympathetic aid."

When we consider the functions of the skin, with its myriads of minute glands, innumerable little tubes—employed in removing the worn-out, useless matter of the system, we cannot fail to appreciate the utility of frequent ablutions with soap and water. Unless these excretions are removed, the glands are closed, their functions arrested, and unpleasant odors arise. Many persons think because they daily bathe the face, neck, and hands, dress the hair becomingly, and remove the dirt from their clothing, that the *ultimatum* of cleanliness has been reached. In a hygienic point of view, bathing the ENTIRE body is of much greater importance.

Notwithstanding the necessity for cleanliness of the body, we occasionally meet with persons who, although particular with regard to their personal APPEARANCE, permit their bodies to be for WEEKS and even MONTHS without a bath. Such neglect should should never exceed ONE WEEK. Plenty of sunlight, and at least two or three general baths each week, are ESSENTIAL to perfect health. Cleanliness is necessary to health, beauty, attractiveness, and a cheerful disposition. According to an ancient myth; beauty—the mother of love—is the daughter of the waves and sunlight. Water and sunlight still claim their offspring; and while the sunbeams aid in tinting beauty's form, it is moulded into more rounded and graceful proportions by the limpid waters.

Again, cleanliness should not only be promoted by repeated bathing the person, but by a frequent change of clothing, especially of that worn next the skin. Every one must have observed the unpleasant odor that the socks and other underclothing acquire after a few days wear. This results from the impurities exhaled through the skin. These impurities should be removed with the clothing containing them, lest by being retained in contact with the skin, they be reabsorbed into the circulation and become generators of disease.

In Scabies we have the presence of a parasitic animalcules

beneath the true skin, causing this disease. Mode of attack:—When placed upon the skin, the little fellow, like the squirrel and other ground animals, sets himself to make a hole through the scarf skin, with the head and fore-feet. Into this he pushes his whole body. He then begins to burrow himself in the derm, or true skin—making a channel many times his own length, at the end excavating a chamber where he sleeps, and whence he goes out to do his day's work at mining, or boring for food. When tired of this apartment, he digs onward and scoops out another. This mining or boring is the cause of the eruption in Scabies, which is invariably attended with severe itching—whence the name by which the disease is commonly known—this, causing the sufferers from it to scratch and tear the skin with their nails, increases the local inflammation, which already is considerable; fresh vesicles appear, often thickly set on the surface, and mixed with them large papulae and pustules; a bloody serous and sero-purulent discharge flows from the torn integuments, in which deep fissures are also formed, and the eruption spreads rapidly, in severe cases attacking the lower extremities, the abdomen and the trunk, as well as the hands and arms, but being very rarely, if ever witnessed on the face.

Thus we see that the parasite in scabie finds a home beneath the outside skin, while the parasite, in diphtheria, appearing on the inside skin, has to build for itself a home or covering. The fungus or false membrane (or scab as we might call it) is the covering or house underneath which it dwells. It commences work on the delicate membrane, and ulceration is the effect of that work. If these scabs on the throat were torn off, as we find they are scratched off in scabie, they would leave a sore as hard to heal. Let the false membrane then be thrown off as it sometimes is, or cruelly taken off as at other times; it would leave behind a foul ulcerating surface as found in scabie. The throat is only the development of the disease, for like scabie here and there on muscous membranes, throughout the whole body it may be found. Proof of this may be seen by decomposition setting in immediately after death.

Diphtheria is also caused by certain conditions of the atmosphere. The influence upon disease by the different degrees of density in the air which surrounds us, and of other circumstances effecting it, have not been much studied. Some valuable facts may be drawn from this source. The putting upon the body, or taking from it, several tons of pressure every time the barometer rises or falls, must have of itself no small influence upon its health. The comparatively new science of physical geography, by spreading before us the interesting facts in regard to temperature, storms, atmospheric currents, &c., is opening the way for

the physician to learn a great deal more about the causes of this disease than he has heretofore. Now, let the atmosphere become moist, that moisture acting upon vegetable matter produces fermentation, that fermentatton is the generation of animal life. (hence the increase of temperature resulting therefrom.) All this is brought about through the magnetic rays of the sun acting upon vegetable and animal matter, from which the life has departed. In this state germs of life are developed, by gaining access to the throat through the air we breahte; fasten, upon the mucous membrane, causing the inflammation of the throat; and, as you watch the progress after one of these hungry parasites has fastened on the membrane, you find a certain moisture, then a sweating process. This exudation is, indeed, a peculiar fluid, which being brought to the surface and into contact with the air we breathe, stiffens into a membrane or skin-like substance, grows thick and tough, or leathery, as we find it upon the mucous surface in diphtheria. A fever, generally of a low typhoid character, soon manifests itself; the skin is hot; there is intense thirst; the pulse is quick and feeble; ranging from 120 to 150 (or even more) per minute, showing that a poison of a very peculiar nature has entered the blood through the lungs, resembling the poison of the bite of the black rattle snake of the West; such fever being simply the further development of these germs into an active state of existence. Therefore, I have come to the conclusion that this disease is caused by these parasitic germs, that, after gaining a foot-hold in the human body, unless they are killed or expelled, will become acclimated; will feel themselves quite at home, and laugh at the boasted science that would force them to emigrate, or leave their home. Here they will stay, and fill themselves with the nature of any impure state existing therein.

Diphtheria comes by quick contagion, it comes precisely in the same way as the grain dies of the same disease. An interesting account of the insect that causes its disease and death, by Mr. Bethune, is now before me. He says the midge frequents the ripening ears of grain; the eggs are laid in the young and tender blossoms of the wheat, and as soon as the larvæ are hatched from the eggs, they begin to feed upon the juices of the grain kernel, and continue extracting the juices of the grain, causing it to shrivel up and become utterly worthless. When the period of the ripening of the grain arrives, the larvæ descends to the earth and remains there throughout winter. In the following spring it transforms into the pupa state, and in the month of June—earlier or later, according to the season—the perfect insect or fly makes its appearance, just about the time when the young crop of grain is beginning to assume the flower state. Its presence at this time of the year is made known to

etymologists and others, by large numbers flying in at the windows at night, covering the lamps on one's table, &c. It is in this way I have chiefly noticed the perfect insect. Thus, as the midge insects, as soon as they gain maturity, begin to feed upon the juices of the grain kernel while in the young and tender blossom, causing it to sicken and die; so this insect mite, ACAIUS DIPHTHERITIS, OF THE CLASS ARACHNIDA, feeds on the young and tender blossoms of our common humanity, from the babe in the cradle to the young man or woman about to bloom in all their loveliness. We may well say with Longfellow :—

"Death gazed at the flowers with tearful eyes,
And kissed their drooping leaves."

So this disease spreads on the wings of the wind, like a "destroying Angel," reaping the harvest of death."

Blind indeed must he be, or what is worse, wilfully perverse, who can view all this and fail or refuse to acknowledge the power of the Supreme and universal mind. All nature, and all life down to the minutest of the insect tribe, reveal a present Diety. Their mysterious works and ways are only intelligible in such a presence. They are under Divine law and obey the Divine command of their Creator with as much exactness as the mighty planets that move in their respective spheres, forever singing as they shine, "The Hand that made us in Divine." Were it not so, they would drive man from the face of the earth.—Thus I believe I have fully shown the causes of diphtheria.

SYMPTOMS.

The incipient stage of diphtheria is generally only a slight feeling of illness, lasting for a few days, more or less, before the more serious attack. The symptoms vary in different cases. In some the disease comes on gradually, while in others it is malignant from the first. This will lead us to make three divisions of the symptoms :—

1. Sometimes during the first stage of this disease, there is a slight aching sensation in the throat. We have drowsiness and chilliness, followed by feverishness, sometimes headache, and aching of the limbs. The throat feels sore, the neck is stiff, and a sense of langour, lassitude, and exhaustion prevades the system. An almost characteristic symptom is a slightly swollen and tender condition of the glands at the angles of the lower jaw; the tonsils, one or both, are usually red and swollen—sometimes swollen, but not red. In young children the redness is of a rose-color, in older children and adults, of a crimson, or a deep scarlet. The uvula, the velum, the arches of the palate, and the back wall of the pharynx, generally show inflammation. Swallowing, though painful sometimes, is often easy enough, even to the end

of bad cases. The pulse is usually quickened somewhat, and the warmth of the skin is raised a little, though not greatly above the healthy standard. In some cases, the above symptoms constitute the whole of the complaint—recovery taking place without serious consequences. In others they are but the beginning of more alarming indications.

2. The febrile disturbances increase rapidly, and are of a low typhoid character, the skin is hot, there is intense thirst, the pulse is quick and feeble, ranging from 120 to 150 per minute. The tongue is generally loaded with a dirty coat, or it may be bright red. The odor of the breath is characteristic and peculiarily offensive, and there is difficulty of swallowing, and sometimes of breathing. Vomiting is sometimes persistent. If we examine the throat, we find more or less swelling of the tonsils and surrounding parts, which are generally bright, red, and shining,and covered with a profuse, glarey, tenacious, secretion. Sometimes the parts are of a dusky livid hue, and sometimes, though rarely, palid. The false membrane, a peculiar tough exudation, soon appears, and may be seen in patches, large or small, or covering the entire surface, from the gums back as far as can be seen, its color varying from a whitish yellow to a gray or dark ashen tint. When it is thrown off, it sometimes leaves a foul ulcerating surface beneath.

3. Here the hand of our God is plainly seen. He has commanded those minute angels of Death to do their work, and it is done. Neither the prayers of the good, the tears of friends, nor the skill of the physician, can stay their work. The command has gone forth from the Eternal Throne, and as diseases are all His servants, He says to one: "Do this," and it is done. The disease goes on in greater severity, the colored specks or patches, which gradually enlarge or spread until they meet and form one continuous pellicle. This membrane sometimes extends into neighboring parts, as the back passages to the nose, and the larynx, wind-pipe, bronchial tubes, and gullet. These extensions make the case all the more dangerous and unmanageable. I may add that there is great difference in the time occupied by different cases in running their course—some reaching a climax only after several days' continuance, while others dash on to a fatal termination in the brief space of a few hours.

4. Signs of approaching death. The prostration soon becomes extreme, and small livid spots may appear on the surface of the body. There may be delirium, which is, in fatal cases, succeeded by stupor (coma). The extremities become cold, diarrhœa and in some cases convulsions, mark the approach of death. Sometimes the patient dies before the false membrane forms.

TREATMENT.

First we must look to Him who has diseases under His control, and imitate the example of His dear Son, our Lord and Saviour Jesus Christ: who in the days of His flesh stood preeminently at the head of the medical profession, healing all manner of diseases.

We will take up the treatment in the same order as we have given the symptoms. Good ventilation, but no draught on patient, &c., &c. Air that is admitted into the sick room should not be contaminated by passing over foul drains, privies, or other sources of infection, &c. Cleanliness cannot be too thoroughly impressed upon the minds of those who have the care of the sick. All excretions from the patient should be strongly disinfected before leaving the sick room, and then buried; not committed to privies to communicate disease to those who frequent them. The bedding should be changed every day, if not washed, sprinkled with a solution of carbolic acid, made for disinfectant purposes, and thoroughly aired before returning. Now look at the skin of the patient: if it is not clean, make it so, with glycerine soap and tepid water. The hands and face of the patient should be bathed frequently, the hair combed, and everything about kept clean and tidy. Never wake a patient while sleeping quietly, but if snoring wake immediately. Let all drinks be given warm, as cold drinks tend to aggravate the complaint. As a drink give toast water. A good supporting diet should be given; beef tea, milk punch, &c., should be freely administered.

The next thing to be done; get the patient into a perspiration by the use of the spirit vapor bath; if you cannot do this, a hot foot bath will do. Give Illa whiskey, one tablespoonful every fifteen minutes until it is sensibly felt in the head. Put herring draughts, dipped in vinegar, on the feet. If vomiting comes on, control it by allowing the patient to suck small pieces of ice every five or ten minutes. If bile is vomited, give magnesia—if a young man, a tablespoonful in cold water. Apply hot fomentations to the throat. After these fomentations have done their work, take a herring, dip it in hot vinegar, and apply it to the throat; when you take this herring off, let the throat be well rubbed with Johnson's Anodyne Liniment, also rub down the breast bone, stomach, lungs and bowels. I do not undervalue the importance of giving a gentle emetic, but when required nature does this for us. I prefer a good cathartic, which you will find in the Compound Cathartic of the U. S. Pharmacopoeia of 1870, which can be had at any respectable druggist's.

GARGLE.—RECIPE.—Rose water, 6 ozs.: syrup of orange peel, 1 oz.; muriated tinct. of iron, 1 oz.; mix.

Take of this mixture, 1 tablespoonful; cold water half a pint; mix well; to be used every half hour.

SECOND. If the mouth does not become clean, use the following, swabbing the back of the mouth and throat:

Table salt, 2 drachms; black pepper, golden seal, nitrate of potash, alum, 1 drachm each; mix and pulverize; put into a teacup half full of boiling water, stir well and then fill up with good vinegar, use every half hour, one, two and four hours, as recovery progresses.

Make a Liniment as follows:—Spirits of turpentine, sweet oil, and aqua ammonia, one oz. each; put them in a bottle and shake well.

The glands under the ear and jaw sometimes inflame, causing swelling and pain in that region. Now apply this liniment freely, and also up and down the spine.

If the throat is filling up and breathing becomes difficult, give the Illa Whiskey mixed with lemon juice, equal parts. This will cut the phlegm.

A tablespoonful of this may be given every hour or two, or when required. Also inhale steam from water to which a few drops of the oil of peppermint has been added.

THE BOWELS.—Keep them daily active with the following, if the fever is high:—

Epsom salt 1 oz.; cold water, ½ pint; mix well; also cream tartar 1 oz.; boiling water ½ pint. Let it stand until cool, put into a bottle with the salts; mix well. Dose for an adult—one to four tablespoonfuls once a day, until the bowels are moved once a day. If the fever has gone, give one tablespoon of my carminitive instead, (once a day or more if required.) Avoid undue exercise of the voice, and that kind of food which requires much mastication. The idea is; use the jaws as little as possible.

When the false membrane is thrown off, it sometimes leaves a foul ulcerative surface beneath. Now use the following recipe on this foul ulcerated surface:—

Carbolic acid, one teaspoonful; glycerine, six teaspoonfuls; cold water, six teaspoonfuls; mix well. Apply with a soft swab. Also add of this mixture twenty drops to a tumblerful of cold water, and give of it, internally, one teaspoonful every two hours until the strength of the poison abates, which you will easily know by the smell of the breath. Then give prepared Iron in full doses, that is, one teaspoonful for an adult, in a wine glass full of cold water. Less must be given according to age and sex. I have given the recipe for prepared iron under the heading of gargle.

Let it be strongly impressed upon your mind, that through the whole course of treatment the strength must be supported by the most nourishing food, as well as tonics and stimulants. As recovery advances, beef steak, lamb, chicken, milk and eggs.

Now use my imperial gargle as a healing lotion, and to prevent a return of disease. Price $1.00 per bottle, which I will send to any part of the Province. After the iron has done its work, that is when a tinge of red comes upon the cheeks and lips, then give full doses of my *nervous tonic* to strengthen the heart and tone up the nervous system.

For the Third and Fourth, I have no treatment to offer. Take particular notice that the natural temperament of the human body is from 98 to 100 degrees; keep it up to 98 if possible. Further treatment under these two heads I have none, only it would be the attending physician's duty to soothe the pathway to the grave.

" Why should we mourn because of woe
With which we are surrounded?
Does not each change in nature show
Beneficence unbounded?
Why should we when disorder reigns,
Be racked by thoughts distressing,
When every ill we bear, contains
A universal blessing?

" The dangers lurking here and there,
With utter misery freighted,
And germs of death in earth and air,
In vain were ne'er created.
Though in them man can only see
Unnatural abuses,
In the divine economy
They have their perfect uses.

" Though fires may rage upon the land,
And tempests on the ocean,
And discontent on every hand
Sets nations in commotion,
Each, in true wisdom was designed;
Though fraught with desolation,
They teach forbearance to mankind,
And give to each his station.

"As day succeeds the gloomy night,
And joy dispels our sadness;
So bitter wrong gives way to right,
And thrills our heart with gladness.
Forth from a mass of filth, doth spring
The fragrance of the flower,
And ignorance and folly bring
All wisdom, wealth and power.

" By scenes of grief, distress and woe,
Are sympathies excited.
And by deep hatred's dying glow
The touch of love is lighted.
So man goes through each stage of life,
Improving his condition;
Engaged in acts of peace or strife,
He but fulfils his mission.

"Then may we all possess the will
To kindly aid each other;
Let love decide 'twixt good and ill,
And ne'er condemn a brother.
May this clear truth within us shine,
Our minds in wisdom framing—
All things existing are divine,
God's righteousness proclaiming!"

A CHAPTER ON WHAT A NURSE SHOULD BE.—The great want in New Brunswick this day is trained and intelligent nurses. Every female who wishes to act as a nurse to the sick, should be obliged to serve a certain time as an assistant nurse in one of the public hospitals, and to receive a certificate of her efficiency before she leaves the establishment. The advantages which the public would derive from a body of nurses educated in this manner, would be obvious to everyone who has had opportunities of observing the miserable working of the present system. Little benefit can be anticipated if a proper nurse be not obtained.

In choosing a nurse for the sick, the qualifications which should regulate our choice refer to age, strength, health, temper, disposition and education.

AGE.—She should not be under twenty-five, nor above fifty-five years of age. This period is fixed upon, on account both of the physical powers and the moral conduct of the individual. Under twenty-five, the strength of a woman has not reached its maturity, and is scarcely adequate for lifting patients in and out of bed, and for many other duties which require strength and heroic fortitude while performing the duties of a nurse; but the strength and muscular power in females begin to fail after fifty-five, when the natural transition from maturity to decay takes place.

STRENGTH.—The remarks we have made respecting age render it almost unnecessary to say that a woman of a naturally delicate frame of body is unfit for a nurse for the sick; at the same time a coarse, heavy and masculine woman is, for many reasons that we could show, objectionable; whilst strength is required, the frame should be such as to indicate activity.

HEALTH.—None of the qualifications of a nurse for the sick are of more importance than health. An individual who requires attention herself is ill calculated to attend upon others. A woman who is asthmatic, or has *any* difficulty of breathing or any habitual cough; who is rheumatic or gouty, or has any spasmodic affection; who is afflicted with palpitation; who is consumptive, or scrofulous, or has defective sight or hearing, or anything which causes decrepitude, is disqualified for a nurse for the sick. It is important, also, to ascertain that there is no hypochondriacal or hysterical tendency, or predisposition to mental depression, or to be gushing, &c., &c.

Temper and Disposition.—An attendant upon the sick should possess a happy, cheerful and equal flow of spirits; a temper not easily ruffled, kind and sympathetic feelings; and at the same time not such as to interfere with firmness. The expression of the countenance should be open and winning, so as to attract the good-will and confidence of the invalid; a pleasing and gentle manner being more likely to gain esteem and insure obedience to the orders of the physician, than the most persuasive arguments which can be addressed to the understanding of the patient. A collected, cheerful expression of the countenance, in the attendant on the sick, is likely to inspire hope, and to aid the efforts of the physician in the recovery of his patients. There is also an earnestness of manner which should, if possible, be obtained or acquiesced in by the nurse, as it impresses the idea that she feels deeply interested in the case; a circumstance which is always highly appreciated by the patient.

A nurse should be honest, as no description of servant has so much in her power. She should be true as steel; good and true; but the honesty of the nurse is not to be measured by her respect for property. She must be above imposing on the physicians, with respect either to medicine or diet. Her religion also should be sincere, but pharisaical; and although she may pray, and occasionally persuade her charge to put his trust in God, through Christ his Saviour, and thus direct him to the true fountain of health and salvation, yet she must recollect that preaching is not her province, and when mistimed, even the best advice may prove not only profitless, but very injurious; and this is especially likely to be the result when the doctrine which she professes is of a controversial kind, &c., &c.

With respect to Gossiping.—It is a detestable habit under any circumstances, but in a nurse it may be productive of the greatest danger, and also may produce family fueds and a thousand other evils.

The activity essential for a good nurse does not imply a bustling or fidgety manner, but a quiet, steady method of proceeding in the performance of her duties, equally devoid of fluster, turbulence or noise. This activity is generally associated with orderly habits, a most valuable qualification, and without it the sick-room becomes a scene of confusion and disgust, &c., &c. Another quality that is much needed in a nurse is cleanliness in her own person, and in that of her charge. The dress of a nurse should be simple and neat, without trimmings; nothing is more out of place than a fine lady attempting to perform the duties of a nurse.

Education.—It may appear like too much refinement to talk of the education of a nurse; but there is not a greater dif-

ference between the noonday sun and midnight than there is between an educated and an ignorant nurse. The former is often an aid to the physician, not only in carrying his orders into effect, but by observing and informing him of symptoms of great importance which have occurred during his absence; whereas the latter is a source of constant anxiety, and too often assumes the privileges of acting in direct contradiction to his orders, and according to her own opinion, &c., &c. The time has fully come when ignorance in the sick-room must be banished, and intelligence take its place.

VISITING THE SICK.—Dr. R. V. Pierce, M. D., says: "Visiting the sick may be productive of good or evil results. The influence of the mind upon the bodily functions has already been alluded to. Mental impressions made upon the sick exert a powerful influence upon the termination of disease. The chances of recovery are in proportion to the elevation or depression of spirits. Pleasant, cheerful associations animate the patient, inspire hope, arouse the vital energies and aid in his recovery. While disagreeable and melancholy associations beget sadness and despondency, discourage the patient, depress the vital power, enfeeble the body and retard recovery.

"Unless persons who visit the sick can carry with them joy, hope, mirth and animation, they had better stay away. This applies equally in acute and chronic disease. It does not matter what a visitor may *think* with regard to a patient's recovery, *an unfavorable opinion should never find expression in the sick-room*. Life hangs upon a brittle thread, and often that frail support is *hope*. Cheer the sick by words of encouragement, and the hold on life will be strengthened; discourage by uttering such expressions as, "How bad you look!" "Why how you have failed since I saw you last!" "I would have another *doctor; one who knows something!*" "You can't live long if you don't get help!" etc., and the tie which binds them to earth is snapped asunder. Let all persons be guided by this rule: *Never go into the sick-room without carrying with you a few rays of sunshine!*

"If the patient is very weak the visitor may injure him by staying too long. The length of the visit should be graduated to the strength of the invalid. Never let the sufferer be wearied by your too frequent coming or too long remaining, nor by having too many visitors at once. Above all things, do not confine your visitations of the sick to the Sabbath. Many do this and give themselves credit for an extra amount of piety on account of it, when if they would scrutinize their motives more carefully they would see that it was but a contemptible resort to save

time. The sick are often grossly neglected during the week only to be visited to death upon the Sabbath."

The Carthartic pill recommended in the treatment in the lecture, will be found in the U. S. Pharmacopia of 1872, page 1323. A single pill will operate as a mild laxative. Begin with one pill at night. If it operates well, it will be all that is necessary, if not give another in the morning.

Three is a full dose for an adult, and will act as a powerful cathartic, which may be given in bilious fevers, or when the fever is very high in diphtheria.

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BLISSFIELD, Northumberland Co., June 15, 1882.