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DISINFECTION AFTER INFECTIOUS DISEASE

BY WM. J. GREIG, B.A., M.D., L.R.C.P., ENG., TORONTO.

Not many years ago the etiology of epidemic diseases was wrapt in mystery. It was known that their propagation depended on the diffusion of a virus, but the exact nature of this was uncertain. Bristowe says that formerly these diseases were believed to be due to some mysterious influence which diffused itself like a vapor over the surface of the infected region, involving equally the whole population, modifying the already prevalent diseases, and causing the specific troubles in those who were liable to them. Of late years, increased knowledge, arising from the study of the germ theory of disease, has given us new, more exact, and, we hope, more correct information concerning etiology.

Recent investigations would appear to show that certain of the specific infectious diseases are caused by micro-organisms. These are anthrax, diphtheria, typhoid, relapsing fever, erysipelas, cholera, pneumonia, glanders, tuberculosis, pyæmia, septicæmia, malaria, tetanus, leprosy, and actinomycosis.

In other diseases of the infectious class, the propagation of which is dependent on a virus of some kind, analogy would indicate that micro-organisms are also the cause. The similiarity in contagiousness, the existence of a period of incubation, the prodromal symptoms, regular course and protection for a time in certain of these diseases against another attack would pre-suppose that the nature of the contagion in the doubtful diseases is similar to that of which we are more certain. These diseases are typhus, variola, vaccinia, scarlatina, measles, mumps, varicella, pertus-

sis, influenza, dengue, cerebro-spinal meningitis, yellow fever, dysentery, rabies, syphilis.

In disinfection after any of these diseases, they must be all treated on the supposition that they are caused by micro-organisms.

The diseases which we will specially consider on account of their very frequent occurrence, are scarlet fever, measles, diphtheria, tuberculosis, pyæmia, septicæmia, erysipelas, typhoid, variola, cholera.

In scarlet fever the contagion is especially to be feared during desquamation. There is a difference of opinion amongst authorities as to the exact period of infectiousness of this disease. Dr. Squire, the writer in Quain's Dictionary, states that the infection exists during the whole duration of the disease. Eustace Smith and Bristowe state that it is not to be feared so much during the first few days. Osler questions whether the contagion is ever developed before the eruption appears. It must remain as an undecided point until the germ of the disease is discovered.

In regard to measles, a German investigator and Dr. Booker, of Johns Hopkins, have each discovered a germ which was constantly present in the throats of the cases of the disease examined. This germ was cultivated and inoculation experiments performed on animals, but with negative results. It may be that the animals used were insusceptible to the disease, and that the germ found was really the specific germ. But so far the chain of reasoning is not complete.

In diphtheria, it has been proved experimentally, that the Klebs-Loeffler bacillus is the cause of the disease. This organism is thrown off in the mucus discharges from the throat and nose, and in the membranc, which may be expectorated. It is not thrown off in the breath, hence the extent of contagion during the disease is limited to a few feet. The bacillus in the active state cannot be carried by the air, but when discharged from the throat in mucus and membrane, and allowed to dry, may then be carried about freely.

In typhoid the germ is found in the stools, and it may also be carried in the air when dried. Some observers claim that it does exist in the blood, the urine and the rose-colored spots.

Erysipelas, pyæmia, septicæmia are infective diseases due to the presence of micro-organisms in some form, or of their poisons. Different organisms

have been found, but the most constant and the one which is considered to be the cause, cannot be distinguished from the pus-producing cocci, the streptococcus pyogenes.

Tuberculosis is due to the presence in the affected part of the tubercle bacillus. Like the Klebs-Löffler bacillus in its moist state it is not carried by the air, or by the breath of the patient, but in the expectoration countless millions of the bacilli are thrown off daily. The following is from Osler's Practice: "Nuttall, of Johns Hopkins, made some investigations in which he calculated that in the expectoration from a patient in the hospital, from one and a-half to four and a-third billions of bacilli were thrown off in twenty-four hours. When allowed to dry the sputa soon becomes dust, and is thus widely distributed. Cornet, under the supervision of Koch, made some very instructive observations on this point. He collected dust from the walls of various localities and determined its virulence by inoculation into susceptible animals. Material was gathered from twenty-one hospital wards, three asylums, two prisons, from the surroundings of sixty-two phthical patients in private practice, and from twenty-nine other localities in which tubercular patients were only occasionally found. Of one hundred and eighteen dust samples from hospital wards and the rooms of phthical patients, forty were infective, and produced tuberculosis. Negative results were obtained in some cases. In a room occupied by a tuberculous patient, the dust from the wall was infective for six weeks after her death."

These facts show us that too much stress cannot be laid on the contagiousness of tuberculosis. The sputa must be disinfected twice a day, and, of course, should be collected in a convenient receptacle. After the recovery or death of the patient, as much care should be taken in disinfecting the clothes, furniture and room, as after a case of variola.

In this connection I have much pleasure in referring you to an article by Dr. McPhedran, in the *Canadian Practitioner* of June 1st, 1891.

A few words in reference to epidemic pneumonia. The diplococcus pneumoniæ of Frankel is now considered by many to be the specific agent of the disease. It seems, however, to be found in the mouth of many perfectly healthy people. Hence the same need of disinfection does not exist

after this disease. But people with weak lungs would be very wise to keep away from pneumonia cases.

Small pox has always been considered the type of a contagious disease and yet the specific organism, if there is such, has not so far been isolated. The contagion develops in the system of the patient and is reproduced in the pustules. It exists in the secretions and excretions, and in the exhalations from the lungs and skin. The dried scales, as dust-like powder are given off during convalescence, and distributed everywhere throughout the room. Hence, after this disease special care must be taken to disinfect, not only the room, furniture and clothes, but also the body and the liquid and solid excretions of the patient. This disease is contagious from the very first.

Asiatic cholera is one of the specific infectious diseases. It is caused by the presence in the bowels of the cholera spirillum, a genus of the spiro-bacteria, commonly called the comma bacillus, because its shape and curve are similar to that of a comma. Koch's investigations have proved beyond a doubt that this is the specific organism of the disease. This germ is constantly present in the fæces in the early stages of the disease. It is not present in the vomited matter, unless the intestinal contents have been brought up. The source of infection is, therefore, the discharges from the bowels obtaining access to the drinking water. Those who handle the dejecta and linen of cholera patients cannot be too careful to keep their hands disinfected. The germ is not carried by the air, as fortunately thorough drying kills it. It cannot exist as fomites; it is not carried by post or by merchandise, as three hours' drying kills it. Moisture is essential for its existence, and it can, therefore, only be carried by man. Of course if the germ obtains access to any material or position in which it retains its moisture, it will retain its vitality, and in that way may be carried by the mails or in merchandise. Persons with digestive derangements are more liable. It is very rarely that the germ can pass the healthy acid stomach, but an alkaline reaction favors its development. An overloaded stomach in which the acidity is almost neutralized, would assist the germ in obtaining access to the duodenum, in the alkaline reaction of which it would flourish. The bacillus can multiply externally to the body in

suitable media, *e.g.*, moist linen, beef tea and potato. Stagnant water forms a very suitable culture ground. Fortunately it is easily killed. Koch found that 1 in 5,000 solutions of quinine and 1 in 100,000 solutions of perchloride of mercury killed it. SO_2 does also, but it is evident that the agent used must be different according to the media in which it exists.

Let us consider briefly the characteristics of organisms in general. The extremes of temperature at which growth is possible are 11°F . and 100°F . Do not understand me to say that they are killed at these temperatures. Growth is prevented. The most favorable temperature for development is 82°F . Other favorable conditions for growth are the presence of moisture and organic matter of a slightly alkaline or neutral re-action, and the absence of sunlight. But these conditions are not essential to life. They have been known to live for years in a dry state. They have been frozen in blocks of ice, and yet when restored to warmth have regained their vitality. Fresh air and sunlight seem destructive to them in length of time, varying with the organism from a few days to several months. When nutrition fails some of the varieties enter on the spore stage of existence in which they will live an indefinite length of time. The varieties which form spores so far as known are the bacillus of anthrax and of tubercle, and Welch says of diphtheria. In this state no evidence of life is given, but as soon as conditions favorable to life are renewed, the spore develops again into the same kind of a cell as that from which it originally came. I fear that a popular misapprehension exists as to the nature of these spores. We are apt to think of their namesakes on the back of the leaf of a fern. Our bacterial spore is entirely different. In its formation the original cell disappears, the cell wall falls away and the protoplasmic contents gather into a globular body in the centre of the old cell. Under the high power of the microscope it seems to have a delicate lining membrane.

Let us now enquire what the effect is of our different disinfectants on these growths. And first in regard to sterilization by dry and moist heat. In experimental work anthrax spores have been taken because they are the most difficult to kill. Dr. Parson's experiments made some years ago and published in a local Government report show

that anthrax spores need four hours' exposure to dry heat at 212°F ., or one hour's exposure at 245°F .; but were destroyed by from ten minutes to half an hour exposure to boiling water or steam at 212°F . Ordinary bacterial life is destroyed at a temperature of 140°F .

Dry heat lacks in penetrative power. Steam on the contrary penetrates quickly into the interstices of any fabric. The reason is as follows: As steam penetrates into the colder parts it condenses and occupies a very small fraction of its former volume, *viz.*, $\frac{1}{300}$, more steam rushes forward to supply its place and thus the fabric is soon saturated and sterilization occurs. Dry hot air, on the other hand, contracts in volume only $\frac{1}{4}$, and thus longer time and a higher temperature is required to produce the same result. Take, therefore, for example a mattress which has been exposed to the germs of anthrax. With dry heat at a temperature of 212°F . at the end of four hours the outside would have been sterilized; but a higher degree would be needed before the inside would be disinfected; result, the mattress would be destroyed by the excessive heat. And even with germs less resistant, needing a temperature of 140°F ., the outside would need to be about 300°F . before the temperature in the centre would be high enough. These facts show us that dry heat is of very limited utility compared with moist heat in the shape of steam or boiling water.

Dr. Abbot, of Johns Hopkins, recommends a method which he calls intermittent sterilization. It is based on the idea that the spores are not killed unless germination has commenced. The fabric is to be exposed to a moist T. of 212°F . for fifteen minutes on each of three successive days, and during the interval to be kept at a temperature of from 53°F . to 60°F . to allow germination to proceed.

Neither moist nor dry heat should ever exceed 250°F ., as scorching occurs, and even that is too high for white woollen goods. Steam causes a certain amount of shrinking in textile material and cannot be used in the case of leather. Dyed articles may have their color altered, and many substances are rendered brittle by over-heating.

Of all disinfectants, that most commonly used is SO_2 , produced by the combustion of sulphur in free air. This gas has been used from the earliest times. It is recorded that the ancient Egyp-

tians used it and we are told by a Greek writer that Ulysses thus disinfected a palace captured by him. From those times until the acceptance of the germ theory of disease, and the more exact methods inaugurated as a result thereof, SO_2 has been used by successive generations without a doubt of its efficacy as a reliable disinfectant. Koch was the first to show that SO_2 was not omnipotent. He demonstrated that anthrax spores were not killed even when SO_2 in liquid form was poured over them. His results with material not containing spores were more satisfactory. It was attached to silk threads hanging in a closed chamber and exposed to the gas in the proportion of one volume per cent. In only one case did this fail. The micrococcus prodigiosus was not killed after four hours' exposure, but was after twenty-four.

Dr. Sternberg, of the United States Army, in 1884 performed a number of experiments for the American Public Health Association. His experiments were numerous, repeated several times and varied in character. His conclusion in regard to the action of the gas on spores was the same as that of Koch. His conclusion in regard to micro-organisms other than spores was that if free exposure to the gas resulted, the organisms were killed, especially if the gas was produced in the presence of moisture. If, however, the germs were protected, as for instance when folded in a blanket, or if placed on cotton wool and put in a coat pocket, the gas, even if produced in a large volume and in the presence of moisture, could not be depended on to kill them. Dr. Herman M. Biggs in 1887 performed for the New York Board of Health some experiments demonstrating what is known as the vacuum process. Micro-organisms, notably impure cultures of the cholera spirillum, were placed in the centre of a bale of rags. This bale was placed in a bell jar from which the air was then evacuated. SO_2 was introduced in 100 per cent. volume and the rags were allowed to remain exposed for different periods of time in the different experiments, the shortest being twenty minutes. After a large number of careful and varied experiments, his conclusion was that micro-organisms of all kinds excepting spores were killed. We must remember, however, that while the gas penetrated to the centre of a bale of rags and killed the germs, it did so only under pressure.

Approaching more closely, in its conditions,

those that we meet in our every day practice, is the experiment performed at the New York Infant Asylum. In the winter of '87-88, diphtheria broke out. It extended to the adjoining maternity wards and attacked five of the new born children. One of them was suffering at the same time from an umbilical phlegmon. The ward was cleared, windows and doors closed, and all crevices filled up as well as possible. Ten pounds of sulphur to each 1000 cubic feet of space was burned, and the room allowed to remain for twelve hours. At the end of that time several medical gentlemen entered and proceeded to raise a dust by beating the floor with sticks. The dust was allowed to settle on culture media, and in due time cultures were developed. Great numbers of microbes overlying each other appeared under the microscope, and the streptococcus pyogenes was discovered identical in form with the streptococcus found in the umbilical phlegmon.

In this case the SO_2 failed, even though it was used in two and one half times the strength recommended in works of hygiene. It has been claimed that if the gas had been produced in the presence of moisture the results would have been better.

As a bleaching agent SO_2 will de-oxidise only in the presence of moisture, and if its action on bacterial life is of a similar character, evidently the presence of moisture is necessary. Dr. Squibb, of Brooklyn, the chemist, explains the action of the gas as follows: "By seizing on the oxygen of the air, and when that is exhausted on the oxygen of any moisture that may be present, in succession there are formed SO_2 , H_2SO_3 and H_2SO_4 . The organic matter (in this case the bacteria) is de-oxidised, the place occupied by the oxygen being filled with the H_2SO_4 , and thus the organism is killed." Granted that SO_2 may act thus in some cases, it is evident that it has other modes of action, as shown in the experiments performed in a vacuum produced in a bell jar.

Our conclusions in regard to the value of SO_2 as a disinfectant are as follows. As ordinarily used it is a farce. When used in the presence of moisture, in the proportion of three or four lbs. of sulphur to the 1000 cubic feet of space, and in a room closed as completely as possible, it can be relied on to kill all bacteria which are on the surface and freely exposed to its action, excepting

spores. But as Dr. Sternberg says it is doubtful whether the result is as good as would be produced by thorough ventilation, and by washing all surfaces with a solution of bi-chloride of mercury.

The best method of using sulphur in practice is as follows. Sprinkled with alcohol it should be placed in an iron vessel, supported over a pail or tub of water and burned there. The room must not be opened for twelve hours, and then it should be opened and the air allowed to enter freely. Four pounds of sulphur to the 1000 cubic feet of space should be used, and the floor, walls and all articles of furniture freely sprinkled with water.

A much more reliable disinfectant is chlorine gas. This also requires the presence of moisture. Having a strong affinity for hydrogen, it unites with the hydrogen of the water, setting free nascent oxygen, which is a powerful oxidizer and destroyer of organic matter. The objections to chlorine are the difficulty of production and its destructive properties.

Practically, its use is limited to the amount of chlorine which is set free from chlorinated lime. Commercial chlorinated lime contains from 20% to 40% of free chlorine, when kept in an air-tight receptacle. It loses chlorine rapidly when exposed to air.

Experiments have shown chlorine gas in the proportion of 1 in 100 is an efficient germicide, being destructive to the life of spores. Even 1 in 400 is effectual against spores, but requires longer time.

Chlorinated lime is the best substance to use in disinfecting excreta, the most practical application being in typhoid. Four ounces of the best chlorinated lime is dissolved in a gallon of water, and one pint of this solution must be used to disinfect each passage. It should be mixed well, allowed to remain in the vessel at least ten minutes before emptying into the closet.

Corrosive sublimate in various strengths has always been considered one of our most reliable disinfectants. Many think that this salt is over-rated, but that it is an effective agent is shown by its results in surgery. The objections to it are, 1st, that it is irritating; and 2nd, that it enters into chemical combination with the albumen of the tissues and of bacteria, an albuminate of mercury being formed, and thus its germicidal qualities are destroyed. The answer to these objections is that chloride of mercury is not irri-

tating in weak solutions, and that any disinfectant is irritating in strong solutions.

And, again, that because albuminate of mercury is formed, the germicidal qualities of the salt are not destroyed thereby. To quote from the address of Dr. White, of Philadelphia, given in Toronto two years ago, "This precipitate (the albuminate of mercury), it was discovered by Sir Joseph Lister, possessed powerful antiseptic properties, with much less power of producing irritation; he, therefore, devised a form of antiseptic dressing called 'the sero-sublimate gauze,' which consisted of gauze charged with a solution of corrosive sublimate in the serum of the blood. This, however, was difficult to manufacture, and produced a harsh and non-absorbent dressing, which was mechanically irritating. It was succeeded by the salalembroth." These facts show us, on the authority of Sir Joseph Lister himself, that the precipitation of mercury by the albumin of the tissues does not destroy its germicidal qualities.

The Committee on Disinfectants of the American Public Health Association, after their investigations, concluded that for ordinary bacterial life 1 in 10,000 is sufficient, but that 1 in 1,000 is needed when spores are present.

It is generally accepted that bi-chloride acts as a disinfectant by entering into chemical combination with albumin. The proofs of this are, 1st, that heat is produced by the chemical action; 2nd, that the mercury can be precipitated from this combination by a solution of sulphide of ammonium. Geffert has demonstrated this re-action. If, then, this be true, why should a stronger solution be required to kill spores than to kill ordinary bacterial life? Why should the mercury in a 1 in 10,000 solution not enter into chemical combination with the albumin of a bacterial spore as well as with the albumin of bacteria? There appears to be an inconsistency here, of which I have seen no explanation.

Again, we must remember in the use of sublimate that its action is not selective. It will combine, not only with bacteria, but with any protoplasmic material which may be present. Therefore, it is scarcely a suitable disinfectant for some purposes. For instance, if used in typhoid stools or tubercular sputa, large quantities or strong solutions must be used, as chemical combination will take place with all the albuminous

material present. This introduces another point for consideration in the use of this drug. If the action of the drug is chemical, it follows that weak solutions in large quantities would be just as effective as stronger solutions in smaller quantities. The important point is that mercury enough must be present to combine with all the albuminous material present.

The conclusions, then, as to the most suitable use of corrosive sublimate are as follows. A standard solution of 1 in 1,000 may be recommended for the disinfection of bedding and clothing that can be washed; for washing the floors and walls of infected apartments. A weaker solution would probably be effective if we were sure of the absence of spores, but in the uncertainty of our present knowledge on this point, it is safer to recommend the stronger solutions.

A recent writer in the *Medical News*, in discussing the merits of mercuric chloride, claims that it is very much over-rated as a germicide, but is a valuable antiseptic. He states that it is little better than absolute alcohol, and quotes Klein, who has made the statement that it is no better than vinegar. He maintains that mercury enters into combination only with the albuminous envelope of the bacteria and that the germ itself is unaffected excepting inasmuch as it enclosed by a material which it is difficult to get rid of. Albuminate of mercury, when in contact with woollen goods and other textile material, cannot be got rid of by any ordinary washing. The mercury, however, is precipitated from its combinations by salines, and by sulphide of ammonium. Thus the bacteria, still alive, are set free. In Koch's experiments, the bacteria, after being exposed to the mercuric solution, were injected under the skin of animals. The writer claims that different results would have been obtained had the germs been injected into the blood. That when injected under the skin the mercuric combination was broken, but that the germ was left lying in an antiseptic pool which prevented its action. Had injection been made into the blood the mercury would have been precipitated, carried away in the blood stream, and the germs left free to work their own sweet will. These statements, however, require verification.

Carbolic acid may be said to have been recognized as an antiseptic from the the time of its

discovery in 1834, and has been largely used up till the present time. Experiments, however, have shown that excepting under impracticable conditions, it is not a useful disinfectant. Thus anthrax spores did not lose their power of germinating unless they were treated with a 5% solution for twenty-four hours. Again, it is volatile, so that in use, if we begin with a 5% solution, we may end with a 2% solution. Again, it is expensive. And in effective strength is hard to handle. 1% solution is effective against the germs of many diseases, notably the tubercle bacillus, but to produce these results, it was required to act for a number of hours.

We are all aware that the market is filled with so-called antiseptics and disinfectants. Several of these disinfectants, and the most effective of them, contained corrosive sublimate, as was shown by the simple experiment of dipping a polished piece of copper into the solution, when metallic mercury was found deposited on the surface.

Many of these commercial disinfectants failed to disinfect even in 50% solution. Others were effectual only in strength varying from 10% to 40%. In fact, the strength in which most of them must be used, would render the cost of disinfectants very high, compared with such cheap and efficient germicides, as mercuric chloride and chlorinated lime.

In conclusion; infectious diseases may be divided into three classes according to the precautions which are needed after them.

1. Among the diseases of this class must be included the following—diphtheria, scarlet fever, tuberculosis, variola. SO_2 cannot be depended on, because it lacks penetration, and does not kill spores. Thorough ventilation will, with the other means to be described, be sufficient. All paper should be stripped off the ceilings and walls. All surfaces, ceilings, walls, woodwork, floors and furniture should then be washed in a 1 in 1000 solution of mercuric chloride. The white walls and ceiling should then be either papered or white limed. Woodwork and floors should be painted and furniture varnished. If objection is made to stripping the walls and ceilings, the next best thing is to wipe them carefully with a thick crust of bread, which will clean off the dust and with it many of the bacteria.

Any clothing, drapery, or bedding must be dis-

infected in one of three ways according to the quality of the goods. Either boiled, or steamed over boiling water for from ten minutes to half an hour, or to be soaked in a bichloride solution 1.1000 for an hour.

In regard to mattresses, carpets and pillows the only effectual method is by the use of a large steam sterilizer, such as that in use at the isolating hospital in Toronto.

These articles cannot be treated satisfactorily at home. The Health Department should for a small fee undertake to do this work for the public. Excluding this method, let the articles in question, be heaped loosely on the floor and sulphur in proper quantities be burned. Afterwards let them be hung in the open air, well beaten and allowed to remain for several weeks.

Any article that is worthless should be burned. All expectorated matter, or cloths saturated with expectorated matter should be destroyed. Some authorities claim that they should be disinfected before burning.

2. This class will include diseases, the contagion of which is not so virulent, such as measles, pertussis, erysipelas, pyæmia, etc. Disinfection here should consist in burning sulphur in proper quantity in the room, having first arranged all the clothing and bedding in such a way that the gas will have free access to all parts. Afterwards thorough ventilation. Any clothing or bedding in contact with the person of the patient should be either boiled, steamed or soaked in a bi-chloride solution.

3. The diseases in which the contagion is contained in the bowel discharges, such as typhoid and cholera. All passages should be disinfected in the chamber before emptying, by the use of a solution of chlorinated lime. \bar{z} iv. of the best commercial chlorinated lime should be dissolved in one gallon of water, and a pint of this used with each passage. They should be mixed well and allowed to stand ten minutes before emptying. In country places, or where there is no system of water works, they should be buried as far as possible from the water supply. It is a serious mistake to empty them into privy pits.

Any clothing or bedding which has been in contact with the patient should be boiled, steamed or soaked in a 1 in 1000 bi-chloride solution. To protect the mattresses in these cases, it is an excellent

plan to stretch a Mackintosh or any waterproof material under the sheet on which the patient lies.

DIPHTHERIA.*

BY W. J. WILSON, M.D., RICHMOND HILL, ONT.

Mr. President and Gentlemen,—It is not my intention to go into the whole subject of diphtheria in this paper, but only to consider a few points of practical importance relating to the spread and prevention of the disease. I bring the subject up in this form in the hope that the discussion following may tend to settle certain points and give us a more definite idea concerning them. It has been held for a long time that those not suffering from diphtheria in their own person could not carry it. This statement is made by a writer in "Reynold's System of Medicine," but as that was written before the germ of diphtheria was discovered, and as our theories have changed a great deal since that time, the author's opinions may have altered with the times. But more recently, Dr. Forchheimer, in the *International Clinics* for April, '91, says: "I know very well that the statement of eminent bacteriologists at the last International Medical Congress at Berlin, was, that diphtheria can be carried by clothes, cooking utensils, articles of food, etc., but I have certain reasons to doubt this. As these reasons were not given, I do not know what they are, but I intend to bring before you histories showing conclusively that such a person may carry diphtheria, and in the cases I bring forward, actually did do so.

In April, '88, diphtheria broke out in Markham township, in a poor family, there were two deaths and two or three recoveries. The family, lived in a small old frame house, which, after the children recovered, they vacated, to save the trouble of cleaning, and moved to a similar house of one story and three or four rooms about one quarter mile distant. After they moved, the father of the family, a farm laborer, who had not had diphtheria himself, went to work for a neighboring farmer. This farmer's child took diphtheria after a few days, and died. The farmer's wife took it, and had a very severe attack, but recovered. This man then went to

* Read before the Ontario Med. Association, June, 1892.

work for farmer No. 2, in the latter part of June, and this farmer's hired man took diphtheria in the course of a week, and died after three days' illness. He next went to work for farmer No. 3, and in a week or ten days No. 3 and his hired man contracted the disease, both recovering. He then left No. 3 and went to work for farmer No. 4, and No. 4's two children took the disease in about the usual time, both recovering after a severe attack. This was July 4th, '88; this laborer having been at these four places during the month of June, and last few days of May. By this time people were afraid to employ him at their homes, and he was given work on the public roads. He worked at this till August 15th, when his eldest son, æt. 19, began to return home from the farmers where he had worked all summer, and he contracted diphtheria with extensive deposit in his throat and through his nose. He recovered, but owing to a resulting paralysis, did no more work till the following spring.

After the son's recovery they fumed the house with sulphur and carbolic acid, and washed up as well as they knew how. The father remained at home till November, when he returned to farmer No. 2, whose hired man had died from the disease in June. After working there a week or two, No. 2's son took diphtheria of a very malignant type, and died, the membrane having spread over his fauces, through his nose and into his larynx within three days. His mother next contracted the disease, but recovered after a very severe attack. These were the only two of the family who had the disease, as the other children were sent away as soon as the first one took sick, and did not return till all was thoroughly cleaned up.

There can be no doubt that ten persons contracted diphtheria from this one man, who as stated before, had it in his family but never had it himself. His oldest son took it by returning home in the evenings, three months after the other members of his family had recovered, and after they had removed to another house. This son again carried diphtheria to the next place where he went to work seven months after his own recovery. It is only fair to state that they were very dirty people and could not be relied on to carry out any sanitary measures.

The disease could not be accounted for in either of the four families by any communication be-

tween them, and there were no other cases in the district.

Another class of cases and one of great interest is to be found in those patients who have had the disease and have recovered but carry the germ in the recesses of their nose and fauces, or crypts of their tonsils. These cases are probably more numerous than one might think at first sight, two cases having come under my notice this spring, one where a young man came home discharged, cured but had a slight discharge from his nose following the diphtheritic attack. He gave diphtheria to two families of his relatives. The other where two children came to the country three weeks after the commencement of the disease. In the one child there remained a foul discharge from the ear. On its arrival in the country its mother washed out the ear every day, and in ten days she contracted the disease.

A writer in Hare's System of Therapeutics states that the germ has retained its vitality for five months after being dried and that it will live longer where there is moisture. If this statement be correct there seems to be no good reason why diphtheria germs might not live and flourish for a great length of time in the mouth and crypts of the tonsil.

These facts make it very difficult to set any time limit when a child may safely return to school or mingle with other children, and unless the medical attendant knows more than is usual about the amount of cleaning and disinfection done after the disease is over, and has also made bacteriological examinations, he must necessarily have some misgivings in certifying that the child may return to school. Nothing should be left after an attack of diphtheria that has not been thoroughly cleaned and disinfected. A disinfectant wash should be used for mouth nose and throat in every case for some time after convalescence. The skin, hair, nails and ears should be thoroughly washed and no contaminated article of clothing worn. Great care must be taken in cleaning the household effects. It is here that mistakes are often made.

I know of one family where a new carpet was on the floor when diphtheria broke out. After they were all better, it was not thought necessary to take up this carpet, and it was not taken up for three years, but when they did take it up,

diphtheria again broke out in the family, and one of the daughters died. In another instance the carpet was put out of doors for a few days, and then rolled up and kept in an out-building for a year. When it was brought in at the end of that time diphtheria broke out again. In still another instance a young man had diphtheria, and on his recovery his room was simply papered over the old paper. The family then left the house, and the next family turned this room into a kitchen. It remained in the same condition for two years, when a girl took the paper off, and within a few days she had diphtheria. Now these cases go to show that either a remarkable coincidence occurred in each case, or else the germ lived respectively one, two and three years, and retained its virulence. I am inclined to believe the latter, and on this account friends should not be too hasty to visit those who have been sick, even after the usual means of disinfection, fuming, etc., have been gone through.

Sulphur is frequently burned in rooms where there is no moisture, and even if moisture be present, the amount necessary (about three lbs. to 1000 cubic feet) as shown by Sternberg's experiments, to thoroughly disinfect the place is not used. All contaminated articles should be exposed for twelve hours to sulphur fumes with plenty of moisture. Articles of clothing boiled or exposed to dry heat when possible, and walls, floors, and ceilings washed with hot solution of mercuric chloride (1 in 500). The main thing is not to miss anything, and make sure everything has had sufficient exposure to the action of a good disinfectant, and for a time longer than laboratory experiments require to destroy the germ. All mattresses, feather beds and pillows should be opened to ensure thorough exposure, and articles of little value are better burned.

BACTERIOLOGICAL NOTES.

COMPILED BY E. B. SHUTTLEWORTH.

Bacterium Coli Commune.—This bacillus is just now exciting considerable attention on account of the assertions of some bacteriologists that it is similar to, or identical with forms which are attributed with producing more serious results. Rodet and Roux (*Arch. de Med. Ex.*), state their opinion,

based on many experiments, that this bacillus and that of typhoid fever are, as has been previously asserted, one and the same organism, modified only by the existence of different pathological conditions. Inoculations with both bacilli produced the same variations in temperature, the same lesions, and the same experimental disease. Two other experimenters, Lesage and Macaigne, found that inoculations with *B. coli commune*, taken from a healthy intestine, were not pathogenic to man, except when very large quantities were used, but, under certain conditions, as when the intestines were irritated with tartar emetic, and diarrhoea was thus produced, the germs acquired activity, and became pathogenic. Again we have the statement, repeated in *Merck's Bulletin*, Oct., that the bacillus observed by Drs. Gilbert and Girode, in several cases of cholera, alleged to be *nostras*, were, in the opinion of many practitioners, no other than *B. coli commune*. The subject is, certainly, at present, in a rather confused condition. We have, in the first place, the assertion that the apparently harmless bacillus is identical with that of typhoid; then that the organism may pass from a non-pathogenic to a harmful form, and, lastly, that it may produce the symptoms and effects of cholera.

No doubt the subject will soon be cleared up, as a good many workers seem to be engaged upon it. In the meantime a little information in regard to the known history and characters of the bacillus may not be unacceptable. It was discovered by Escherich, in 1885, in the faeces of children fed exclusively on their mothers' milk, and has since been found to be constantly present in the alimentary tube of man and many animals. It is in the form of slightly curved rods, rather shorter than those of the tubercle bacillus, and about twice as thick. It can be cultivated on gelatine, potatoes, or blood serum, and thrives better at a room temperature than that of the body; it slowly coagulates milk with little or no formation of acid. It is said to require air, but, under certain conditions, may be anærobic, and thus produces carbonic acid gas. It does not liquify gelatine. Inoculation with a cultivation produces in rabbits and guinea pigs an elevation of temperature, violent diarrhoea, and death. Since writing the above we have seen a notice of the report of G. W. Fuller, bacteriologist to the Massachusetts

State Board of Health, in which his conclusions directly militate with those of Rodet and Roux, first quoted. He has been engaged on various modes of differentiation of the typhoid bacillus. He finds that it is quite possible to distinguish this organism from *B. coli* but regards the potato test as worthless for this purpose. The non-coagulation of sterilized milk; the non-production or very slight formation of acid; and the turbidity produced, without evolution of gas, when the bacilli are grown in Smith's solution, are regarded as being perfectly diagnostic. Smith's solution contains 2 per cent. glucose, 1 per cent. peptone, and five tenths of one per cent. of common salt, rendered slightly alkaline with soda, as is ordinary nutrient gelatine.

New Method of Fixing and Staining.—The ordinary way of fixing sputum, blood, mucus, pus, etc., on cover glasses, by direct exposure to heat, as in passing them several times through flame, is always more or less risky, and, even when carefully performed, is liable to alter, to a greater or less extent, the form or size of micro-organisms. Dr. J. H. Byron, who recently read a paper on the subject, at a meeting of the New York Pathological Society, obviates the use of heat by substituting bi-chloride of mercury, which is made a constituent of one of the stains. Cover glasses are smeared in the usual way, and, without being allowed to dry, are at once put into an alcoholic solution, containing one per cent. each of eosin and bi-chloride. An immersion for one minute will be sufficient, when the cover should be carefully washed, and then put into dilute aniline-water gentian violet, followed by absolute alcohol, xylol, and balsam. In case of tissue sections the order of immersion should be alcohol, gentian violet, eosin, alcohol, xylol, balsam. Blood, by the first method, is said to give very good results. Red corpuscles are purplish-red, granules and plates red, and micro-organisms deep blue. We shall try this method and report hereafter.

Diagnostic Cultivation of the Diphtheria Bacillus.—The difficulty of obtaining and sterilizing a supply of blood serum render the method of Roux and Yersin inapplicable for the occasional requirements of ordinary practitioners. The plan recommended by Dr. Sahkaroff is not open to these objections. The shell of a hard-boiled egg is partly removed, so as to expose the albumen,

and slices of a size suitable for insertion in a six inch test-tube are removed by a knife that has been previously sterilized by heat. The sterilization of the test-tube is accomplished by putting into it about two-thirds of an inch of water, plugging with cotton wool, boiling away about half the water, and, when cool, emptying quickly. A slice of egg is then inserted and charged by contact with a flattened platinum wire, with which a little of the membrane has been scraped. The plug of cotton is then re-inserted, and the tube set aside, at a temperature of 95° to 100° F. After twenty-four hours' incubation the albumen will show greyish growths of the bacillus, if present. Identification may then be accomplished by making a cover glass preparation, and staining with Loeffler's blue.

Relative Power of Germicides.—In the results of some experiments recently reported to the Societ  de Biologie, Paris, M.M. Christmas and Respaut (*Mon. de la Pharm.*), classed benzoic acid and chloride of zinc with phenol. A one per cent. aqueous solution of any one of these was sufficient to destroy in one minute the vitality of the bacilli of diphtheria, or typhoid.

Selected Articles.

EARLY SYMPTOMS OF MENTAL DISEASE AND THE PREVENTION OF INSANITY.

Mental disease is not quite so familiar a phrase as insanity, but I wish to make use of the former because it more faithfully covers the field to which I more especially desire to direct your attention. My preference for the term "mental disease" must not induce you to conclude that I necessarily always mean insanity. It may be perfectly legitimate and quite correct to speak of a case as one of mental disease without inferring or suggesting that it is also one of insanity. There is a wide gulf between the first symptoms of mental disease and actual insanity, and I hope I may not unprofitably ask you to consider a group of symptoms, or stage of mental disease, rarely seen except by the general practitioner.

As Dr. Savage says, "every perversion of nervous action, every unusual display of intellectual or moral force, is not to be regarded as a case requiring the interposition of the physician whose chief care has been for the insane." The general practitioner has, "more than most men,

opportunities of seeing a wide range of mental phenomena." The slightest deviation from normal mentalisation, the expression of strange and eccentric ideas, or other offences against sentiment and society are primarily deposited with the family physician. To no other member of the profession are such opportunities afforded of studying disease in its simplest and most curable forms, of employing preventive measures, and, in this particular instance, of averting future wrecks of humanity.

No sooner does one recall the painful incidents of an anxious case than there seems to re-echo from every quarter the regretful but familiar phrase "had I only been called earlier." Now, I much fear there is loss of time, loss of opportunity, and waste of material, because of the widely spread notion that mental disease is of a different breed from other diseases, and therefore not likely to be dealt with except under strained conditions and after consideration. All this is very humiliating, and one cannot wonder at the efforts being made to impart and infuse a better knowledge of mental disease among the general body of the profession.

However, it is no part of my duty to-day to express any opinion on this subject, but rather to exhort you to show a greater readiness and to display a stouter individual confidence in your association with cases of mental disease in their earlier stages. I am quite prepared to be told that even the family physician is not always consulted as early as he should be in such cases, but, allowing for this, the field is wide and the opportunities vast.

I would here say I leave untouched any consideration of those cases where the symptoms are patent and of sudden onset, or where the symptoms have reached the stage of full development before you are consulted.

In considering the early symptoms of mental disease it would be a wearisome and profitless task to attempt anything like a clinical exposition. Each form or phase of mental disease has premonitory signs and symptoms, though perhaps not always observed nor looked for. This may result from two causes. First, the reluctance of the patient or relatives to make known direct or collateral facts; and, secondly, a studied consideration on the part of the doctor not to wound feelings by pronouncing the symptoms as mental. It is of very much greater importance that the earliest symptoms should be observed, studied, and treated in certain cases than others, and for this reason: When there is a pronounced insane neurosis, or when the symptoms betoken organic disease, there is neither the same difficulty in diagnosis nor the same hope of recovery as when the symptoms are simple and possibly functional. It is often possible to trace back the symptoms to a period

when no doubt surrounded the patient's mental powers, and when the subject was in full possession of social equality. I could not better illustrate the truth of this than by a short reference to two living examples from among many now in our wards.

CASE I.—A. F., aged 32, married, was admitted in October, 1886. It was stated that the mental symptoms were of three months' duration. She was suffering from open maniacal perversion, with mixed sensory aphasic symptoms. On further inquiry we learned that, six years previous to this woman being considered insane, her friends were wont to be angry and annoyed with her for strange acts of conduct and mistakes in writing and calculation. She was a schoolmistress, and also managed the books of a small business. She would write absurd answers to business letters, and in her own private letters would misplace words. She was constantly "doing wrong," and making mistakes, for which supposed acts of carelessness she was frequently abused and most unkindly treated. Such were no acts of carelessness, but the early symptoms of mental disease.

CASE II.—J. D., aged 42, married, was admitted in December, 1885, suffering from mania with delusions (general paralysis). We were informed that the symptoms were of twelve months' duration. This man was a small farmer, and at one time in very comfortable circumstances. Ten years previous to his admission into the asylum, he rode through the harvest field wearing "white kid gloves and patent leather boots," and said to his foreman, "I am going for a ride." For these acts he was laughed at, ridiculed—in short, considered a vain fool. They were the early symptoms of mental disease.

When you are consulted for a general state of mental uneasiness, it is usually to be observed that the patient is over-anxious, is worried and desponding, because he has convinced his own mind that business or other matters are not satisfactory. He is perfectly rational in conversation "in a way," yet his mind is not working normally. "Smalls" are "greats," and little blacks are large blacks. Should these abnormal currents of ideas be allowed to multiply and propagate, the next stage is soon reached, and he tells you that he is ruined; that his affairs are not correct or prospering, that he cannot settle to work, and so forth. And now, instead of simple mental perversion you have actual mental disease. At this stage a consultation might be suggested; but I wish you to think of the stage preceding these delusions, the period which unquestionably belongs to you, and during which wisely-directed treatment is of most avail.

Take, again, the case of the anxious mother, who, during the period of lactation, is too often unmindful of her own health, and falls into a state

of despondency. Unfortunately, this condition is very frequently neglected, partly because of its simplicity, and partly by not being considered in the light of mental disease. A few days more, and this case is one of open melancholia.

Under very different conditions you meet with cases of a similar nature where domestic troubles or pecuniary losses are the immediate cause of the mental symptoms. Here, again, there is the initial stage, often of long duration, and during which preventive measures are of the greatest value. Allow these cases to drift a little further until the borderland of insanity is reached, and their downward course is almost inevitable.

I have no doubt you will all recall numbers of such cases, and what I wish to impress upon you is the necessity and importance of employing early and preventive measures. Delay and neglect may mean disaster.

Then there is the case of the young girl, who, at the period of a great physiological crisis, experiences feelings and sensations at once beyond her comprehension and understanding, and which she allows to disturb her peace of mind until the current of her thoughts no longer represent the buoyancy of her girlhood.

As too often happens, mothers are unmindful of the critical stage of their child's life, and the general treatment is neither consoling nor refreshing. I know of no stage in woman's life when greater care or wiser counsels are needed. Neglect may mean early mental troubles, or it may mean a life of incessant misery, because of the early planting of neurotic seeds. I mention this class of cases because, from time to time, one sees so many young girls whose illness dates from the menstrual epoch, and where, I am confident, much more might be done to avert the development of mental disease; and, again, because there is an increasing tendency to the development of neurotic and mental symptoms at this anxious stage of life in the present or rising generation of young women.

You are frequently consulted respecting the schoolboy or schoolgirl who suffers from intolerable headache, who cannot sleep, who cries and frets because of his or her inability to accomplish home tasks or keep an equal place with others in the class. In short, the child is absolutely miserable, and the seeds of disease are being rooted, through the misguided rules or laws of primary education, and through the failure of teachers to allow for any difference in brain power or any defect in brain development.

I must allude to one other class where the earliest symptoms of mental disease are specially your property, and in which class I believe are many preventable deaths. It only needs mention to save description of the number of deaths where the coroner directs the jury to find a verdict of "suicide (or as the case may be) while of unsound

mind." We have not to borrow examples from other countries, nor even from other counties, for there are numbers within our own small radius in the course of the year. Signs of warning and symptoms of danger are either unheeded or disbelieved, and nothing short of an actual attempt convinces the relative and others of the serious nature of the case.

The course of events in these cases illustrates forcibly the difference between the professional and lay methods of reasoning respecting the nature and importance of the earliest symptoms of mental disease. The profession recognise in these premonitory symptoms the precursors of disease, if not the actual symbols of disease; but the public pooh-pooh this, and only awaken to the truth when the laws of society are palpably disregarded, or when the community are startled by a daring and irresponsible attempt at self-destruction or murder. It is hard to know on whom to fix the blame in many of these sad terminations to previous useful lives, but of this I am quite certain, a great and grave duty is that of the family physician. He may with impunity refuse to sign lunacy certificates, but by no twist of the imagination can he escape from responsibility when dealing with the early symptoms of mental disease.

Treatment.—In considering the question of treatment, it may be laid down as a general principle that it is useless to ransack the *Pharmacopœia* or to combine reputed drugs in the hope of finding a panacea. You can at best correct system errors by therapeutics, but I know of no drug that will cure mental disease. It is not therapeutics but moral treatment that is required. One time it is healthy exercise, another recreation, another change of surroundings, another removal from all associations with relatives, another regulation of diet and hours—in short, let your prescription be moral and not therapeutical, and, at the risk of being abused and chastised, let the time-honoured battle of physis give place to preventive medicine. I may be told that you have no means of treating these symptoms other than by therapeutics; but this I cannot accept, and, as I have already said, drugs are, if not useless, of little value.

As our knowledge of the pathology of disease advances, our faith in curative measures grows less. There are a few grand examples, but do not the weight of evidence and the bent of scientific research favour the adoption of preventive, rather than curative, measures? Here are the trenchant words of Professor Clifford Allbutt: "But what need of further evidence to prove that while the advance of curative medicine is readily summed up in a few brilliant episodes, the advance of preventive medicine is along the whole line with a steady and uniform tide that knows no ebb?" Dr. Clouston says, "If the first signs that betoken

danger to the mind-health were observed, and the first symptoms of disease noticed, and their true significance apprehended, everyone knows that their further onset and progress could often be arrested." All the talk and writing about the treatment of mental disease in special hospitals by an array of departmental specialists is glittering, but unsound: It is not therapeutics or special hospitals that we require, but the aid of the general practitioner, and if he could be induced to be more of a specialist in his work generally, the benefit to scientific medicine would be immense.

The unique position of the family physician may be described as a sacred trust in regard to his patients and a solemn bond in regard to the social world. He is consulted on all matters, he is confided in, he is trusted, and his powers of influence exceed those of any other living being. I speak now generally, not caring to dwell on those instances when we are thwarted in good intentions and cruelly treated by ungrateful patients.

What above all else has delayed the recognition of insanity as a disease, and therefore the treatment of the earliest symptoms of mental disease has been public prejudice on the one side and a want of knowledge of the true significance and importance of first symptoms on the other. The one cause has been the means of fostering the shameful opinion that mental disease is a disgrace, and the other has been the instigator of classifying the early symptoms as eccentricities or foolish freaks of human nature.

I would not willingly, even in words, encroach or impose upon your sacred hours, but remembering your exceptional opportunities and your unlimited powers of influence, I am constrained to make an appeal for a better share of your working day in the cause of mental disease, and to express the hope that more attention will be paid and more consideration given to the study and treatment of the first signs of mental troubles.

I believe we are severally doing our part in the field of preventive medicine, and as regards the special department of psychology, the general practitioner would seem to stand forth as the public pillar and keystone towards the prevention of insanity.

These and similar exertions on his part will accomplish much in diffusing better and more humane ideas respecting the insane. The progress in this direction has been slow, still great advances have been made, and it is only for one reason that I allude to the subject.

Attempts are being made to rivet the public mind on the feebleness and lassitude of those entrusted with the care and treatment of the insane, and we have actually been asked to believe that with special hospitals the average rate of recovery could be increased by 10 per cent., to be followed by a corresponding decrease in the number

of the insane. I can only say I do not accept these views, and I attach more importance to the efforts of the family physician in the prevention and reduction of insanity than to any supposed increase in the recovery rate by means of special hospitals and therapeutics.

I do not think that anyone engaged in the treatment of the insane would advise the removal of a patient to an institution if the case could be treated at home. The early symptoms can and should be treated by the family physician, but when open and pronounced there should be no delay in obtaining special treatment. Whether early or late you will fail if you rely on therapeutics.

Do not be discomfited because of the varied and varying character of the symptoms. Seldom will you find two cases alike in the initial stage. But the more closely you study the variations of normal mind, the more easily will you detect mental deviation. Guard against labelling the primary element of mental disease as eccentricities, or painting moral insanity as hysteria.

In no department within the whole range of medical science is there more need for the practice of specialism by the general practitioner than in the treatment of the early symptoms of mental disease. We admire, respect, and follow the teaching or consulting room opinion of ripe experience, sound learning, and wide culture, but in every branch of the profession there is a great desire for more general specialism and a great cry against the increase of special specialism. The experience gained in the wards of any institution for the treatment of disease fosters and propagates individual and general confidence. It is one of the regrets of my life as an asylum physician that my brother practitioners so seldom evince a desire to gain knowledge in the special department of mental disease. I am confident that, if you were to visit our wards—and few there are amongst you who could do not do so several times in the course of twelve months—the gain would more than compensate you for the time and trouble.

Let it not be said that the fault is ours, for I am constantly asking individual members of the profession to visit us, and I now bid one and all an open welcome at all reasonable hours. I can assure you it will be a real pleasure to us, and no effort will be spared to make your visits profitable and interesting. I cannot do more than refer to this important subject; but I could not allow the opportunity to pass without mentioning how desirous I am that the richly-stored wards of our asylum should be utilised for the benefit of and taken advantage by the profession generally.

What is possible elsewhere is not impossible within the area of this branch. We may lack in public distinction and repute, but not in earnestness and devotion to duty. There are as able and

distinguished pillars of the profession on the roll of country practitioners as on the staffs of our large hospitals.—R. W. McDonald, in *Br. Med. Jour.*

THE COLD-BATH TREATMENT OF TYPHOID FEVER.

While no one can bring a railing accusation against us as a profession for neglecting the things that pertain to the cure of disease by drugs, we must bear meekly the rebuke of those who claim that non-medicinal agents, such as systematic exercise, fresh air, and the use of water scarcely receive the attention which their virtues demand. Particularly is this the case with water as a means of controlling the severer symptoms of fever. For centuries it was one of the great hygienic measures, and the use of baths in disease is recommended by writers in every age since Hippocrates. You will find, indeed, in the writings of the Father of Medicine an admirable account of the indications and uses of the bath, to some of which I shall refer again.

During the first half of this century hydrotherapy was largely in the hands of the hydropaths, by which term may be distinguished the large class of hermaphrodite practitioners who look upon water as a cure-all; but under the guidance of von Ziemssen, Liebermeister, Winternitz, Brand, and others, the use of compresses, douches, and the various forms of baths has been introduced largely into rational practice. More than thirty years ago Brand, of Stettin, urged the systematic treatment of typhoid fever by cold baths. The method has been successfully carried out on a large scale in Germany and in France, but in England and in this country only spasmodic and not very successful efforts have been made to encourage its use, at least in hospital practice. The remarkable figures published by Brand in 1887 made me determine to adopt it at the earliest possible date, but when the wards were first opened the arrangements were not adapted, and our staff of nurses not large enough, to carry out the method thoroughly, so that for the first year we followed the ordinary symptomatic and expectant plan of treatment. But I am not myself personally responsible for its introduction. During my absence in Europe, in 1890, my former first assistant, Dr. Lafleur, now of Montreal, after a visit to the wards of Dr. J. C. Wilson at the German Hospital in Philadelphia, began the practice, and the hospital is under a lasting debt to him for the accuracy and care with which at the outset, and for more than a year subsequently, he supervised the details of the treatment.

Most of you have seen the application of the method in the wards, but I shall emphasize certain

points in the procedure by having one of the patients bathed before you, so that you may see the minutiae.

The ward orders are as follows: The temperature of typhoid fever patients is to be taken every two hours; when above 102.5°, a bath at 70° is to be given every third hour. The patient before you has reached the sixteenth day of the disease. He has been in hospital nine days, and has had thirty-six baths. The tub is wheeled to the side of the bed—a practice much preferable to that followed in some of the foreign hospitals of carrying the patient to the bath, or, indeed, allowing him, if he is able, to walk to it.

The technique of the procedure is as follows: The tub, as you see, is of light *papier-maché* material, and even when filled with water, as at present, is readily portable on wheels. The temperature of the water is 68°. Here in the amphitheatre we shall reverse the usual procedure, and have the patient wheeled to the side of the bath. The preparation is extremely simple. The heavier bedclothes are removed and a light sheet is thrown over the patient from the neck down. Under this his night-shirt is removed, and, if necessary, a light napkin is applied over the genitals. The patient is given a small quantity of whisky. Two orderlies will now lift him into the bath, still covered with the sheet. This patient happens to be a large, well-nourished man, and he fits very comfortably into the bath-tub, having, as you notice, an air-cushion supporting the head and neck. You will see in the ante-room one or two other forms of bath-tubs, one of which has a sloping platform for the support of the back. In more delicate, particularly in thin, emaciated, patients, the greatest care must be taken to support the nates and make the posture in the bath as comfortable as possible. A cloth wrung out of ice-water is placed upon the patient's head, and with a small sponge the head and face are kept bathed with the same water. You see here an unusually docile patient, who takes the baths without much protest, but, as you have just heard him say, he would prefer them warm. Systematic friction is now applied to the skin either with the hand or by means of a cloth or India-rubber rubber, which for convenience may be attached to a stick. The friction is rightly regarded as a very important element in the treatment, though, as you hear from this patient, he does not at all like it, and prefers to be left alone. Curiously enough, Hippocrates laid stress upon this very point when he said: "But the person who takes the bath should be orderly and reserved in his manner, should do nothing for himself, but others should pour the water upon him and rub him." The abdomen should not be rubbed. While the patient is in the bath, the bed is prepared for his reception with a rubber sheet, a blanket, and over these an old

linen sheet. (After remaining in the bath for twenty minutes the patient was lifted out.)

I am glad that you have witnessed the little *contretemps* in lifting this patient out of his bath. You see that he is a strongly built, heavy man, and the orderlies were only just able to lift him from the bath to the bed, and you saw that in doing so there was some little difficulty, owing to the catching of one arm on the side of the bath. This, however, does not very often happen, but now and then patients complain of scratches in the process of lifting in and out of the bath; and though done, as you see, with the greatest possible care, these little accidents are liable to happen. The man is now well wrapped up in the sheet, which is tucked in between the arms and legs, and brought well around the neck. Over this the blanket is placed. In cases in which the temperature is very high the patient may remain in the sheet for from five to ten minutes, but under other circumstances he may be carefully dried at once. You see that this man retains a good color in his face; the extremities are cold but not livid; and he is now beginning to shiver. Very often this shivering is distressing while in the bath, and one of the most unpleasant features of the system. If the patient is very cold and the shivering is extreme, hot bottles may be applied to the feet and at the sides. You see by this two-hourly temperature-chart the influence of the baths; and half an hour after the temperature will be taken again, and the record made. If, at the end of three hours, the temperature is again above 102.5°, he will have another bath such as you have just seen. Now, before the patient is wheeled out, he will be given two ounces of hot milk, with a little whisky.

Practically what you have seen in this case is the routine of our treatment. The patients receive no medicine other than the alcohol, and that we do not give as a matter of course, but as a rule only, before and after the bath. In other cases, when the heart becomes feeble, we give strychnine, and in some cases digitalis and ether. The effects of the baths are: first, to reduce the fever, principally by favoring heat-dissipation and by the direct action of the cold water upon the blood that circulates in the superficial vessels; secondly as a general tonic to the nervous and circulatory systems. Perhaps the most striking effect is seen in the lessening of the nervous irritability, the favoring of sleep, and the clearing of the mind. In patients treated early by this method we rarely see the dry tongue, muttering delirium, the subsultus, and the other grave nervous phenomena which are of such serious import in typhoid fever. The baths, too, appear to improve the general nutrition, and the patients take their food better, digest better, and, as has been said, the vital processes all seem more active. Do

not suppose, however, that you can, as Brand enthusiastically says, keep the patient in an almost a febrile condition. An inspection of any series of carefully taken charts will convince you that this is an impossibility; the temperature rises again in a variable space of time, and in some instances the influences of the bath upon the rectal temperature is extremely slight.

An important question is, Shall we bathe all cases indifferently, whether the temperature reaches 102.5° or not, and whether grave or mild? When the temperature does not reach the point indicated, if the patient's condition is good and there are no nervous symptoms the baths are not ordered. This has been our practice during the past two years, and I do not know that we have in any case had cause to regret it. Of course, we do not here often see patients before the seventh day, but occasionally, as in the man in bed 3 in ward F, we do find cases in which the temperature is very low on admission, scarcely 100° or 101°, while subsequently the fever becomes very pronounced. Now, in the very case in question, the man has subsequently had a sharp attack of typhoid fever, but we did not bathe him when his temperature was low for the very good reason that we did not think he had the disease. On the other hand, in doubtful cases in which the fever is 103° we have no hesitation in ordering baths, and have frequently bathed patients who subsequently proved to have pneumonia or malaria.

The contra-indications are as follows: Hæmorrhage from the bowels, not because the cold baths tend to increase the hæmorrhage, but because they interfere with the essential element in treatment, namely, rest. You have seen within the past week in the patients in beds 20 and 24 that the baths were omitted on account of hæmorrhage. In the extreme debility of the last stages, in protracted cases with running pulse, it is advisable to omit the baths, though we do so with reluctance; but in many cases it has seemed wise, particularly in cases admitted in the third week, or admitted in relapse. Often in a day or two the condition is improved sufficiently to justify the use of the method. Neither pneumonia nor bronchitis is regarded as a special contra-indication, and pluerisy, only when the pain is severe. Of course, the baths must be omitted when there are signs of perforation.

We use the bath-treatment and advocate it because by it the mortality in typhoid fever has been reduced so remarkably in hospital work that its employment seems imperative for the saving of lives. You can for yourselves read and compare the statistics in the different hospitals which are given in two special works on this method now available for practitioners in this country—one, *The Hydriatic Treatment in Typhoid Fever*, by Dr. Shiler, of Cleveland, formerly a Fellow of the Johns

Hopkins University; the other on the *Use of Water in Modern Medicine*, by Dr. Simon Baruch, of New York. These little books should be widely read by the profession. They are timely contributions to a subject that has not yet reached the daily lives of the doctors in this country. Practically, the mortality under the cold-bath treatment in hospitals has been reduced from 15 and 20 or 25 per cent., to an average of 6 or 7 per cent., taking all cases, or even very much lower, if the cases are seen early. Indeed, Brand has figures that show an absence of mortality in some 1200 cases in which the treatment began before the fifth day. But in hospital practice we can never expect to see our patients before the end of the first week. At the German Hospital in Philadelphia, where the method has been followed most accurately by Dr. J. C. Wilson and his colleagues, there were ninety-four consecutive cases treated without a death; but I understand from Dr. Wilson that this remarkable good fortune has not continued, though the mortality has been kept at a very low rate. Our own more limited experience is also strikingly in favor of the method, and a report is in course of publication dealing with the first hundred cases so treated. In the first year of the opening of the hospital there were thirty-two cases treated on the symptomatic and expectant plan, of which eight died, a mortality of 25 per cent., a rate unusually high even for a general hospital. The cases, however, were of unusual severity; one had acute hæmorrhagic nephritis, with profuse hæmaturia; one case, admitted at the beginning of the third week, had extensive double pneumonia. Two cases died of perforation, while another case died of profuse hæmorrhage from the bowels. On the other hand, in the first hundred cases treated by the cold baths, the mortality has been only seven per cent. a reduction so striking and remarkable that it must be attributed to the good results of the bath. Even this rate of mortality which is about the average for hospitals in which the rigid Brand system is carried out, would be considered by the proposer of the method far too high. In the report referred to I have given full details of the fatal cases, and will it be noticed that one of the eight, an old man of seventy, was admitted late in the disease with extensive lobar pneumonia, and as the disease was not recognised as typhoid he was not bathed. Two cases were admitted in relapse.

You will be pleased to learn that in cases treated this year we are still gratified with the results of the method. We are at about the seventieth case in our second series of a hundred cases and only six of these have died.

Lastly, a special interest to you as practitioners, comes the question, How far is this method available in private practice? I have been rapped

over the knuckles, so to speak, for saying that in private practice it was scarcely feasible, but I suppose it is more correct to say that in this, as in other matters, where there is a will there is a way, and if the practitioner insists and has the courage of his convictions, the method can in many cases be carried out at home. It is very interesting at this point to know Dr. Sihler's experience in private practice, and I would recommend the careful perusal, by practitioners, of Appendix A of his little manual. Really the chief obstacle to-day is that of which Hippocrates complains, when, in speaking of the bath, he says: "Sometimes it must be less used than it would be otherwise, from the want of accommodation; for in few families are all the conveniences prepared, and persons who can manage the baths as they ought to." Portable tubs, however, are now available, and with a good nurse, intelligently assisted by one or two members of the patient's family the practice can be successfully carried out. There is now, moreover, a much stronger feeling in the profession in favor of hydrotherapy, and the practitioner can at least get the moral support of his colleagues. Still there are difficulties, which can, however, be overcome with care, patience, and a little tact. My preceptor, Dr. R. P. Howard, in Montreal, used to tell a story which rather set the younger ones among us against the Brand method. Early in the "sixties," shortly after the publication of Brand's paper, Dr. Howard, in his lectures on typhoid fever, had given the full details, and had spoken of the remarkable results obtained by Brand. One of his pupils, a year or so later, practising in a small town in Western Canada, had faith enough in his teacher and in Brand, to use the cold bath in a very severe case of typhoid fever, which occurred in one of the prominent families of the town. The poor patient promptly died after the bath, and the young physician felt so chagrined, and the feeling against him was so strong, that he left the town. Such an accident, however, is a very remote contingency, and one that need scarcely be taken into account in discussing the advantages and disadvantages of the cold-bath treatment in typhoid fever.

Do not, however, underestimate the troubles that you will encounter in introducing this method into family practice. I have here a letter from one of my old University Hospital house-physicians, an extremely careful and able practitioner, who has been using the cold bath very faithfully, and in speaking of one case he says; "The prayers, entreaties, supplications, and last but not least effective, the lusty yells of this girl at each bath were not such as to materially increase the repose of the neighborhood, or strengthen to any great extent the *morale* of the family."

We have been congratulating ourselves during

the past two or three months that our numerous cases have been doing so satisfactorily, but yesterday one of the inevitable accidents occurred, which, in general hospitals at any rate, must continue, in spite of Brand's statements, to occur occasionally and maintain some mortality, at any rate, in typhoid fever. The patient, admitted about the seventh day of his illness, was a strong, well-built healthy man, aged thirty-seven. He was bathed from the time of his entry, and had had about forty baths. The day before yesterday the pulse was feeble and rapid after the bath, and it was thought advisable to order the baths to be discontinued. There was a little tenderness in the abdomen, but nothing very striking. Yesterday, as some of you saw, the signs of perforation were well marked, and of this he died. I show you here the small intestine, and you will see a somewhat unusual and remarkable picture. There is a small slough near the ileo-cecal valve, and there are two or three small ulcers in the first half above the valve. There are also one or two swollen solitary follicles, but there are also several patches which show simply the shaven-beard appearance, and the lymph-elements are not themselves specially swollen. At a distance of 30 cm. from the valve there is a small perforation, resulting from the extension of a small, deep slough through both muscular coats. Higher up there are one or two small ulcers, not larger than peas, and above this there are Peyer's patches uninvolved, with scarcely any infiltration. The spleen is very much enlarged and soft. Here was a patient, without extremely high temperature, bathed from about the seventh day, with every favorable indication, and, as the autopsy showed, extremely slight ulceration in the ileum, and yet, owing, no doubt, to local conditions in the limited area involved, the necrosis had extended deeply, and passing through both muscular coats, the inevitable perforation occurred, with fatal peritonitis.—Wm. Osler, M.D., in *Med. News*.

ALBUMINURIA IN PREGNANCY.

Among the diseases of pregnancy, albuminuria is one of the most important, and it is on this account that I am directing your attention to it this evening. It is only within the last fifty years that it has been recognized. It was first alluded to in France by Rayer, and soon afterwards in this country by Dr. Lever in the seventh volume of the "Guy's Hospital Reports." Since then various papers have appeared on the subject from time to time, but import of the symptom still remains somewhat uncertain. This, no doubt, is due to the varieties of the disease. From the observations of Monsieur Blot, many years ago, it appeared that at

least twenty per cent. of all pregnant women had albumen in the urine in varying quantities, and it was estimated that albumen was to be found, one in seven before, one in four and a half during, and one in four shortly after labor. These observations, however, have never been confirmed in this country, and the amount of albumen sometimes present, and persistence or not after delivery, has not been stated.

The reason that albuminuria has always been regarded in pregnant women with alarm has been on account of the coincidence in many cases with the occurrence of the eclampsia; but there are other—and quite as great—dangers which occur in its presence, viz., retinitis, causing almost blindness—the "amaurosis" of old authors, and the persistence of the symptom itself, ultimately causing the death of the patient from Bright's disease. Hence we shall find that our treatment to be successful must, in the main, be preventive. It is well to remember in the outset that albuminuria is far more frequent in primiparous than multiparous women, though even in the pregnant state the urine of a healthy woman contains no albumen, hence it may clearly be said to indicate a pathological condition of which it is the symptom. Also that in both, the greater the age the less the liability; and it also may be taken as a general fact that the amount of urea found in the urine is diminished in all cases.

Now with regard to the causes, the following have been assigned: pressure on the renal veins, or on the ureters; increased arterial tension in connection with hypertrophy of the heart; reflex irritation conveyed from the uterus to the kidney; increased work thrown upon the kidney during pregnancy, this acting on a kidney originally weak, and possibly having undergone some degeneration; then the occurrence of Bright's disease before or coincident with the pregnancy, or the re-development of old scarlatinal dropsy. Among the French authors, super-albuminosis is assigned as a cause.

Now, first with regard to pressure—although this may be an active cause sometimes in the latter part of pregnancy, and especially when œdema is found of the lower extremities, it can scarcely be considered an active cause in those cases where the albuminuria is a comparatively early symptom, especially those cases where it comes on before the fourth month. With regard to increased arterial tension, this undoubtedly, in the presence of a watery condition of blood, favors the occurrence of albuminuria; and when we come to consider the state of the blood in pregnancy, no doubt this has an important bearing.

Let me remind you roughly that the blood during pregnancy has less albumen and more water, and it is on this account that the French observers lay stress upon the condition of super-albuminosis being a cause of albuminuria. They contend that although the amount of albumen in

the blood in pregnancy is lowered, still proportionately the water is increased, and that in the presence of this arterial tension there is a tendency in many cases for exudation of the albumen to take place: and the experiment of Bernard of the injection of albumen or serum into a vein producing albuminuria, and also the known fact that an excessive diet of albuminous material has also given rise to albuminuria, have a distinct bearing on this. It has also been thought that a large amount of albumen being required for the nutrition of the fœtus, and this not being used up, especially in cases when the fœtus is found small and shrivelled, that the excess of albumen not used exudes through the vessels and passes into the urine. There is no doubt—and Tyler Smith laid stress upon this—that the reflex condition, in the same way as other reflex symptoms such as induce the vomiting of pregnancy, has to do in some cases with the occurrence of albuminuria. It has been stated, and I believe correctly, that it is rare to find blood in the urine in the albuminuria of pregnancy, whereas in the acute desquamatory nephritis it is fairly common.

With regard to the coincidence of Bright's disease, this is often difficult to ascertain, as we are by no means certain when the albuminuria commenced. My own impression is that in many cases which I have seen, the cause seems to be some latent condition of the kidney, which is brought out by the presence of pregnancy, and this certainly accounts for those cases where albuminuria comes out in successive pregnancies and disappears on the termination of the pregnancy. Other symptoms that are noted in albuminuria are œdema, headache, deafness, blindness, paralysis, dizziness, vomiting, and pain in the lumbar region. Of these it is not necessary that I should lay stress upon the occurrence of œdema; this is not often overlooked in the latter part of pregnancy. At this period œdema is observed, and among the older authors was often associated with the occurrence of convulsions. But it is to the occurrence of *early œdema* that I wish to draw your special notice. This is often observed in connection with the eyelids, but œdema to a considerable extent, of the vulva often takes place, and is either not noticed by the patient or she lays no stress upon it. In two cases this has been a very well-marked point; in both of them the patient was apparently well, and complained of nothing; in one as early as six weeks the œdema of the vulva was so great that it was necessary to relieve it by puncture, and in this case albuminuria had occurred in the two previous pregnancies, in both of which abortion took place between the third and fourth month. In the other case, a primiparous woman complained of nothing, and apparently being in perfect health, was seized at about the fourth month, with violent convulsions, deafness, and blindness, lasting for over thirty-six hours, the urine being nearly solid with

albumen. After this period the symptoms slowly passed off. When the patient recovered consciousness she stated that she had considerable swelling of the private parts, but that she had not mentioned it because she thought this was one of the ordinary occurrences of pregnancy. Hence it is important in all doubtful cases to question the patient closely on the subject of œdema.

Again, in a primiparous woman the occurrences of persistent headache with giddiness should arouse our suspicions, and cause us to examine the urine, and this especially as time goes on, when dimness of sight, amounting almost to complete blindness, is apt to take place. Another very unfortunate symptom is the occurrence of late sickness. This, in the presence of albuminuria, is often attended by fatal results. It should be remembered how the retinitis is met with more often in the albuminuria of pregnancy than in that of the non-pregnant state.

With regard to the course of the disease, in the slighter cases, the albumen may remain small in quantity, or may disappear, or, on the other hand, increasing, may lead to the dangers to which we have alluded. But the course of the disease depends very much upon the varieties, and we may say of these that the symptom may be transient and slight, or large and increasing in quantity, and the albumen increasing coincident with the diminishing urea, is always a serious condition. Then, as to the occurrence of the œdema with the albuminuria, this again helps us with regard to our interference or not.

With regard to prognosis, this has to be considered as to the present pregnancy—as to future pregnancies and as to a continuance of the disease or not after pregnancy has concluded. First, as to the present pregnancy: our prognosis here depends much upon the quantity of albumen and its increase or decrease under treatment, though in cases where casts are found the symptom passes off after emptying of the uterus, still their presence renders our prognosis more serious than when they are absent. It is well to remember also that the appearance of albumen in the early months of pregnancy is more serious than when it appears only in the latter months; but, on the whole, and bearing in mind what we have to say in regard to treatment, our prognosis as to present pregnancy may be said to be favorable. As to future pregnancies, there is no doubt that there is a great tendency for the symptom to recur, and believing as we do, that the pregnant state is often the condition which brings out the latent kidney trouble, a very guarded prognosis must be given and the patient carefully watched, the urine being examined at intervals during subsequent pregnancies. As to continuance of the disease we may in many cases predict the absolute recovery of the patient, but it is well to wait from three to six months before a

final opinion is given; it sometimes happens that the albumen disappears entirely at first, and after a time returns again, and continues for a variable period.

With regard to the treatment. The treatment of albuminuria is much the same in pregnancy as at other times, that is to say, as far as diet or medicine is concerned; to promote the action of the skin, increase diuresis, and promote extra activity of the bowels are well-defined rules of treatment. At the same time, the diet should consist largely of milk, and the avoidance of all albuminous food, and this as far as can be maintained, keeping in mind the patient's general condition, is at first the main treatment. The patient improving, we may then administer some form of iron, and watching her carefully, allow the case to go on if possible until the child is viable; but no matter at what period of the pregnancy, if the symptom increases, or if the general condition of the patient does not distinctively improve, then, bearing in mind that in many cases the albumen disappears soon after the termination of the pregnancy, the question of its premature conclusion must be seriously entertained. Hence the preventive treatment to avoid danger to the patient is the provocation of premature labor or even abortion, and this in most cases at once relieves the urgent symptoms; the albumen disappears, the sight is restored, and the patient is brought from a state of danger to one of safety.

The treatment may then be said to be, to attack the symptom by appropriate measures, to keep the patient at rest, and watch her closely, and be prepared to act if the albumen increases, or the general condition of the patient is not an improving one. And to carry out this plan regardless of the time at which the pregnancy has arrived if the state of the patient justifies in doing so. Of course in the cases seen later at the stage when retinitis or other serious symptom is present, the bringing on of premature labor or even abortion becomes an immediate and urgent necessity.

With regard to the after-treatment, this of course depends upon the persistence or not of the albuminuria. In the cases in which the disease is involved with that of chronic Bright's disease, the condition remains, and has to be treated as an ordinary case of nephritis.

In all cases the risk of pregnancy should, as far as possible, be avoided for at least one or two years. As it is especially when the pregnancies follow each other in rapid succession that the recurrence of the albuminuria is likely to happen.

In conclusion the points that I would desire especially to impress upon you are the diagnosis of the condition as early as possible. And for this the more frequent examination of the urine, especially in primiparous women, for the detection of albumen is to be advised. Next, close questioning these women as to the occurrence of early

œdema, and, finally, if the albumen be discovered, the patient to be carefully watched and treated; and unless the amount of albumen *decreases*, or remains stationary, the patient's general condition otherwise being good, then the case must be looked upon with anxiety, and the question of emptying the uterus carefully discussed and carried out. The termination of the pregnancy begin the on y real safety to the patient.—J. B. Potter, M.D., F. R. C. P. in *Clin. Jour.*

A CLINICAL DESCRIPTION OF DYSENTERY AS IT OCCURS IN NICARAGUA.

Three varieties of dysentery are met with in Nicaragua, namely, the malarial, the endemic, and the epidemic, and of these the malarial is by far the most common. The prodromal symptoms of malarial dysentery are malaise, pain in the back, in the head, and in the umbilical region extending toward the pubes. In association with the diarrhœa these pains are highly characteristic of this form of dysentery. Mild cases are marked by very slight febrile and circulatory disturbances; whereas in the more severe cases we have a moderate elevation of temperature, varying between 102° and 104° F. The stools are at first composed almost entirely of pure mucus, are small in quantity, and are frequently attended by tenesmus; soon the mucus is streaked with blood. The pains are not usually severe during the act of defecation, but the pain in the head and back is excruciating. Liver complications are not infrequent, particularly acute hepatitis or acute hepatic engorgement, each of which is frequently associated with jaundice. Hepatic abscess is a rare complication and is usually secondary to the ulceration of the colon. At times the spleen becomes greatly enlarged.

Changes in the urine, indicative of kidney disease, probably exist, but chemical and microscopical examinations are rarely made from lack of proper instruments and reagents. Many of these cases of malarial dysentery are followed by intense anæmia and debility, lasting for several months.

When cases are seen early and promptly treated the prognosis is almost uniformly favorable, but when seen late they usually die. As post-mortem examinations are never permitted, no information exists regarding the morbid anatomy or pathology of this interesting disease. The amœba coli, if searched for, would be found in many of these cases.

The treatment found most successful by Dr. Bermudez, of Managua, Nicaragua, is as follows: To an adult is given six grains of quinine morning and evening, in conjunction with—

R.—Ammonii chloridi, gr. v.
 Pulv. ipecac, gr. v.
 M.—Tr. opii, gtt. x-xv
 Sig: To be repeated every two hours.

The amount of laudanum is determined by the severity of the pain. When the pain is particularly severe and obstinate, morphine is superadded, and, in cases marked by debility, it is customary to substitute the carbonate for the chloride of ammonium in five-grain doses, every two hours, day and night.

In the way of food nothing is permitted except milk or milk and lime-water, to which sago may be added. The patient is allowed to drink freely of cool water, thus alleviating the intense thirst which is usually present. Ice-water is considered harmful.

The *second* variety, known as endemic dysentery, resembles the preceding, but is very much milder, and is usually unattended by the fever or the severe pains in the head, back and extremities, or abdomen that characterize the malarial form. The stools are composed of feces mixed with mucus and blood; are less frequent, and the tormina and tenesmus are less severe.

The average duration of malarial dysentery is three weeks, but occasionally it has been known to last two months, while very mild cases run their course in two weeks.

The treatment for this variety is the same as for the malarial, with the exception that the quinine is omitted. Almost all cases recover, and complications or sequelæ are uncommon.

The *third* variety recognized is called epidemic dysentery, which, as a rule, comes on suddenly, with pains in the head, back, throat, and extremities, accompanied with severe abdominal pains, shooting in character and centering at or about the umbilicus. Headache is particularly complained of; and not infrequently nausea and the vomiting of bile are associated. From the first the discharges are bloody, frequent, and there is intense pain and tenesmus. There may be as many as one hundred and fifty evacuations in the twenty-four hours, and an ordinary case may average twenty-four in the twenty-four hours, or one hourly, day and night. The temperature is high, ranging from 104° to 106° F., with a morning remission of two degrees, at which time there may be moderate perspiration. Severe cases die in less than seven days, and favorable cases may recover in from two to three weeks.

The discharges from the intestines continue bloody throughout the disease, but change in color becoming dark and sometimes black from decomposed blood-pigment, and frequently they are viscid and tenacious from admixture with mucus.

At times the patient becomes delirious, and occasionally coma supervenes. Children often

develop twitching of the muscles, rolling of the eyes, and there is a tendency to bury the head in the pillow.

The complications usually noted are hepatitis, jaundice and abscess of the liver. Usually so soon as hepatic complications occur the patient dies; in other cases epidemic dysentery is complicated by croupous pneumonia with rusty sputum, and it usually affects the base of the right lung. Now and then severe internal hæmorrhages occur, and such an accident explains the cause of sudden death which has been occasionally observed. In this form of dysentery the anæmia and debility are more marked than in the malarial form, and is more persistent. Not infrequently the patient suffers from obstinate constipation, due to stricture resulting from the healing of large and deep ulcers in the colon.

These cases are best treated by the administration of from ten to twenty grains of quinine given three times daily, and in addition chloride of ammonium, five grains; pulverized ipecac, five grains; and tincture of opium, ten to fifteen drops, repeated every two hours. Frequently, however, there is so much gastric irritability that these remedies are not retained, and in such cases the quinine is continued, but the chloride of ammonium and ipecac mixture is omitted, and fifteen grains of bismuth or five grains of tannic acid repeated every two hours, is substituted. When opium is indicated it is invariably administered in the form of the tincture, in doses of five to fifteen drops, repeated every two or three hours, according to the severity of the case. At times nitrate of silver, in doses of one-sixth or one-eighth of a grain in pill form, is given every three hours. If the astringents mentioned prove of no avail, recourse is had to the acetate of lead, in doses of two or three grains every three hours. Most cases require stimulants, and experience has shown that alcohol in the form of brandy or whisky is *indivisible*, and that the best results are secured from the use of sherry, port or any of the red or white wines, associated with the carbonate of ammonium, in ten-grain doses, repeated every three hours.

The food is restricted to milk and lime-water, sago and farina. Not infrequently Dr. Bermudez has seen as many as one hundred cases in two months with a mortality of but two per cent., and his father would probably see as many as two hundred cases in the same length of time.

Dysentery is one of the most common diseases of Nicaragua, and typical examples of the disease may be seen any day in the year. Most cases of malarial dysentery are observed during December, January and February, while the epidemic variety occurs more frequently during the months of March, April and May. Of course, endemic dysentery is always present, and, as would naturally be expected, is equally prevalent at all seasons. The

malarial form prevails chiefly in low, marshy districts, during the hot months. It is well to remember that the dry season, which corresponds to our summer, begins in November and ends in April, the remaining months constituting the Nicaraguan winter, or wet season. The average maximum temperature in the dry season is from 95 to 98 degrees. There is a difference of at least ten degrees between the temperature of the day and that of the evening.

The contagiousness of epidemic dysentery is fully recognized, and all ordinary precautions are taken to prevent the spread of the disease. Isolation, the free use of carbolic acid, the burial of all discharges, especially fecal and urinary; the burning of the linen soiled by the discharges; and in cases where the patient is too poor to submit to the destruction of clothing by burning they are disinfected by boiling water.

In all of these cases no researches have been made regarding the presence of the *amœba coli*.

Nicaragua has excited much interest of late, particularly in view of the probability that in the near future the Nicaraguan canal will become a reality, which will bring it into intimate relations with the entire world. I have, therefore, ventured to record these observations regarding a disease which prevails constantly, and at times becomes contagious.

My thanks are due to my friend and student, Dr. Salvador Bermudez, and to his father, who has practiced in Nicaragua for more than thirty-five years, for the description of dysentery as it appears in Nicaragua, and for the treatment which has given them the best results. The enormous experience of the physicians of Nicaragua has heretofore never been made known to the medical profession, in so much as they have no medical magazine to which they could report their observations; and, moreover, at no time has it been their custom to carefully note the cases under their care, so that this report is of particular value, and is, perhaps, the first of the kind published in the English language. It is especially worthy of note that the greatest confidence is placed in the use of the chloride of ammonium, and this is their uniform practice. I would, therefore, suggest that it be employed in the United States, especially in the Southern States, where the climate more nearly resembles that of Nicaragua.—Judson Daland, M.D., in *St. Louis Med. and Surg. Jour.*

PNEUMONIA TREATED BY ICE-COLD APPLICATIONS.

The poet who sings of the beauties of spring seeks his inspiration while the earth is still in the lap of winter. So, the practitioner of the healing art, in order to be prepared for the prevailing ail-

ments of the colder seasons, must do a little thinking about it during the warmer months, and perhaps draw somewhat upon the last winter's experience of himself and others.

The fact that so many and various treatments are advised for pneumonia shows either that a really feasible and successful treatment is not generally recognized, or that, as Dr. Osler tells us, the disease is practically uninfluenced for good by any treatment whatever, beyond general principles.

Upon the clear recognition of the morbid processes at work in the system, causing pneumonia and its series of phenomena, must rest the formulation of a rational and successful line of treatment for this disease.

The war which has raged about the treatment of this prevalent and often very fatal complaint has seen the banners of venesection, antimony, squills, opium, ammonia, alcohol, heat and cold, expectancy and heroism, with many others of lesser following, scour the field in serried array, with many ups and downs, in the fight for favor at the hands of the profession. And, latterly, the coal-tar derivatives, with their specious promises of cooling the fevered brow, have won for the time a position, in which strategy has had more effect than solid fighting capacity.

That pneumonia is a *specific fever*, in which the lesion of the pulmonary tissue is but an incident, is not, I believe, sufficiently recognized. Upon this one fact rests, I am firmly convinced, the rational and successful treatment of this, which is pre-eminently *the* disease of our colder months.

In all cases the general febrile condition is initiated and in full progress in advance of the lung lesion. The prompt recognition of the morbid process at work renders possible the aborting of the pulmonary sequence. I have seen and recognized the pneumonic fever in progress a full week before the characteristic signs appeared in the lung, and I have no doubt most readers have had a similar experience. The pulmonic fever itself would rarely promote a fatal result; and I feel safe in saying that, just so far as the invasion of the lung-substance (and the consequent interference with the action of a vital organ) is prevented, by so much will a fatal event in this disease be averted.

Another fact is to be borne in mind in the treatment of this and other febrile diseases, viz., that in fever there is lessened elimination of heat, as well as increased production of it. And also that, in increased temperature of the human body, the morbid germs become more active in their growth and multiplication the higher the point indicated by the mercury. I think the inference is obvious.

Influenced by the foregoing considerations, I decided last winter to adopt the use of cold applications in the treatment of pneumonia. This decision was strengthened by confirmatory evi-

dence, which I observed in the current medical literature.

During the past winter I treated about twenty-five cases of pneumonia upon practically this one line of procedure. The results were excellent in every way. The recoveries were prompt and rapid in all the cases but two. Of these, one was very prolonged, being secondary to la grippe and complicated with fibrinous pleurisy, and the other died. The latter was a hospital case—a poor, miserable woman, who had led a wretched life. There was albuminuria, due—as *post-mortem* examination revealed—to cystic degeneration of the kidneys, and also concurrent peritonitis. So I do not think that any treatment whatever would have altered the result. I do not propose to go into statistics, for my cases are too few. But the beneficial effects of the treatment were so prompt and so apparent, *in the face of the greatest prejudice and opposition*, that they carried conviction to the most unbelieving. I have seen the application of ice-cold compresses terminate a case of double pneumonia of the base by crisis in sixty hours. This case was characterized by severe dyspnoea, pain, and a temperature of over 105° F., with total absence of breath-sounds at the bases when first seen.

Another patient, a woman of 74 years, with consolidation of right base, recovered in four days.

A baby, 2 years of age, with catarrhal pneumonia, most marked on the left side, was quite convalescent on the third day.

A laborer, 34 years of age, with consolidation of right base, delirious, and much oppressed for breath, required but two days' attendance.

A bride, 22 years of age, who had been undergoing the usual round of festivities, awoke, after a particularly fatiguing party, in a feverish and lethargic state. Called immediately, I stated the probability of pneumonia ensuing. After twenty-four hours there was the characteristic fine crepitation and stitchy feeling to the breathing; temperature, 105½° F.; pulse, 130. Ice-cold compresses aborted the lung lesion entirely, and produced a critical perspiration in thirty hours, at which time the norm was reached and persisted.

There is no need to enlarge these details. The cases are all down in my case-book, and they all bear the record that from the time the cold was applied, rapid improvement ensued.

The method was as follows: A large towel was wrung out of ice-water, and the thorax enveloped in it. A comparatively dry towel was laid over it, and a binder of flannel or cotton held all snug. The ice-water towel was changed as often as necessary, in order to ease the pain and reduce the temperature. When the pain or dyspnoea was severe, or the temperature high, the intervals would be short, say five or ten minutes. As the symptoms improved, the changes were made only

as the towels assumed the heat of the body. The face and limbs were frequently sponged with the ice-water, and when required a cold compress was put upon the brow.

The medication was confined to promoting a critical perspiration. This was effected by large doses of liquor ammonii acetatis and spiritus etheris nitrosi, well diluted, every hour. In one or two cases this had to be supplemented with pilocarpine muriate. No alcohol was required, except in the fatal case referred to. Antipyretics of the coal-tar series were not used, except in the one case just mentioned. The diet was principally of milk, and liberal in quantity. Incidental symptoms were met as they arose. In none of the cases was there any expectoration to mention. In some none at all, in others but a little. Free perspiration was usually succeeded by copious diuresis. As a precautionary measure, a wet compress was worn for twenty-four hours after the crisis, and changed when it became dry.

In order to obtain the effects to be desired in this treatment, the cold must be freely applied and with a firm hand, until the effect of a reduction of temperature and arrest of symptoms occurs.

The treatment is grateful to the patient. It can be managed without incommoding the sufferer, by the exercise of a little ingenuity. It is prompt in its effects for good, and it is easily applied.

In exceedingly plethoric cases I could conceive of the value of venesection at the outset, and, in fact, have so used it with excellent effect, but not in the series under consideration.

As the experience of twenty years' continued observation, I would most earnestly deprecate the use of opium, antimony, or blisters in the treatment of pneumonia; and my experience of the more modern antipyretics is hardly more favorable.

Under the usual routine treatment of poultices, expectorants, and whisky, I can quite understand Dr. Osler's view as to the non-efficiency of treatment. But with the experience of the free use of cold, in the manner herein outlined, and in view of the etiological considerations advanced, I feel that a new and happier era is dawning in the treatment of pneumonia.—F. W. Jackson, M.D., Brockville, Ont., in *Therapeutic Gazette*.

EVOLUTION AND CLITORIS—Dr. Robert T. Morris, of New York, had a paper entitled "Is Evolution trying to do away with the Clitoris?" and presented photomicrographs and sections of anatomical specimens in support of his proposition. The summary of his paper, which is to appear in full in the *American Journal of Obstetrics*, was as follows:

1. The prepuce and the glans clitoris are bound

together by adhesion, partly or completely, in about eighty per cent. of all white American women.

2. Such preputial adhesions are rare among negroes, and apparently occur only in a few individuals possessing a large admixture of white blood.

3. Highly developed domesticated animals do not present examples of this degeneration, judging from a fair collection of data bearing upon the subject.

4. When preputial adhesions are extensive the glans clitoridis and the imprisoned mucous glands remain undeveloped, but they may develop later when the physician has separated adhesion.

5. The failure of the embryonic genital eminence to properly develop the prepuce and glans clitoridis for perfect cleavage probably means that nature is trying to abolish the clitoridis, as civilization advances.

6. The degenerative process represented by preputial adhesions is characteristic of the civilized type of *homo sapiens* in which we find decaying teeth, early falling hair and imperfect corneas and eye muscles.

7. Preputial adhesions which involve small portions of the glans clitoridis are of interest simply as anatomical curiosities.

8. Preputial adhesions involving a large part or whole of the glans clitoridis cause profound disturbance, and are among the most pronounced of peripheral irritators. They cause desire for masturbation which leads to neurasthenia and they are responsible for grave reflex neuroses.

9. Preputial adhesions probably form the most common single factor of invalidism in women. The clitoridis is an electric button which pressed by adhesion rings up the whole nervous system.

10. The physician who neglects to examine the female child for preputial adhesions neglects the most important single duty of his professional life.—*Med. Mirror*.

A NEW VIEW OF LEUCOCYTHEMIA. — Robert Muir, "Observations on Leucocythemia," in the *Journal of Pathology and Bacteriology*, interestingly describes a careful study of the disease. In describing his technique a new method of "fixing" cover-glass preparations is given, in which the spread film is dropped into a saturated solution of bichloride of mercury before drying. After fixing in this way, it is stained and handled like a section of tissue. Another method employed was to drop blood into strong Flemming's solution, which both hardens and fixes the cells at once. Afterward, the drops are imbedded and cut in paraffine. For staining, saffranin and Ehrlich's hematoxylin were found best. His work is not yet complete, but the conclusions thus far reached are interesting.

"I believe that the changes found in leucocythemia cannot be explained on any other theory than that of an excessive and indefinite proliferation of a certain kind of cell, in its nature resembling that seen in the growth of many tumors. Practically all recent observers are agreed that the spleen of an adult mammal does not perform the functions of transforming white corpuscles into red, and also, in fact, that leucocytes found in normal blood do not become red corpuscles. Nor do I believe from the results of numerous observations that those cells of bone marrow, which are similar in structure to the large uni-nucleated corpuscles of leucocythemic blood, produce the nucleated antecedents of the red blood corpuscles. Regarding this, however, there is greater difference of opinion, and one cannot satisfactorily discuss the question without giving a minute account of the characters of the various cells found in the marrow and their relationships to one another. Even on the supposition that these marrow cells do form nucleated red corpuscles, the essence of the disease would rather be an excessive proliferation of the former, the failure to become transformed being a result of the rapid division. The theory of Löwit that the cause of the disease is a failure of the uni-nucleated leucocytes to become multi-nucleated, with a consequent accumulation in the blood, is open to still greater objections. The presence of mitotic figures in the blood, the characters of the cells present, and especially in some cases of the great actual increase of the multi-nucleated forms, are quite unexplained by such a theory."—*Univ. Med. Mag.*

THE CHOREA OF PREGNANCY.—In an article upon this subject (*International Medical Magazine*), Dr. Lloyd, of Philadelphia, gives the prognosis as follows: Very practical questions are involved in the prognosis, both to the mother and the child. Some years ago an English obstetrician, Barnes, wrote a paper on all the cases of the chorea of pregnancy that he could find in medical literature. His statistics seem to prove that about seventeen out of fifty-six are fatal. I think that this is an over-estimate, for this reason: It has happened in the past that only the fatal or the severe cases have been reported. I have seen five cases of the chorea of pregnancy, none of which have been fatal. Milder cases are not apt to get into print. I think that, while the chorea of pregnancy is a grave disease, it is not as grave as Barnes' statistics seem to prove. Another question comes up—the prognosis in the case of the child. Statistics have also proved that some of these women go into premature labor, and that some of these children are still-born or die shortly after birth, probably because of the premature labor or because of the mother's reduced condition. A very practical question which you will have to face is,

whether or not you shall bring on premature labor or even abortion. Many of these cases of chorea in pregnancy certainly recover after labor, but a small proportion do not, and on that account it is difficult to advise when premature labor should be induced. When the woman's life and the babe's life are in jeopardy it is justifiable, even imperative, to act. I think that after seven months in some cases, the chances for the babe's life may be better if taken from the mother. Recollect, however, that women do not all recover after confinement, and that the child does not always live.—*Med. and Surg. Rep.*

HOW TO GO TO BED.—We have still something to learn in the matter of nursing, according to Dr. Richardson, who tells us in *The Asclepiad* that in hospital, as in private practice, great errors are made in the choice of bedclothing for the sick, and particularly for the sick who are suffering from febrile affections. We have got rid of the heavy curtains around the bed; of the grand accumulator of dust and other uncleanness, the tester; of the heavy valance, which converted the under part of the bed into a close cupboard, in which all kinds of unwholesome and cumbrous articles lay concealed, including sometimes excreted matter itself; and we have banished the carpet, which often, as a hard-trodden, dust-laden rag, made the floor beneath the bed persistently impure. This is all good; but the old feather beds, flock-mattresses, heavy blankets, thick, impermeable, and dense counterpanes still encumber many a patient, rendering ventilation of his body as impossible as in the days of our forefathers. The art of going to bed is one which has been studied (and practiced) for untold centuries. We have not advanced much on the practice of our forefathers in the West. According to Dr. Ernest Hart, and now according to Mr. Richardson, we "go to bed" in a very unwholesome and stupid fashion.—*British Medical Journal*.

THE CRY IN THE DIAGNOSIS OF DISEASES OF CHILDREN.—The cry of children, according to Dr. E. C. Hill (*Denver Med. Times*), in pneumonia and capillary bronchitis is moderate and peevish and muffled, as if a door were shut between child and hearer. The cry of croup is hoarse, brassy, and metallic, with a crowing inspiration. That of cerebral disease, particularly hydrocephalus, is short, sharp, shrill, and solitary. Marasmus and tubercular peritonitis are manifested by moaning and wailing. Obstinate, passionate, and long continued crying tells of earache, thirst, hunger, original meanness, or the pricking of a pin. The pleuritic is louder and shriller than the pneumonic, and is evoked by moving the child or on coughing. The cry of intestinal ailments is often accompanied by wriggling and writhing before defecation.

Exhaustion is manifested with a whine. Crying only, or just after coughing, indicates pain caused by the act. The return or inspiratory part of the cry grows weaker towards the fatal end of all diseases, and the absence of crying during disease is often of graver import than its presence, showing complete exhaustion and loss of power. Loud screaming sometimes tells of renal gravel.—*Arch. of Gyn.*

MENSTRUATION AND LACTATION.—It is a generally received view that the supervention of menstruation during the period of lactation is prejudicial to the quality of the maternal milk-supply, and therefore detrimental to the nutrition of the child. Most practitioners will probably state as a matter of observation, that menstruation unfits the mother as a nurse by reducing the quantity of the milk, in addition to rendering it more "watery." In order to ascertain the real effect of menstruation on the quality of the milk, Dr. Schlichter has made a series of analyses which seem to show that the current belief is founded on defective observation. In addition to careful examination of the composition of the milk during and after menstruation, he had the child weighed and its general condition noted at and after the same period. He reports that in respect both of casein and fat, the milk secreted during menstruation compared favorably with that furnished prior to that date. The differences observed, moreover, in no case equalled those which occur in the milk of the normal healthy female at the various periods of the same day; hence he declines to attach any importance to them.—*Dietetic Gazette*.

TREATMENT OF METRORRHAGIA.—(*Provincial Med. Jour.; Med. and Surg. Reporter*).—In certain cases of obstinate metrorrhagia, ergotin, extractum hydrastis canadensis, ice, and applications of tampons are alike incapable of arresting the hæmorrhage. In such cases a hypodermatic injection of sulphate of atropine has been recently recommended. It is given in doses of $\frac{1}{100}$ grain twice daily. In one case, in which the hæmorrhage had existed for a fortnight, it was completely arrested after the fourth injection. In a second, when the patient was in the state of collapse, the first injection was followed by a return of the normal temperature and increase of the pulse rate; after the second the hæmorrhage was diminished in a striking degree; after the third it entirely ceased. A moderate dilatation of the pupils was the only secondary effect observed.—*Arch. of Gyn.*

Professor Kobert has discovered that peroxide of hydrogen is an antidote for hydrocyanic acid poison. It should be given freely by the mouth and subcutaneously until recovery or death.

THE CANADA LANCET.

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THE OVERCROWDING OF THE MEDICAL PROFESSION.

Just now a great deal is being said in regard to the overcrowding of the medical profession, and it is no doubt true that the medical profession is at present very much overcrowded. One who has qualified himself for the practice of physic in a full and practical manner, ought to be worth more than a mere living to the community in which he dwells, yet so far from such being the case he is often left to starve, and very often ekes out an existence the pecuniary strain of which, together with the hardships, anxiety, privation and exposure, are so great that it is scarcely worth the living; and yet each year teachers come from the school house, and boys from the farm to study medicine, thinking of the fine practices and positions which at the end of a few years they will be in possession of. They see Dr. So-and-so driving a fine pair of horses, or Dr. Dash in the city with a handsome turnout, and naturally conclude he leads but a life of luxury and ease, and knowing him before he entered medicine are sure he could have derived his comfortable surroundings from no other source than that of his practice. Little do they see of the other side; perhaps that same Dr. has about exhausted his credit and is making a final push, putting on all the front that can be made so as to boom his practice before finally resolving to change his location. What this overcrowding is due to is not very easy to determine. It cannot be rightly attributed to any apathy on

the part of the Medical Council; that body have been continually at work for the past ten years at the Matriculation Examination, and although it is higher to-day than the Matriculation Examination required by any licensing body in Europe the influx still continues. The Matriculation Examination and the subsequent portion of the curriculum is to-day nearly three times as difficult as it was ten years ago, and yet the number of students entering the profession is thrice as great, notwithstanding the fact that certain prominent members of the "Medical Defence Association," who originally set out to find fault with the Medical Council because of its having levied a tax of two dollars per annum upon the members of the medical profession, are now (ashamed of their peccant policy) turning upon certain members of the Medical Council who represent the medical schools on that Board, and who have collectively done more to raise the standard of medical education, and maintain the medical character of the whole curriculum than any other members.

In professional teaching, female teachers are crowding out the males, they work for lower salary, and, in the main, do quite as good work. The higher degree of perfection of the public and high school courses makes it easier for the student to matriculate in Arts or to proceed to a degree in Arts, or to take the Arts course. For a couple of years the student takes the Arts course, qualifies himself for nothing in particular, and hence turns into a law office, or a medical school, or proceeding with his course in Arts in the natural science department he thinks to himself if he could but attend a hospital for a short term he would soon know all there is to know in medicine and become a famous physician, and forthwith seeks the aid of a medical school to complete his object. No doubt, his studying chemistry, biology, botany and physics in the same laboratory with and by the side of the medical student is largely responsible for his turning into the channels of medicine to complete his course, and it will ever be so until the Medical Council sees fit to separate medical teaching in these subjects from the Arts work in the same, for they are essentially different. The possession of a large amount of apparatus and paraphernalia which is paraded before the eyes of students, and particularly freshmen, the object of which is probably not understood by even the pro-

fessors themselves, does much to make the department of medicine attractive to the student. It is also a fact that at the very time when an increased number of medical men were least needed in the country the Ontario Government saw fit to spend over ninety thousand dollars of state money in erecting buildings in which to teach medicine, and the authorities of a certain university, after such encouragement, applied to the Government for endowment for the chairs of Surgery, Anatomy, Sanitary Science and Medical Jurisprudence, and it was even rumored that a free course on many of the primary branches of medicine would be given if endowment could be obtained for the chairs, and yet there are medical men in the profession to-day who will say such action is justifiable and "*tends to elevate the profession generally.*" If something could be done to make the fees of the medical student as nearly approach to those of the Old Country colleges, as does the teaching itself, it is quite possible the effect would be beneficial upon the schools of medicine and the entire profession.

THE LATE ACTION OF THE DISCIPLINE COMMITTEE.

The members of this committee, Dr. Bray, of Chatham, Dr. Day, of Belleville, and Dr. Logan, of Ottawa, recently had under consideration the cases of Dr. Anderson, of London, and Dr. McCully, of Toronto.

Dr. Anderson's case is not yet decided. He was charged with having been connected with a band of itinerant doctors, the "College of Eminent Physicians and Surgeons"; with entering into conspiracy with one Murray (now in jail in Liverpool for fraud, and illegally practising medicine) for the purpose of deceiving suffering people; allowing his name to be used as a registered practitioner for the purpose of carrying out the fraudulent scheme, and of evading the Ontario Medical Act; representing to the various patients who came to consult the alleged staff of eminent physicians and surgeons that he could cure their cases whether he knew the cases were curable or not, and giving guarantees to that effect; stating on oath in the Toronto police court that he personally examined all patients, in order to save Murray from conviction under the Ontario Medical Act.

Dr. McCully's case occupied a considerable time.

A good many witnesses were examined and a good deal of fun and merriment came out of the case. The practices of the doctor are too well known to the profession to need any comment. The upshot of the whole thing was that Dr. McCully sent the following statement to the committee through his solicitor:—

"I admit that the advertisements complained of herein and any others of the like effect or nature are unprofessional, and the publication thereof by me constitute infamous and disgraceful conduct in a professional respect within the meaning of the Ontario Medical Act.

"I submit myself to the action of the Council in the premises, and admit that I am liable on the evidence to have my name erased from the Medical Register.

"I undertake and agree to not further offend in the premises, and ask the Council to suspend action on the report of the committee so long as I, in good faith, comply with the above undertaking.

"It is agreed that the charges other than those which charge the advertisements to be a breach of the Act, are to be considered as undisposed of and untried.

"(Signed) S. E. McCULLY.

"(Signed) WALTER CASSELS.

"Toronto, Dec. 12th, 1892."

THE ANNUAL MEDICAL BANQUETS.

Trinity's sixteenth annual dinner was held at the Rossin House, Nov. 29th. The menu was excellent and was partaken of by more than 300 students and guests. Among the guests were Chancellor G. W. Allan of Trinity University, Mr. Barlow Cumberland, Dean Geikie, Dr. Graham, Dr. Grasett, Mr. Walter S. Lee, Principal MacMurchy, Dr. Ryerson, Dr. Sheard, Dr. Davison, Dr. G. A. Bingham, Prof. Ellis, Principal Dickson, Dr. A. J. Johnson, Rev. Provost Boddy, Rev. G. M. Milligan, Dr. O'Reilly, Dr. T. Dunfield, Dr. R. B. Orr, Dr. Miller, of Hamilton; Dr. Harris, of Brantford.

The officers were: Chairman, J. R. Bingham; vice-presidents, E. L. Proctor, J. G. Lamont, V. A. Hart; toaster, W. J. A. Ross; hon. secretary, C. C. Field; committee, W. W. Andrus, R. T. Corbett, C. H. Brereton, H. E. Armstrong, J. G. Battell, A. H. Marks, R. H. Foster.

The president, Dr. J. R. Bingham, made a thoughtful and eloquent speech, in which the praises of his *Alma Mater* were duly sung. The whole affair was an unqualified success.

The Toronto dinner was held, also at the Rossin House, Dec. 1st. Among the guests present were His Excellency the Governor-General, His Honor

the Lieutenant-Governor of Ontario, Hon. Chancellor Boyd, Messrs. Justices Rose and Falconbridge, Hon. Richard Harcourt, Acting-Minister of Education, and Vice-Chancellor Mulock, Principal Caven, Principal Dickson, Principal MacMurchy, Prof. Alfred Baker, Dr. C. O'Reilly, Mr. W. S. Lee, Drs. R. B. Nevitt, Fotheringham and W. H. B. Aikins.

The president was W. P. Thompson, B.A., and very creditably did he fill the chair. The speaker of the evening was Mr. Mulock. The point of his speech was that public money should be applied to the teaching of scientific preventive medicine. But he did not show why *one* institution should have a monopoly of such public aid.

The officers who managed to make the dinner such a success were, president, Dr. W. P. Thompson, B.A.; 1st vice-president, J. Crawford; 2nd vice-president, T. W. C. McKay; hon. secretary, J. A. McNaughton; committee, 4th year, F. G. Grant, J. H. Shouldice; 3rd year, J. D. Curtis, W. C. Laidlaw, E. B. Fisher; 2nd year, J. R. Lancaster, M. O. Klotz, E. T. Kellam; 1st year, W. T. Tait, H. M. Cunningham, W. F. Callfas and A. H. Macklem.

RELIABILITY OF WATER ANALYSES.

Practical chemists have long looked askance at the deductions we are taught to draw from the presence of certain chemical substances in water. Even the methods which have been employed have been sharply criticized, and grave doubts expressed as to the value and reliability of the data thus obtained. In Toronto, lately, there have been several analyses of the drinking supply of the city, which differ very materially, and one alderman had the extreme effrontery to make the statement that one analyst, a well-known and clever physician, was either drunk or crazy. It is about time that such men should learn to hold their slanderous tongues in matters of which the laity are very ignorant, to say the least. The comparatively small amount of extraneous salts present in the average sample of water submitted for analysis, renders the quantitative estimates very liable to error, either in the direction of exaggeration, or by overlooking them altogether. It is certain that analyses of the same water by different chemists often display very conflicting results.

According to no less an authority than Sir George Buchanan, there are no tests which enable us to determine the presence in drinking water of organisms detrimental to health.

At most, the chemist is enabled to testify to having discovered albuminoid ammonia, nitrates, etc., which lead him to infer the presence of organic impurities in the water.

According to this eminent authority, it would be far better to make a study of the source of water supply, and eliminate all possible cause of contamination, than to trust to analyses. The bacteriological examination of water, of which so much was expected, has not appreciably added to our knowledge in this respect. The distrust which the didactic pronouncements of water analysts has excited among "those who know," has now become articulate, and it is very probable that, in the near future, transcendental chemistry will have to fall into the background when the question of deciding on the purity, or otherwise, of water, comes to the front.

GOLDEN RULES OF SURGICAL PRACTICE—Continued.—(*Times and Reg.*):

SYPHILIS.—Do not adhere to the popular division of "hard" and "soft" sore.

Do not forget a sore may become hard four weeks after coition, because it has been inoculated by a mixed secretion.

Do not forget that no matter what the character of any primary sore may be, the chances are that the sequel will prove that it contained the germ of true syphilis.

Do not believe or rely upon sharply defined rules for the diagnosis of chancre; even with sores which are obviously soft and non-infecting until the incubation period (3—5 weeks) is well passed.

Do not entertain any confidence that induration will not occur; and it would be acting most unwisely to give an absolute opinion on the matter.

Phimosis acquired is so common an accompaniment of the three venereal diseases, acute gonorrhoea, soft sore, hard sore, that you ought never to express a decided opinion until you have got a look at the trouble.

Do not hesitate to slit up the prepuce, in order to examine and treat a sloughing sore. If you do not do it the sloughing most probably will.

Always prohibit smoking, and any diet which may lead to diarrhœa while mercury is being given for syphilis.

Never forget occasional idiosyncrasy in patients against taking mercury and iodide.

Remember the one simple rule for successful treatment of syphilis is, keep inunction and fumigation methods for exceptional cases, and give small doses of mercury more or less frequently, but never large doses.

Never forget that with a patient confined to bed and on low diet, ptyalism can be produced with half the dose of mercury.

[N. B.—Rapid loss of weight means that mercury is disagreeing with the patient.]

Remember that pot. iod. and mercury, except in the scrofulous and in cachetic patients, are well borne in syphilis if there is need of them.

Never forget to warn your patient of his gums and his tendency to catch cold, when taking mercury.

For all cases of phagedæna, mercury ought always to be given.

Remember the earlier mercury is exhibited, the greater the probability that the symptoms will be wholly prevented or delayed.

Never exercise a syphilitic testis, however bad, even when there is abscess and fungus testis.

Remember in tertiary syphilis whenever a case resists the iodide, and whenever it is important to obtain a rapid result, the mercury should be added to the iodide or the mercury should be given alone.

Never omit to give opium in all gangrenous and sloughing wounds which do not prove amenable.

Remember syphilis may imitate all known forms of skin disease, but it can produce no originals (Hutchinson).

Never forget that lichen ruber and lichen planus are often dusky and copper tinted, and present all the features which to those of limited experience suggest a confident diagnosis of syphilis.

Remember that in rare instances syphilis imitates variola closely; there is, however:—

1. Persistence.
2. Absence of odor.
3. History to guide you.

Never let a markedly syphilitic mother suckle her child.

Never let a syphilitic child have a wet nurse.

In syphilis do not sanction marriage until two

years after the date of infection, and then only if the patient is free from gleet, and has thoroughly and successfully been treated with mercury.

Never assume, as was formerly done, that mercury should be avoided when syphilitic sores ulcerate; on the contrary, when used with iron, quinine, and opium, it will almost always prove the means of cure.

Do not forget that the safety of the eye in syphilitic iritis depends, however, mainly upon the promptitude and efficiency with which atropine is employed.

Never forget to examine for retinitis and choroiditis if a syphilitic patient complains of failure of sight or muscæ, and use mercury smartly if you find either.

Never neglect local measures in the lesions of intermediate and tertiary stages of syphilis.

Remember that a node of secondary syphilis usually disappears or is prone to ossify, but a tertiary like other gummata are more liable to supuration and caries.

Do not open a syphilitic bubo unless acutely suppurating, or remove a node of bone; they usually absorb.—*To be continued.*

TREATMENT OF CYSTS AND ABSCESSSES BY PAPIOD AND PEROXIDE OF HYDROGEN.—We take the following from the *Med. and Surg. Rep.*: The first case was one of sebaceous cyst having existed for at least ten years, and until recently, given but little trouble. When I opened the sac, it was inflamed, partly broken down and about to open at the site of my incision. Its cavity contained about 16 to 20 grams of decomposed serum and pus. I made but a small incision that the fluids might be better retained. The solution employed was as follows, viz:

R.—Papoid, 15 to 20 grams.
Sodii bicarb, 5 to 10 grams.
Aquæ, 100 c. c.

This injection was allowed to remain from one to eight hours, then pressed out of sac, and a strong solution of peroxide of hydrogen introduced to thoroughly clean the cavity. This was repeated once or twice daily. The patient was irregular in treatment of cyst, otherwise the result would have been obtained earlier. A few weeks of this treatment entirely removed the cyst wall, and satisfactorily cured the case.

The second case was one of perineal abscess, that owing to the carelessness of the patient had existed for several months, during which period it had been thoroughly injected daily with peroxide of hydrogen solution. The patient was unwilling to remain away from his business, and thus have the necessary rest for cure, and also was troubled with uric acid deposits and calculi in bladder. The abscess improved under above treatment, but would break down occasionally and discharge pus. Several times the urethral floor was perforated by the pus, and urine passed freely through the sinus. I injected a 15 per cent. solution of papoid, of the formula above given, allowing it to remain in the cavity about ten to fifteen minutes. The patient described the sensation at the time, as though many mosquitoes were stinging the sac walls. I cleansed the cavity with peroxide hydrogen solution as before. In a day or so, the abscess closed, and remained so for ten days; it then had a slight discharge of pus, but an injection of peroxide hydrogen was followed by permanent closure of the sinus. This treatment was given three or four months ago.

The prompt arrest of this abscess from a single injection of an alkaline 15 per cent. solution of papoid, greatly surprised me. The cure can not be attributed to peroxide of hydrogen, as this had been used for months with favorable, but not curative results; employed after the papoid, it simply or mainly oxidized the debris or digested pyrogenic membrane, facilitating its removal.

Had I employed the papoid and been aided by rest to my patient, I am confident that I could have cured the case, probably several months earlier.

TREATMENT OF FEVER.—This old, but ever new subject is one in which every medical man must be certainly anxious to be refreshed. It lies at the root of so much of every-day work that any ray of light must be gratefully received. The following conclusions by Dr. Graham Steell, of Manchester, *Manchester Med. Chronicle*, are worthy of note :—

1. Attention must in all cases be directed to the normal fever of the disease, and to the accompanying pulse-rate. Only when the fever and pulse-rate assume abnormal severity is there place for consideration of antipyretic treatment.

2. Of the methods of antipyretic treatment, that by bathing is unquestionably the best, and the patient should be placed, first of all, in tepid water, which is subsequently cooled. Wet packing is a much less efficacious method. Treatment by antipyretic drugs is the worst method of antipyretic treatment, but notwithstanding is often useful, both employed alone and as an adjunct to treatment by bathing. In hyperpyrexia, treatment by drugs is useless, and cold bathing affords the only trustworthy treatment.

3. The general laws which govern antipyretic treatment appear to be similar, whatever the method of treatment adopted. He is aware that theoretical consideration may be urged against this statement, but he is speaking from the practical standpoint.

4. There can be no doubt that the severity of a fever in the immense majority of cases may be well estimated by the resistance which the pyrexia offers to antipyretic treatment. As a general rule, continuous fever offers greatest resistance, remittent less, and intermittent least. The greater efficacy of antipyretic treatment in the later stages of typhoid may be partly so explained. The fact of degrees of resistance to antipyretic treatment, corresponding to degrees of severity of the attack, suggests that the course of mild and moderate cases might be greatly shortened by a vigorous adoption of antipyretic treatment.

5. The difficulties in the carrying out of antipyretic treatment by bathing, are so great that the treatment must be reserved in private practice for cases in which danger threatens from high fever and severity of the general symptoms. Antipyretic drugs may often be used with advantage as adjuncts to treatment by bathing, and occasionally alone. Nevertheless, their use is to be avoided as much as possible.

SOME MODIFICATIONS OF THIERSCH'S METHOD OF SKIN-GRAFTING.—Watson (*Boston Med. and Surg. Journal*) gives the following modifications of Thiersch's method adopted by him :—

1. The substitution of a four per cent. boracic solution for the sterilized salt solution, both during the operation and in the subsequent dressings if wet dressings be used.

2. Instead of the frequently repeated moistenings of the grafted surface and the dressings, it is

sufficient to wet the gauze dressing once in twenty-four or forty-eight hours with boracic acid solution; the gauze dressing being covered over the outside by a rubber of gutta-percha tissue.

3. If the dressing remains odorless it need not be removed until at the end of from four to six days after the first application.

4. Perfectly successful immediate results may be obtained under the use of dry sterilized dressings—healing taking place under one dressing. (This plan I have not tried, however, sufficiently often to be able to say from personal observation if the good results are as invariable as under wet dressings, or if the skin of the newly-healed surface is as sound ultimately.)

5. It is unnecessary to curette the surface to be grafted, provided it be covered by healthy, fresh, red, flat, granulation tissue. This omission saves the time which is required to still the bleeding which follows curetting.

6. Where, under a reverse condition of the exposed surface, curetting has been done, the application of an Esmarch bandage and tourniquet, when possible, and the leaving of the latter in place for from one-half hour to an hour after the operation has been completed is of decided advantage.

7. It is not necessary to the success of the operation that the whole of the exposed surface should be covered with grafts at any one time. The patient may be in a too exhausted condition to allow of the prolonged etherization necessary to cover an extensive area; if so, there need be no anxiety as to the result if but a portion of the surface be grafted at one time.

Dr. McBurney recommends that the skin be stretched from which the grafts are taken.

PHYSICIAN'S VISITING LIST.—The forty-second publication of "The Physician's Visiting List," by P. Blakiston, Son & Co., Philadelphia, for 1893, is the most complete, smallest and lightest visiting list published. The fact that it has been published for over forty years is sufficient guarantee of its excellence and popularity. It is published in various sizes, for from twenty-five to one hundred patients a day or week. Besides its usefulness as a visiting list, it is a pocket-book containing valuable information for a physician. In it may be found a reliable dose table, tables of the metric

system, a list of new remedies, rules for examining the urine, a table for calculating the period of pregnancy, the antidotes for poisons, the proper methods of resuscitating the half-drowned, and other equally useful information. For durability, neatness, completeness, and simplicity of arrangement, it is excelled by none in the market, and the low price of the list brings it within the reach of all.

DOVERS' POWDER IN THE TREATMENT OF COLLIQUATIVE SWEATING.—Dr. G. Frank Lydston, of Chicago, stated in a recent clinical lecture, that while an interne in the New York Charity Hospital, he experimented quite extensively upon the abundant clinical material in the medical wards, to determine the relative value of the various remedies recommended for night sweats, particularly in pulmonary consumption. He found atropine not only unreliable but productive of certain disagreeable effects that more than counterbalanced its possible advantages. The mineral acids and other tonic remedies and astringent cathes were not much more efficacious than the atropine. He established, to his own satisfaction, that there are but two remedies which can be relied upon to check night sweats. These are the Dovers' powders and the active principle of *cocculus indicus* or picrotoxin, the former being by far the more valuable of the two.

HABITUAL ABORTION.—Assafetida has been recently recommended in cases of habitual abortion (*Lancet*). Dr. Tuazzo gives it in pills containing a grain and a half as soon as it becomes clear that a new pregnancy has commenced. At first only two pills are prescribed, but later on the number is gradually increased to ten daily. The treatment is continued until the labor is over, and then the daily dose is gradually diminished. By this method, cases where as many as five successive abortions had occurred have been successfully treated, and where in one instance a miscarriage appeared to be imminent during the seventh month it was averted and the patient was delivered at full term.

SALOL FOR GONNORRHEA.—Dr. C. Underwood says: (*West. Med. Rep.*) that salol can reduce the duration of gonorrhœa to the lowest limits. The method consists in the regular employment of

from forty to sixty grains of salol through the day I order my patients to have four doses of from ten to fifteen grains each, taken immediately on rising in the morning, at 11 o'clock a.m., 4 o'clock p.m. and the last thing on retiring to bed at night. This I ordered in a powder or compressed tablets. Having known that many of these tablets passed through the intestinal canal without being absorbed and in the form they were administered, I am now using the drug in a powder form. It is tasteless and is not complained of by patients. The dose is begun, unless the patient shows that the drug disagrees with him, with sixty grains a day continued until the discharge has become very meagre. Then it is gradually lessened. The author claims that better results follow this method than any other.

HINTS ON COUGHS.—Dr. Walter F. Chappell (*New York Med. Jour.*) divides coughs into six classes, according to their frequency. The first class is the catarrhal cough, sometimes so called, to remove accumulations of mucus from the nasopharynx or due to enlargement of vessels or gland tissue of the pharynx or base of the tongue. Second class: From a common cold, acute rhinitis, extending later into trachea and bronchi. Third class: Different forms of cough occurring in the various stages of phthisis. Fourth class: Winter cough from bronchial catarrh, chronic bronchitis, and quiescent or arrested phthisis. Cough worse at night and in early morning. Expectoration, white and frothy. Fifth class: Nervous coughs, generally of a reflex origin, paroxysmal, sometimes violent, characterized by short, dry hacks. Sixth class: Alcoholic or gastric. The patient shows symptoms of digestive disturbance; fauces and pharynx are of a deep red, often bluish color. The condition is due to over-indulgence in food and alcoholic beverages. In persons of a rheumatic or gouty tendency very little will produce this result. His directions for treatment contain nothing new.

VIVISECTION.—The subject of vivisection has recently been brought up again in England (*Boston Med. and Sur. Jour.*), the occasion being the meeting of the Church Congress. The principal speakers in favor were Drs. Wilks and Ruffer, and Mr. Victor Horsley. Mr. Lawson Tait, who has

announced himself on previous occasions as an anti-vivisectionist, did not appear. The bishops appear to have been divided, two of them being the principal advocates of the anti-vivisection party. The argument appears to have been very much in favor of the vivisectionists, although no definite conclusions were reached.

Mr. Lawson Tait's challenge to the vivisection party to point to a single instance in which valuable knowledge has been acquired by the aid of experiments on living animals, has been met by a refusal on the part of Sir Andrew Clark, Sir James Paget, Dr. Wilks, and Sir George Humphry to discuss the matter in public. They claim that no important progress has been made in medicine, surgery or midwifery which has not been promoted by this method of inquiry.

HAS CANCER A SPECIFIC ORGANISM?—Dr. Ohlmacher (*Chicago Med. Rec.*) says regarding the above question:—1. That the microbic origin of cancer is wholly unsupported by experimental evidence. 2. That a characteristic and pathogenic animal micro-organism has not yet been found. 3. That inoculation and cultivation experiments have thus far been negative. 4. That most of the peculiar inclusions of carcinoma are the results of cell degeneration or cell metamorphosis, and are not characteristic of carcinoma. 5. That the hyperchromatosis and fertilization theories of Klebs and Macallum are too full of speculation.

TREATMENT OF GONORRHOEA.—Reverdin recommends (*Rev. de Chir.*) permanganate of potash irrigation in the treatment of gonorrhœa in all its stages. No other treatment is used, no untoward complications have been observed, and complete cures have been made in three days, the average being fifteen days. The urethra is cleaned by having the patient urinate, and washed out by syringing with permanganate solution. A soft catheter is introduced, not beyond the bulb, of course, attached to a fountain syringe, and three or four pints allowed to run out of the urethra. The strength of the solution varies with the tolerance of the mucous membrane, one to five thousand being used at first, and its temperature should be about 110° F. The discharge practically ceases after the first two or three washings, but the treat-

ment must be continued until all signs of inflammation have disappeared. The recommendation is based upon an experience of eight years.

TREATMENT OF RINGWORM.—Crawford Warren, F.R.C.S.I. (*Lancet*), suggests the following treatment for this affection: The affected region should first be washed with soap and warm water containing a little carbonate of soda, and then well dried. Ascectic acid should then be thoroughly applied with a small brush, and in the lapse of about five minutes, when the acid will have soaked into the part, an ointment composed of sixty grains of chrysophanic acid to an ounce of lanoline should be rubbed in. This treatment should be carried out daily for such a period as may be necessary.

ANTIPYRINE IN EPISTAXIS.—Dr. E. G. West, of Boston (*Med. Rec.*), finds antipyrine decidedly reliable in epistaxis. It is his custom when a case of unusual violence occurs, to saturate a pledget of cotton in a solution of antipyrine, or in the dry powder, and introduce it into the nostril. It stopped the bleeding in every instance that he applied it. The patient by this method is relieved of the disagreeable tarry clots formed by the solutions of iron, so commonly used for this purpose.

It may interest you to know that I have had a most satisfactory result from the administration of your BROMIDIA in a case of sleeplessness, after a slight apoplexy, with partial paralysis of the right cheek and arm. The patient (male, 63 years old) suffered from weak heart, and before coming under my care had been given Sulphonal, Paraldehyde, etc., without sleep being obtained. The first night here he received one drachm of BROMIDIA and got seven to eight hours' quiet sleep without any ill after-effect from the drug. The same dose continues to give the patient some hours' sleep every night.—M. Colet Larkin, M.B., C.M., Ramsgate, Eng.

HYDRASTIS CANADENSIS FOR THE VOMITING OF PREGNANCY.—Férodow, a Russian gynecologist, has (*Gaz. Med. de Paris*) controlled obstinate vomiting in four cases of pregnancy by the administration of twenty drops of fluid extract of hydrastis four times a day. The efficacy of the remedy is said to depend upon a lowering of the

blood-pressure, relieving the engorgement of the uterus, and upon a sedative influence upon the motor nervous centers and the gastro-intestinal canal.

ALL THAT IS NECESSARY.—The American Association for the Advancement of Science, says the following lines are all that is necessary for the physician to learn in order to prescribe in the metric system:

1,000 milligrams make 1 gram.

1,000 grams or cubic centimetres make 1 kilo or liter.

65 milligrams make one grain.

15½ grains make one gram.

31 grams make one ounce, Troy.

PERSONAL.—Dr. W. Stewart Philp (McGill, M.D., C.M., '89; M.C.P. & S., Ont.), who is spending the winter in Florida, has been recently accepted a member of the "Florida Medical Ass'n," after passing a most creditable examination.

Books and Pamphlets.

TEXT BOOK OF OPHTHALMOLOGY. By Ernest Fuchs, M.D., Professor of Ophthalmology, University of Vienna. Authorized translation from the second enlarged and improved German edition, by A. Duane, M.D., Assist. Surg. New York Ophthalmic and Aural Institute; with numerous illustrations. New York: Appleton & Co. 1892. Canadian Agency, 170 Yonge St., Toronto.

This work, fresh from the master-mind of the foremost ophthalmologist in Europe, cannot fail to be of great utility to all who desire to post themselves upon the subject treated of. The text is clear and concise, embracing every advancement made in the science of ophthalmology. We can scarcely call attention to any one part of the subject, as all are treated of in the most thorough manner; the pathology, physiology, and operative procedures in every disease being indicated in a thoroughly practical and efficient manner. The chapters devoted to Errors of Refraction are unsurpassed in any work extant, this difficult subject being placed in such a form as to be understood by all desiring to avail themselves of special training upon the subject. It is, in fact, the greatest and best work upon the subject of ophthalmology ever written.