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Clinical Observations on Typhoid Fever.

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M B, C M. Edinburgh University 1885.

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MEMORANDUM.

From the

Dean of the Faculty of Medicine.

To.....

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In reply to your letter of..... *I beg to state that*

J. B. Ridley Sanction a Thesis on
Typhoid Fever in 1889 which
has rejected.

Herewith Sends in a Thesis on Same Subject

In thinking over the subject of my Thesis, and endeavouring to provide material which might contain the results of original observation, I beg to lay before you some thoughts engendered by a review of my own personal experience in connection with Typhoid Fever. Hence I do not propose to trouble you with any detailed analysis of these cases of Typhoid which have happened to fall under my own personal supervision, in fact I intend rather to bring before you some of the chief points which to me at least appear of special interest.

The subject matter of this Thesis is derived from the attentive consideration of some 200 cases of the disease which have been entirely under my care.

It is a disease from which no class of the community is Exempt, nor is it possible to be in practice long without having cases of this disease to deal with, so that any facts borne out by clinical observations which tend to show any improvement in its treatment must be looked upon with keen interest by those who have to battle with this disease.

The death rate is always more or less

heavy, and it behooves each one of us to do all in our power to lessen the mortality of this disease.
There is no doubt that the liability to the disease which has its primary stage in the solitary and agminate glands diminishes with age, in early life there is a heightened degree of physiological activity, so that a person is rendered more liable to the introduction of pathogenic microbes, but as age goes on the glands undergo a certain change which renders the person less susceptible to the introduction of the poison, and the same can be said as regards the tonsil in Scarlet Fever, and another reason why those under 30 years of age are more liable to the disease, is no doubt due to the greater alkalinity of the blood serum, and intestinal secretions in early life, when the disease occurs after this age it is generally so do not say always, in those whose vital condition is in a depraved state, or in those who have had an insufficient supply of food, Those cases of immunity against the disease I look upon as associated with an increased formation of acid in the system.

The Typhoid Bacillus grows best in the alkaline contents of the small intestine where there is no oxygen, and it is no doubt owing mainly to this latter fact that Peroxide of Hydrogen is such a powerful antiseptic to the bacillus in this disease, but I may say that it requires to be given with Extreme caution, and in fact I can not advise it to be given by the mouth at all, owing to its rapid absorption it is very liable to produce alarming symptoms, so I have generally given it in the form of enema diluted well with cold water and so used, I have seen very beneficial results.

As regards the aetiology of the disease, I am a strong believer in the bacillary origin, and hold that its virulence is greatly dependent upon its capacity for spore formation outside the body, a method of reproduction which is carried on at its greatest activity when the temperature ranges from 80° Fah to 100° Fah.

Of one thing I am certain that no single ptomaine would give rise to the very varied toxic symptoms which characterise different cases of the disease.

In the majority of the cases the intestinal symptoms were not more severe or prominent than those of the respiratory and nervous systems.
As far as the bowel was concerned the only complications that had to dread were those of hæmorrhage and perforation, and in the latter of these in my experience it may to a great extent be obviated by the prevention of any distension of the bowel, a condition which is to a large extent due to the lines of treatment that may be adopted.
Hæmorrhage was often a very serious complication, and in several of the cases under my care placed the lives of the patients in imminent danger.
From my own experience derived from 200 cases extending over a period of over eight years, with a mortality of under 10 per cent I feel strongly convinced that in by far the largest proportion of cases the extreme antipyretic treatment of the present day is contra indicated, and is based upon a mistaken view of the febrile process.
In support of this statement, I need only refer to the very high temperature occurring in relapsing fever, which

often rises to a 107° Fah, with a mortality of only about 1 per cent, this appears to me that the symptom pyrexia need not be one of such grave omen.

The question of Albumen occurring in the urine is one of great clinical importance, giving as it does a valuable indication to the state of the circulation, as it not only tends to indicate a condition of renal congestion associated with defective cardiac energy, but also a diminished vis viva in the circulation, and a state of vaso motor paresis.
It is a condition upon which very little if anything is stated in any book upon the subject as far as I have seen, and as I shall show forms not only a very fatal complication, either alone or in conjunction with others, but it is also a clinical factor upon which a good deal of the prognosis of the case must rest.
It is much regret to myself that I was only able to make valuable notes in 75 cases of the disease owing to the great pressure of work at the time, therefore the information is only derived from the 75 and does not apply

to the whole 200.
The late Dr. Murchison states that out of 549 cases he found albumen present in 157 or 28·6 per cent. but he does not state how many died of those where it was present.
I found albumen present in 42 cases absent in 33. out of the 75 cases. that is it was present in 56 per cent of the 42 who had albumen in the urine and 9 of these died directly or indirectly from this complication, giving a death rate of 21·4 per cent. Now of those without albumen none died.
Amongst the 42 who had albumen, there were 3 children none of whom died.
Amongst the 33 who had no trace of albumen were 14 children.
This I think shows how much less liability there is in Children to the presence of albumen than in adults, and more over that in those in whom it was present none died.
I was able to classify these cases of Albuminuria under 3 headings.
Firstly those with preexisting kidney disease, now these cases seemed to be so rare that they almost might be

left out of consideration.
Secondly.
Cases where there was abundant and persistent albumen, in the urine often to the extent of 0·05 up to 0·1 per cent, in these the mortality was very high and Post-mortem Examination showed interstitial or diffuse nephritis with glomerulitis and haemorrhage. I could only look upon the nephritis in this class of case as septic.
Thirdly.
Cases where the albumen existed only as a trace and that only for a short time. Amongst these the mortality was small, and renal changes scarcely to be detected, and upon microscopical examination the chief alterations seemed to be vascular engorgement with capillary haemorrhage, slight cellular infiltration and multiplication of nuclei with cloudy swelling of the epithelium.
Parenchymatous nephritis with fatty degeneration of the epithelium was not found, though some degenerative changes were generally present but difficult to distinguish from those alterations which occur so rapidly

post-mortem, especially in deaths from peritonitis due to perforation.

Of the 9 fatal cases out of the 42 with albumen present.
I consider one came under the 1st heading, but as no post-mortem was allowed I was not able to say for definite certainty, but considering the life history of the case, he was a patient in which one would expect to find pre-existing kidney mischief, but clinically it was difficult to say, owing to the typhoid condition predominating and so masking any organic renal changes of long standing, but as he was a hard drinker, or rather had been for many years, I was justified in diagnosing him as a case in which pre-existing disease was present, in all probability the early stage of granular con-tracted kidney.

Seven deaths out of the 42 came under the 2nd heading, but as they all or nearly so had other complications as well, but I have noticed that complications even more severe

than these, never terminated fatally as they did when accompanied by persistent albumen in the urine.

One came under the 3rd heading. Now from the above it will be seen that when albumen is present and persists in large amount that the prognosis would certainly appear to me to be more grave, and so it practically is, but at the same time it would be difficult to say what the mortality would be with private cases, as I made these observations upon Hospital cases, and the disease is as a rule well advanced when admitted.

Another point of clinical interest is the rash, it is generally stated in text books, that it appears during the second week of the disease. now in almost every case I have found that it always appears during the 3rd and very often the 4th week of the disease.

In reviewing my own personal experience as to the management and successful treatment of Typhoid Fever, there arose

one point which appears to me of such eminent importance as to dwarf all others into comparative insignificance; I allude to the Diagnosis of the disease, it is so easy to differentiate one disease from another on paper, and how different the whole aspects of the case becomes when we are brought to the bed side of our first patient; and I may say that the difficulties of diagnosis have been a thousand fold increased during the past 3 or 4 years by the prevalence of Epidemic Influenza. In many instances it has been impossible for me to decide within a week or more as to the nature of the disease, especially is this the case when the patient may have been treated elsewhere and in all probability had antifyrin, Salicylic acid or any other of such drugs which give rise to simple hyperæmia, miliary eruption, erythymatous rashes, and urticaria. I have seen cases where a single dose of antifyrin produced a rash almost identical with Scarlet Fever.

In Hospital cases I think the Diagnosis has to be made under unfavourable

circumstances and is therefore some
what more difficult in the early stages.
but as far as my own experience goes,
I find that acute diseases are more
often taken for typhoid than the reverse.
I have on more than one occasion had
patients sent into Hospital as suffering
from typhoid who failed to exhibit any
of the special signs of the disease such
as the marked evening exacerbations
and morning remissions which take
place in the first few days, together with
the listless aspect of the patient, the
tongue furred in the centre with red
tip and edges, the swollen abdomen
and enlarged spleen, and later on
by the dark brown acid motions,
which soon become of a greenish
yellow flocculent pea soup character
and alkaline in reaction, and the
characteristic red lenticular spots
upon the abdomen and chest.
Typhus Fever is a disease which is at times
mistaken for typhoid, but here the rash
consists of dark brownish spots with
a dusky mottling, and the head symptoms
seem to be more pronounced, whilst
sickness, vomiting, diarrhœa, and abd-
-ominal tenderness are absent,

features which are always more or less well marked in Typhoid.

On looking over my notes I see that the following cases were sent-in with a diagnosis of Typhoid.

1. Thrombosis of the Lateral Sinus.
2. Abscess of the Brain.
3. Septic meningitis from disease of middle ear.
4. Tubercular meningitis.
5. meningitis with Pneumonia.
6. A severe case of basilar meningitis.

From the above it would appear that the chief error was in mistaking these affections of the brain and membranes for Typhoid, but - as far as I have seen, the temperature is not so high as in Typhoid, headache and vomiting are much more persistent, the bowels are usually confined and the abdominal walls are retracted, and there is generally paralysis of some of the ocular muscles and nerves, as well as other cranial nerves, and there may be double optic neuritis.
I have never found the knee jerk absent in Typhoid, but - in fact - in the more severe cases it is much exaggerated and is often accompanied

by ankle clonus.
The last two of the above cases recovered, the others died so that the diagnosis was verified by Post-mortem Examination. I have seen a case of acute pneumonic phthisis closely resemble typhoid in many of its clinical features.
In meningitis the Fever is of an irregular type, the knee jerks are exaggerated before Effusion has taken place, and in some cases even ankle clonus may be present. During the hyperesthetic stage the head is generally retracted, and tonic contraction of all the flexor muscles of the limbs, so that the joints were acutely flexed, but this is more often seen in the chronic form of the disease than the acute. I attach great clinical value to this hyperesthetic stage, which is present in all cases of meningitis in the early stage, whilst in Typhoid the patient is in an apathetic condition. In basilar meningitis where the inflammation is confined to the base, hyperesthesia is here an early symptom, but not always present, and as a general rule the patient is quite intelligent, and if any delirium is present it is when the patient is asleep

or dozing, and in addition to this they are restless, move about from side to side with a feeling of being uncomfortable, pick their lips and often blow their noses to try and get rid of the irritation of a little dried mucus which in a case of typhoid would not be noticed. Again in some cases I have noticed that although the upper limbs may be acutely flexed the lower are rigidly extended, this I think takes place when the cerebellum is affected, the knee jerks are first exaggerated, and then ankle clonus becomes established, or even knee clonus may be well marked, the biceps reaction at the elbow and fibrillary contraction of the muscles are easily elicited, in the majority of cases the head is rigidly retracted though I have seen this symptom absent. In meningitis of the vertex the cerebral phenomena are well marked, hyperesthesia and headache are prominent, whilst the delirium may be of a lively type, and a point of clinical importance is that the muscular rigidity and exaggerated deep reflexes are not present to the extent that

they are in basilar meningitis. I have gone some length into this subject of meningitis, as I have found the difficulty seems to be in diagnosing meningitis in place of Typhoid.

As regards Ehrlich's diazo reaction in the examination of the urine, I do not attach much clinical importance to the test as I have found it present in other diseases.
In a few of the cases I had under treatment pneumonia was present in addition to the typhoid, and an error in the diagnosis was made in one case due to the fact that the attack was ushered in with a rigor, high temperature, and embarrassed breathing, but as a rule there ought to be no difficulty after a few days close watching of the case. I may also say that there are some cases of Pneumonia which present a very typhoid like aspect.
I do not think that I had a single case of Typhoid mistaken for any other disease and I am afraid that when errors do arise it is from judging too much from the aspect of the patient without weighing the other factors of the case. Of course there are many in which a diagnosis may

be doubtful for a few days, especially in the early stage of the disease before any clinical signs have manifested themselves.
The onset of some cases may be sudden, in a few of my cases the temperature reached 104° Fah. on the 1st Evening. Bronchial catarrh and hypostatic congestion were frequently present but these conditions especially the latter occur at an advanced stage of the disease and as a rule did not give rise to any difficulty of breathing.
Typhoid Fever is specially liable to many complications, and there is probably no disease in which death may take place from so many quarters, it is therefore essential that the temperature chart should be most carefully watched.
The treatment of such affections as bronchitis, hypostatic congestion of the lungs, pneumonia and pleurisy, usually demands stimulants, Especially ammonia caffeine, bark, digitalis, quinine and some alcohol. I have generally found the following mixture of great service
℞. Am Carb. 15 grs. Caffeini. 2 grs. Tr Quinina Am. ℥i. given in effervescing mixture with 10 grs. of citric acid every 4 hours.

a sudden fall in the temperature, with a blanched anxious face and small weak pulse are the chief signs which usher in hamorrhage, Even before the blood appears in the stools; the lines of treatment that I have generally gone on, and which seemed to me to give the most satisfactory results, is to have a large ice bag or Leiter's tubing kept constantly applied to the abdomen as long as there is a tendency to hamorrhage the peristaltic movements of the intestine are best controlled by repeated doses of opium; but there is no doubt the best hamostatic to my mind is undoubtedly turpentine given in 10. m doses every hour or two either in the form of an Emulsion or in a gelatine capsule, or in the form of the following combination which I generally use, and I may say is of special value, and there is no doubt that it exerts an antiseptic action as well.

℞. Olewm Caryophylli. xii. m.
Olewm Terebinthinæ ʒiii.
Glycerini
Mucilag Acaciæ. aa ʒi.
Syrupi ad ʒvi. ℥ss.
Sig. ʒii Every 4 hours.

In fact, my own views are that many more lives might be saved if the oil of turpentine were more freely used in this disease, the volatile nature of the oil is such that at the temperature of the human body, the vapour must get in contact with the mucous membrane of the intestine.

If there should be defective arterial tone, I generally give Ergot by the mouth, or Ergotine injected hypodermically, or any likelihood of fainting a little alcohol in the form of brandy is the best. I find it is best not to trouble the stomach with much food, so I generally give a little beef essence, light soup, whey, or ice to suck.

I look upon profuse haemorrhage about the 4th week, from ulceration into a blood vessel as a fact of the gravest significance, the patient is not in a position to bear the loss of blood, and the sudden fall of blood pressure at once places his or her life in the most imminent danger. I always order the horizontal position to be maintained, and if there has been much haemorrhage it is as well to raise the foot of the bed so as to depress the patients head below the rest of the body, and I think

it best to draw off the patients urine with a catheter.
In a few of my cases there was bleeding from the nose, gums, lungs, urethra, and severe menstruation in women. I looked upon them as symptomatic of a hæmorrhagic diasthesis.

In any case of death from Hæmorrhage I have always found that the bleeding has taken place not from one point, but from numerous points in one or more of Peyer's patches.

The next complication I had to deal with was that of perforation, with peritonitis which must necessarily follow after a lesion of this nature. It was the cause of death in 7 of my cases, but there was no doubt that 3 others had it and recovered. Now the great question that of course presents itself to one's mind at the present day of modern surgery is how far one is justified in opening the abdomen and washing it out, securing the rupture, or I think what would be better, to trust to nature setting up a process of inflammation and so gluing this portion of the

intestine to another coil, and content oneself with washing out the abdomen with some antiseptic solution, for it is the peritonitis which sets in as the result of the perforation which kills. I have no doubt that there are some cases in which the perforation is so large, and the shock to the system so great, that death takes place before peritonitis sets in.

In two of my cases I was quite prepared to do a laparotomy, but I could not get the consent of the parents, of course they both proved fatal in spite of the ordinary treatment. I however was able to perform a post-mortem in each case, and by this means I was able to verify the diagnosis; in both cases there was acute diffuse peritonitis and the perforations in both cases were not larger than a small pin head, the peritonitis in both these cases which brought about the fatal issue was no doubt due to a small escape of faecal matter, and from the post-mortem evidence I feel confident that had the abdominal cavity been washed out in these cases they both might have survived, however the question is

worthy of every consideration, This perforation due to ulceration is of course a very different matter to when it is due to necrosis of a Peyers patch, as in this latter case there is often a very large rent affecting the whole thickness of the wall of the intestine, and of course the symptoms of shock and collapse are so great in this class of case that operation is quite out of question. So that when in any case the temperature suddenly falls, and there is a livid condition of the face covered with beads of perspiration, and a distended condition of the abdomen with a weak thready pulse, increased frequency of breathing and a general state of collapse, one is justified in arriving at the diagnosis of perforation, but then on the other hand, many cases diagnosed as perforation have recovered, this I look upon as being due to two causes.

Firstly the perforation may be so small as to prevent any escape of feed matter or gas, I think it is quite possible for this to take place if the intestines are in a flaccid condition, and not blown up with gas, now when a perforation takes place with

distended intestines no matter how small the puncture some of the liquid faecal contents are sure to be forced through with the escaping gas. There are some cases I think in which the shock to the nervous system is as great from a small puncture as it would be if a large one had taken place, this I think goes to help to explain some of the cases of recovery after undoubted symptoms of perforation.

Secondly. The Peritonitis may be purely localised around the area of perforation, so that the Extravasated contents are prevented from setting up a diffuse inflammation, absorption gradually taking place.

The chief objections against operating, which appear to represent themselves to my mind are.

Difficulty of Diagnosis.
The Condition of the Patient.
The liability of death under chloroform.
The difficulty of finding perforation.
The diseased condition of wall of gut.

Of course if the laparotomy was done with the object of simply washing out the abdominal cavity, these two latter questions would not be considered.

When symptoms of perforation took

place, I always administered opium freely, little or no food was allowed to pass the stomach, when signs of collapse manifested themselves I generally gave stimulants and hypodermic injections of Ether; nutrient suppositories and Enemas I have found of great value as in this complications it is so necessary to keep up the strength of the patient as much as possible, and food given by the mouth is fraught with danger.

Another complication of great trouble and discomfort to the patient is that of Tympanitis, and it was present in a large number of patients, and varied from mere flatulent distention, to that very Excessive form of Tympanitis which was most marked in those cases of great nervous prostration, an ice bag or cold compress to the abdomen always seemed to be most beneficial to the patient. It always seems to me that intestinal antiseptics should be of great value in this complication, and when one takes into consideration the origin of the Tympanitis, I myself look upon it as due to a septic fermentation, and clinical Experience goes to show that when certain

antiseptics are given, they lessen the fetor and prevent decomposition of the contents of the bowel. And judging from my own experience, I fully believe that as our knowledge of the great value of internal antiseptics becomes more perfect, and their use more general, that not only will this one complication be greatly lessened, but I even look to the time when a complication will be rare, and this disease will be held within bounds, so that the mortality will be greatly diminished and the necessity for the large use of alcohol will be done away with, in fact there is a large field for clinical study in the antiseptic and dietetic treatment of this disease, and such I am glad to say is being more recognized each day, in fact since I have used antiseptics and altered the diet in this disease, I have seen the most marked improvement.

Of course the idea of an antiseptic treatment of this disease is by no means new, for Sir William Jenner as far back as 14 years ago advised charcoal to be given two or three times a day, but to day we possess antiseptics less cumbrous and more effective

than charcoal, The late Dr. Murchison speaks of antiseptics acting upon the poison in the intestinal canal. Niemeyer used chlorine water, and so we have gone on step by step, till at the present-day we use the most complex and modern of antiseptics such as Salol, Salicylic acid, Carbolic acid Naphthol and many others, but-from a practical and clinical study I will give you my own personal experience of those that I have used.

At one time I always used Salol for owing to its insolubility it passes into the intestines and is there decomposed into Salicylic acid and Phenol in the alkaline contents of the small intestines, and there neutralises toxic ptomaines which result-from gastro-intestinal catarrh. I generally gave 10 grains every 4 hours, and it was noticed that it promptly removed the fator of the stools, and greatly diminished or removed the Tympanites, and if the diarrhoea was in any way excessive I generally added 10 grains of Salicylate of Bismuth, I have also used Salicylate of Quinine.

At one time I was in the habit of using B. naphthol, but-as I have seen so much gastric irritation caused by this drug that-I have now quite discarded its use.

It seemed to me to have some action upon the milk that was taken retarding its dijestion, and so producing a milk dyspepsia, I tried it in the form of a pill coated with Keratin, but it made no difference. It has an odour of carbolic acid, is very toxic, and in several cases produced a dark discolouration of the urine and slight symptoms of poisoning. It seems to be better tolerated in children.

There is not the slightest doubt that these antiseptic agents shorten the duration of the Fever, and tend to lessen the splenic enlargement, albumenuria, and other complications, and seem to bring about a more satisfactory convalescence, the risk of propagation is also diminished by destroying the infectious nature of the stools.

There is no doubt that when the condition of Tympanitis comes on and the nervine power of the patient is at its lowest, and the contractile energy of the abdominal and intestinal muscles is consequently at its minimum, hence the want of power to expell the flatus and excess in the quantity formed, and as this takes place about the 4th week when the sloughing and ulceration of the intestinal walls

are at their height, and when one takes into consideration the state of the stomach and glands with their antiseptic digestive properties arrested it only stands in reason that the food that goes into the intestines becoming mixed as it does with the secretions from the diseased intestines readily undergoes gas generating decomposition, hence it seems to me, the great necessity of combating with this condition of things before it has time to begin, as of course the more distended the intestine the greater the liability to perforation, and this is one point where the great value of antiseptics come in

For my own part there is nothing to equal Quinine as a general antiseptic, in fact Eberth has shown experimentally that it is one of the most powerful antiseptics against the Typhoid Bacillus and checks its culture. For some time past I have been in the habit of combining its action with that of chlorine this latter remedy was so highly recommended by the late Dr. Murchison. I must say that I have had very startling results from its use.
The way I generally have it prepared is to put about 30. grains of Chlorate of

Potash in a 24 oz. bottle and add about a couple of drachms of strong hydrochloric acid, the result being that Chlorine gas is given off, small quantities of water should now be added, and the mixture well shaken, and so on till the bottle is full. I then have my solution of free chlorine, now to this mixture I now add about one drachm of Quinine, and some syrup of orange peel, and order an ounce to be given every 4 hours according to the severity of the case. Now one of the first results after giving the mixture is cleansing of the tongue, the pulse of the stools generally disappears, so that it seems to me to exert an antiseptic influence in the blood and neutralises septic substances generated by the Typhoid Bacillus, the Excretions into the intestine are modified, I therefore have come to look upon it not only as an intestinal, but also as a general antiseptic.

There is no doubt that the beneficial results are very great, there is a modification of the febrile temperature, the course of the fever seems to be lessened, the physical strength of the patient seems to be better maintained

food is tolerated with greater power, and the convalescence is more rapid and complete, and there is also less evidence of a septic state of the blood, in fact a marked diminution of abdominal tenderness and meteorism, as well as a decided fall in the quantity of albumen present.

I do not wish it to be thought that this is the very best method to follow in all cases, or that a more perfect line of antiseptic treatment may not be attained, but there is no doubt from what I have seen, that some constitutions are more influenced by one method than another, and there is no doubt that the methods of applying the idea will grow more perfect as our knowledge becomes more complete.

Practically I have met with extreme views both as regards the treatment of the symptoms of pyrexia, and the troubles incident to the bowel disturbance, this bowel symptom being almost invariably constipation, the question arises are aperient remedies to be given or not? Personally I have been most favourably and strongly impressed with the advisability and from my own experience I should add the

importance of refraining from any kind of aperient-drug during the entire course of the fever. I may say I have never given a patient suffering from typhoid aperient medicine and I have no cause for regretting my firmness on this point.

As regards the occurrence of constipation, it was present in a few cases, and the more marked it was the greater was the liability to hemorrhage, in fact in other words the cases in which it appeared were always severe ones, this is of course due to the fact that a deep ulceration must paralyse the bowel, a clinical point of no small importance, and I can only say that it is mainly upon this that I most strongly condemn, and should hesitate before giving purgatives, as it is not only brought with very great danger to the patient, but are strongly contraindicated when the pathological condition of the bowel is taken into consideration, and I certainly fail to see how the brilliant results which follow the administration of calomel when given for constipation in this disease, are brought about as has been so strongly advocated by some

writers in the medical papers, the cases must be very few indeed, and considering the lesion in the bowel which has brought about this constipation in nearly every case, it is not difficult to see how a fatal perforation and subsequent peritonitis may be brought about.

The prevention of bed sores is often a great trouble, a good plan I have found is to paint the parts most exposed to pressure with Collodion daily, or what is even better I found is to put very thin layers of cotton wool over the prominent parts, and to fix them down with Collodion so as to get a thick pad formed which most thoroughly protects the parts exposed to pressure namely the trochanters, sacrum, and elbows, and in addition to being of immense comfort to the patient, as an ulcerating bed sore is a most troublesome complication and very often seriously interfers with the convalescence of the patient

Otorrhea is a condition which occurred in several of my cases, a daily syringe of a warm boracic lotion, and after drying filling the Ear with powdered

boracic acid, if this is done as long as any discharge remains I find that they quickly heal.

Frontal Headache in some cases was a very troublesome symptom, a dark room, evaporating lotions, ice cap. 10. grains of Antipyrin with 3 grains of Caffeine, or the Elixir of Guarana, Bromide of Ammonium, were the various modes of treatment adopted.

since writing this obtained the very greatest benefit in acute cases, where acute delirium mania came on from the use of Hypodermics of Hyoscine of 1/50 gr. and also from the use of Sulphonal

For the Sleeplessness I have generally found that a combination of Chloral, Bromide, and Henbane answered the purpose very well, but I have no hesitation in saying that if they can be done away with altogether, so much the better, in fact they must always be given with caution, and to my mind there is no doubt that alcohol answers the purpose better, but since I have been in the habit of using antiseptics so much I have noticed that there is less tendency to both Frontal headache and Sleeplessness I look upon Typhoid as a disease which varies so very much in severity, that I do not believe in any routine system

of treatment as applicable to all cases alike.
In all cases if possible I insist upon the ward or room being large, airy, well ventilated, and always kept at a temperature of about 60° Fah.
The bedstead I have narrow so that the patient can easily be approached from either side, fitted with a spring and hair mattresses. All flock and feather beds, eider down quilts, and other non conductors of heat I have a strong dislike to.
The patient being put to bed at once, the horizontal position should be maintained through out the course of the disease, and the bed-pan to be used from the beginning, as in the later stages of the disease the erect or sitting posture may be attended with fatal syncope.
I have found the following aromatic and antiseptic lotion most refreshing to the patient; to sponge the body all over with night and morning, by this means not only is the skin kept clean from contamination by the excretions, but the temperature is reduced as well as the burning

feeling of the skin and a general tonic influence is produced

℞. Thymol. 30 grs. Spt- Lavandula ℥ii.
Spt- Vini Rect- ℥iv. Ac Acetici Dil. ℥iiii.
Aq Ros ad ℥xii. m.f. lotio.

I look upon the cleansing of the mouth and teeth, three times a day as most important, and the method I generally adopt is, by means of a piece of absorbent- cotton tied on to the end of a stick and dipped in some alkaline water to which a little antiseptic is added by this means the teeth and gums are kept- clean, and the prevention of ulcers.

I believe in the Oil of Eucalyptus being placed about- the room, or different parts of the wards.

I can not- say that- I have much faith in giving a great- quantity of medicine in this disease, apart- from the complications that- arise, certainly the most- rational treatment- at the present- state of our knowledge seems to me to be the antiseptic one, in fact- I am a strong advocate for it, and have elsewhere stated my own views on the beneficial results obtained from them.

I always have the temperature of the patient taken every 4 hours.
I much prefer the use of tow for cleansing in place of lint, sponges, flannel, or pocket-handkerchiefs, it is cheap and can be burnt at once.
All sheets, blankets etc. that are removed are put at once into an antiseptic fluid perchloride of mercury (1 in 2000) being probably the best, and mostly certainly the stools must be mixed with an abundant supply of the disinfectant fluid, and allowed to stand for some time before being poured down the water closet. I look upon the practice of burying the stools in the earth which prevails in the country so much as extremely dangerous, as it has been clearly shown that Earth does not destroy the vitality of the Bacillus.
I am always careful about all utensils being washed in hot water disinfected. From my own observations I believe it is quite possible for typhoid to be taken by those in attendance upon the patient if great attention is not paid to cleanliness, any soil stained linen when it becomes dry, must necessarily be liberated as dust in

the changing of the patient, and in this way the germs may be inhaled by nurses, in fact in the only case in which a nurse took Typhoid to my knowledge was in this way.
I always enforce that nurses shall wash their hands immediately after attending the patients, and before either giving or taking food.
I hold that water companies should be heavily fined for supplying water polluted at its source or transit.
There seems to me to be a necessity for legislative reform in the Existing System of the drainage of dwelling houses, and the landlord of any property ought to be held accountable for the state of drainage, and punished by a fine if found defective quite apart whether disease had broken out or not.
I also think that there ought to be two sets of plans of the drainage of property, one kept by the landlord, and another at the Sanitary offices where tenants or those about to rent property might inspect it upon paying a small fee.

I will now narrate a few of the sequels of the disease I have met with amongst

my cases.
The first case was that of a young man of neurotic disposition, who after the usual symptoms with rather severe hemorrhage and an intercurrent relapse, was seized on the 34th day with neuritis affecting the outer and inner cords of the brachial plexus on one side. There was pain, hyperesthesia followed by anesthetic weakness and muscular atrophy. Strychnia, massage, and the faradic current produced a decided improvement.

In the case of young woman who after a protracted course of the disease a severe relapse, with hemorrhage, and constipation, a sausage like tumour began to show itself in the ileo cecal region, it developed fluctuation, and on the 3rd day after having been first observed, I opened it with the discharge of some foecal smelling pus. I thought it was doubtful whether this was due to perforation caused by an ulceration or to impacted faecal accumulation, however she made a good recovery.
Melancholia showed itself in a few but-

it was generally in women, & found a liberal diet, with stout, port-wine, and good nervine tonics the best.

Infantile Hemiplegia. This came on in a little girl who had a very severe attack of Typhoid. The attack of paralysis came when she had been convalescent for some few days. It was of the usual cerebral type, the face, arm, and leg being affected on one side with aphasia which was only temporary, and the power of speech came back in a few days but was somewhat thick, there was slight sensory impairment, the reflexes were increased, and a certain amount of rigidity and contracture supervened upon the paralysis, which will sooner or later develope into the mobile spasm of Athetosis.
I can only look upon this very rare sequela as the result of inflammation of the cortex, a polio-encephalitis which is analogous to that in the grey matter of the anterior horns of the spinal cord which causes Infantile Paralysis, or it might be due to an arterial or venous thrombosis, the typhoid poison might act like alcohol or arsenic

in bringing about this condition from septic poisoning. Calomel and the ice bag to the head with bromides. during the acute stage, later on I tried the iodide of potash. marriage. When she left Hospital there was little or no sign of any improvement to the damaged cortex.

I can not say that I have much faith in giving a great quantity of medicine in this disease apart from the complications that arise. The most rational treatment at the present time, seems to me to be the antiseptic one, in fact I am a strong advocate for it and have elsewhere stated my own views on the beneficial results from some of them.
I think that there is no doubt that the administration of the dilute mineral acids is followed by good results. They make up for the deficiency of acid in the gastric juice, which is a marked feature in this disease, they also increase the saliva, and remove the parched condition of the throat and tongue, and at the same time tend to neutralise the excessive alkalinity of the blood, and correct the acrid alkaline motions.

As regards the antipyretic treatment of the disease, I have given up the use of drugs - unless it be quinine - as agents by which the temperature may be reduced, if indeed the hyperpyrexia is to be regarded as such a dangerous symptom which personally I myself have some doubts. I look upon many of the modern day agents for suddenly reducing the temperature as powerful cardiac depress-ants and blood cell disintegrators, I have no objection to their occasional and cautious administration, but to be used with a free hand and as a matter of routine because there is pyrexia, I must protest, as I have myself seen alarming symptoms to follow a single dose of 10 grains of Antipyrine.

As regards the various methods of applying cold water as a means of lowering the temperature in those severe cases where the Thermometer showed the temperature to be 105-6-108 Fah and to have a tendency to rise rather than to become lower, so that the condition of the patient was such as to necessitate some active steps to be taken, and the Hyperpyrexia to be combated if the life of the patient is to be maintained. I look upon it that

it is not the Hyperpyrexia per se, which is so dangerous, but the various changes that are brought about in the system by an excessive high temperature formed within the body, and are probably of the nature of a morbid poison, due to changes in the blood of a chemical nature which soon render life impossible.

I have noticed a very high temperature in one case produce little or no danger, when another will have a temperature of not nearly so high with alarming symptoms. It is of no use then in this disease to stand by with folded arms and say "Wait and see what to morrow does". To delay for a few hours is to lose a golden opportunity never to return.

As a general rule I always order every case a warm bath on admission as I think the soothing and cleansing effects are very beneficial to the patient, and often absolutely necessary in hospital cases.

In some 20 cases I found the cold water enemata of great value where the temperature still persisted high, and the wet pack seemed to have no lowering effect upon it, the water should be retained as long as possible, in fact for

some hours, for if allowed to be rejected the effect will be very slight, I have found that the best way is to raise the foot of the bed, insert the nozzle of a syringe into the rectum and attach to this a few feet of india-rubber tubing to which a funnel is fixed, the water can then be poured down this from a height of a couple of feet, in this way it gravitates into the bowel more steadily.

The Leiters tubing, cold compress and ice bag all have a most decided effect upon lowering the temperature, and to my mind possess a great advantage in being easily applied in severe cases, I have found the ice bag excessively useful in several cases of abdominal distention and intestinal hemorrhage, in one severe and protracted case I had it applied to the abdomen for 25 days constantly, and it had a most beneficial effect in keeping the temperature down. I may say that the case ultimately recovered.

There is no doubt that the wet pack is the most efficient way of applying cold, I generally am in the habit of using it for a short time or continuously according to the condition of the patient and the effect produced upon the

patients. In some of the most severe cases I had it used from a few days up to as many as 20 days according to the severity of the cases.
The way I generally apply it is to have the patient enveloped in a sheet wrung out of cold or tepid water and covered with a blanket, as soon as the sheet begins to dry I replace it by another. I have found it best as a rule not to employ too cold water as the shock to the nervous system is in some cases very great and there is then marked liability to vaso-motor paralysis and internal congestion.
I have in a few cases used the iced water pack, but only in those conditions where there was almost total abolition of the senses, with a general poisoning of the whole system, and where it seemed to me that a decided shock to rouse the nervous system was absolutely necessary.
I am unable to advise the use of the cold bath as a general remedy in this disease, nor have I had any experience with the treatment by the continuous tepid bath, the disadvantages of it appear to me to be very great.

The Dietetic Treatment of the Disease.

There is no doubt that much of the success in Typhoid cases is to be attributed to the line of treatment adopted. It is therefore most necessary to enforce a proper dietary, and to carefully look out for any symptoms or complications that may arise from any injudicious forms of diet, and there is no doubt that great errors are committed, and were more so years before we became so enlightened about the physiological action of food.

I think many lives might be saved if the question of diet was more considered than it is, and to my mind a strong point for this failure is the small amount of knowledge there is shown by some practitioners upon the compositions of foods. I am sorry to say that to some it is quite enough to know that the patient is having a liberal supply of milk, strong beef tea, port wine, and in many cases alcohol literally poured down the patients throat every hour of the day and night from the very day the case was diagnosed as Typhoid.

is it to be wondered at then, that the case goes from bad to worse!
I am quite ready to admit and to recognise the necessity of administering a sufficiency of food to febrile patients, especially with the object of lessoning or compensating for that tendency to destruction of tissue which - and I have no hesitation in saying it - is one of the most serious consequences of fever; but there is no doubt that in large institutions - and I am speaking from experience - the free administration of food and alcohol is far too much a matter of routine, and I am sorry to say very often takes the form of a determination upon the part of the nurse than a discrimination.
How often have I seen the poor fevered lips and parched tongue craving for a cup of cold water, and yet it is denied them, and in all probability get a drink of black beef tea and port wine in place.
From my own Experience then I would say that there should be more discrimination and less routine in the feeding of fever cases, and a better consideration of the fact that food undigested only serves to

intensify the febrile process, and adds to the distress of the patient, and that in giving condensed solutions of nitrogenous extractives we may incur the danger of adding to the already large accumulation of nitrogenous waste in the blood.

I am of opinion that there should be an endeavour to utilise to the greatest extent that is safe and possible for the purpose of checking the waste of tissue which is associated with the febrile process, and I am always careful that no food should be administered that can not be readily absorbed and assimilated, of course the functions of the digestive organs are ~~are~~ gravely impaired during fever, due to a condition of catarrh of the stomach and therefore to give food which the patient is not able to digest is only to result in decomposition in the stomach and intestines, and not only give rise to much local irritation, but will at the same time augment the pyrexial state; thus the desire to force food in the absence of all appetite is only to do more harm than good.

I take it that there is a universal opinion amongst all authorities now, that owing to the interruption of the normal digestion

all food should be given in a fluid form in this disease, such as can be readily and immediately absorbed, and I maintain that it should be given in small quantities and at short intervals.
Now the two kinds of food most generally used in this disease are milk and beef tea. There is no doubt that milk is a very ready and handy food requiring no preparation and therefore gives no trouble, but from my own experience I must say that I look upon this as a danger in itself especially with nurses, and it is a curious fact and one that is little taken into account, and at the same time the one great drawback to the use of milk in acute diseases, is that although it is a fluid food out of the body, it becomes a solid food in the stomach and intestine.
Where it is quickly digested coberated and absorbed I have no hesitation in saying that it is an excellent food, but I am sorry to say that there are many cases in which this is not so, and it is in these patients in which such very serious injury may be done if this peculiarity is overlooked, or even not thought of which is more often the case.

Milk may be a complete food and contain all the elements needed for the nutrition of the body, such as albuminates, fats, carbohydrates, and salines, but I need hardly say that where it has to be given for several weeks as in cases of Typhoid, it fails to meet the excessive tissue waste as a perfect food, this I must say is due to the defective amount of carbo-hydrates it contains, but of course on the other hand it is rich in fat and albuminates, and also in chlorides and phosphates, salts essential to the due nutrition of the tissues. I have therefore for some time past now been in the habit of administ-ering farinaceous foods containing carbo-hydrates, such as finely grated bread, oatmeal, barley gruel, taking care that they are strained from all gritty particles, one of these foods is boiled with the milk to which some flavouring aromatic may be added, such as cloves, nutmeg or lemon peel, and sugar, and I have always found it an advantage to add a small quantity of butter, by this means I find that an adult will get about 15 to 20 ozs of such food and from 2-3 ozs of butter, in the day, and certainly the tissue

waste does not appear to be anything like as great as when the diet consists solely of milk.
I look upon it that the best diet to prevent wasting in this disease has not as far as I am aware been yet found out, but it seems to me that where milk is the only diet, the tissue waste is exceedingly great, I feel therefore confident that if we want to try and lessen this waste of tissue, we must supply a fair amount of carbohydrates, and certainly from my own experience I have been most favourably pleased with the results.
It is also an open question if the present routine dietary which is usually given in this disease, in a large number of cases, consisting as it does almost exclusively of animal products without any vegetable juices does not tend to produce a scorbutic taint, and so favour the tendency to haemorrhage. I have therefore made it my aim as far as possible to maintain a normal condition of the blood and blood vessels and to encourage a healthy reparative action in these tissues.
Milk no doubt is an antiscorbutic

but when it is made an exclusive diet, the blood is not sufficiently replenished with its normal saline constituents, I am therefore in the habit of ordering a powder consisting of about 10 grs of Bicarbonate of soda, 10 grs of Chloride of Sodium, 2 grs of Chloride of Potash and Chloride of Calcium. to be added to each pint of milk.
Furthermore I am always careful that the patient should have no more food than he absorbs as only harm results, in fact I look upon milk as a concentrated food which is apt to coagulate into indigestible curd on entering the stomach or intestines with their acid secretions, I am therefore in the habit of always giving the milk diluted either with pure water, or ice water, lime water or soda or potash water. half and half to which one of the above powders is added, by this means no irritating coagulum is formed when it reaches the stomach, and it is thus allowed to pass into the duodenum in a fluid state.
By this means it will be seen that I add certain necessary salts to the food, which from the absence of vegetable

foods the patient does not get, I also look upon common salt as an excellant antiseptic.

One of my patients craved for days to be allowed a salt herring to eat, I took the hint and added salt to her milk she expressed herself as greatly better, it was not the herring she wanted, but it was the one kind of food which occurred to her mind at the time, which would supply salt to her system, it taught me a lesson in so far that I have always given salts in bad cases since.

I must say that I am not in favour of peptonised foods, their unpleasant smell and taste are not at all agreeable to patients, I think their proper use is for rectal alimentation.

I always say that a fever patient ought to be fed every hour, two ounces of milk with two ounces of some alkaline water given every hour will give 2½ pints of milk a day, which with other forms of food as soups will be ample.

I have myself had several cases of Typhoid in which the administration of milk has not appeared to produce any gastric disturbance, but yet has

set up great intestinal irritation, and the motions have been largely composed of form curd of milk, when this is the case there is not the slightest doubt that this is greatly owing to the fact, that it is given in too concentrated a form and in too great quantity, and that this is really so practical observation has shown over & over again in my own cases, for when the milk is diluted - and why should anyone hesitate to dilute it - with water - and these patients require water and in very much larger quantities than they usually get, and therefore I am in the habit of always giving some of this water in the milk - there is a complete cessation of the intestinal irritation, and an absence of form milk curd in the stools.
I am of opinion that whey ought to be more used than it is in this disease, it is so easily made in a pleasant form by boiling a pint of milk with a few tablespoonfuls of lemon juice, then breaking up the curd and straining through muslin, meat juice can then be added to this, or if an egg be beaten up in boiling water, strained, a fluid is obtained holding in suspension a

considerable quantity of albumen, and so helps to supply the defective albuminate. I look upon Eggs as a valuable form of food which ought to be more used in this disease than they are, and can easily be given beaten up in hot milk and water.

A few words as regards my own Experience of beef tea. I must say I look upon it as it is generally given in this disease, in a very concentrated form, as a source of special danger to the patient, and the best means of setting up septic changes in the intestinal canal in the shape of gastro intestinal fermentation, and not only this I must protest strongly against the amount of sweet port wine that I have known to be given in this disease, and during the acute stage of the Fever, by this line of treatment, and I must say that from my own Experience, it is the sort of routine diet which is ordered in many of the provincial hospitals — a fermenting mixture is formed in the bowel out of which poisonous ptomaines may be the result, Such a state of affairs is thus brought about which must thus jeopardise a patients life from

the fact due to the amount of abdominal distension and tympanites thus produced. As I have already stated that even a fever patient requires so much water, why should not some of this water be given with the beef tea, instead of in the highly concentrated state in which it is generally given, so that patients come to evince the most intense dislike to it. It seems to me to be a mere piece of routine, imagine the fearful monotony of strong beef tea and milk for weeks. Now there are many meat infusions that can very easily be rendered palatable and are infinitely better adapted to serve as food in Typhoid than strong beef tea.

I generally order well made mutton, veal, and chicken broth to which I have added well strained barley gruel, oatmeal, or arrowroot, they make excellent foods and are highly appreciated by the patients, they are in a dilute form, and contain more nutritive materials than the beef tea. And again I often order clear soups, and have vegetables cut up with herbs placed in a muslin bag and boiled in it, they are exceedingly agreeable, they are very readily absorbed and stimulating, and the juices and

Salts of the vegetables add greatly to the food value.
Cold meat-jellies of various kinds are all of special value.
I must say I am a strong believer in farinaceous foods such as thin oat meal, barley gruel, arrowroot, ground rice, added to clear soups carefully strained they are valuable foods to a fever patient.
I maintain that it is an important fact to bear in mind, that there are cases in which there is a tendency to an accumulation in the body of the products resulting from the destruction of the tissues, and that these act as poisons in the blood and that by allowing water to be freely drunk, their elimination is favoured.
To assuage the thirst I always allow toast-or barley water, but the best of all to my mind is to drink lemon water it keeps the mouth clean, and is most grateful to the patient and refreshing.
I see no reason why tea, coffee and cocoa should not be given in those cases where the patients have a desire for it.
As I have stated before every fever patient should be allowed to drink freely of water, and when the temperature is high I give iced water.

Another point with regard to beefta is that it contains little if any albuminates, and from my own practical Experience I am sure that much harm is done by its use in such a concentrated form, as the tissues are undergoing a process of destruction and attempts to build them up are useless at the time.

The only effect of such a diet appears to me is to throw additional work on over-burdened kidneys, and to bring about an inflammatory condition of the organs, and increase the tendency to albuminuria and such is really the case in my Experience of the disease.

In the preparation of beefta, it seems to me that there is considerable waste of material, which no doubt arises from a desire to give food of high nutritive value in small quantities, irrespective of its component parts combined in natural proportion. It is often submitted to prolonged ebullition at high temperatures, when it evolves ammonia, becomes syrupy, loses the property of coagulation and speedily putrefies, this I have convinced myself of practically, and thus its nutritive property comes to be destroyed, hence the dangers to the patient that arise.

Its stimulant action is no doubt due to the potash salts, they in large doses have an injurious effect by their direct action upon the blood globules, and they further prevent the normal exhalation of carbonic acid, and consequently the introduction of oxygen. The salts are out of all proportion to the albuminates, the result being when given, is to increase the thirst, heighten the body temperature, and increase the nitrogenous waste, and 2/3rds of the discarded fibre, termed refuse, being thrown away by many.

I have always maintained that in making beef tea there should be neither refuse or remainder, and after many trials I find that 4 ozs of meat can be suspended in a pint of water and be taken without disgust by the patient. I take it that if a patient receives a pint and a half of such food in 24 hours he gets a large supply of nitrogenous food, and enough for a healthy man at rest.

I have often observed in several cases, that when large quantities of concentrated beef tea have been given there is a condition of torpor and heaviness comes

over the patient, this is generally attributed to the Potash salts, but my own opinion is, that it is due to the excess of nitrogenous extractive matter.
Another point which is not sufficiently considered in Hospital cases, is how very improperly many patients have been fed before they contracted the disease, and it seems to me that there is an unhealthy condition of the tissues and it is the duty of those in attendance to prevent further degeneration.
I must say that I have seen a most wonderful difference, when an antiseptic line of treatment is employed, and a more discriminate diet is used, such as I have tried to explain, from my own experience, that old system of the routine diet of milk, concentrated beef tea, and alcohol was most deadly to the patient, in consequence of the more severe complications, but I can confidently say that although many of my cases were very severe, there was less tendency to hemorrhage, abdominal distension, the wasting of the patient was not near so great, there was little albuminuria, hyperpyrexia was not so frequent, and the "tout ensemble" of

the patient was that of a marked improvement, nor was the metaphor "the shadow of death" so often observed.
When the temperature has been normal for a week or more I generally begin cautiously with fish, chicken, mutton, game, boiled Eggs, bripe etc. If a relapse takes place I am generally inclined to believe it is often due to constipation, than to the use of solid food. Nourishing bitter beer, stout, or a few glasses of port, and there is no doubt that here is the place for stimulating wines such as champagne and port, and not in the acute stage of the fever as some are often wont to hold.
I think that it is highly advisable to keep the patient for a considerable time upon light diet. Two or three cases falling under my own observation go along way to prove the evil results following too early a return to a meat-diet have caused me to regret allowing any case to return to the ordinary diet till some time has elapsed, in fact I have come to regard it with great dread, as an Example one case took a substantial meal of roast mutton upon his return home

he did this in opposition to the advice I gave him, gastric and intestinal hemorrhage followed and death took place in 3 days. Another case after a meat diet had perforation and died. These two cases sufficiently go to show I think what very great care should be exercised for some period after the temperature has been normal.

The question of alcohol in this disease is one upon which a great deal of controversy of opinion has been raised lately, and is therefore a very difficult matter to decide. I am strongly of an opinion that no definite or routine rules should be laid down, but that each case should be taken upon its own aspects. I am fully aware that there are lots of cases that require no alcohol from first to last; but at the same there are also others which require a little even early in the disease, but to order alcohol in large amounts because it is a case of Typhoid, quite apart from the good or evil which will arise, - and it is generally the latter - I must strongly condemn, as it is

absolutely dangerous to the patient. I have myself seen more than one patient suffering from the over dose of alcohol, which was regarded as the delirium from the intensity of the fever.

I am never in the habit of giving alcohol in the early stages of the disease, but only prescribe it when the severity of special symptoms indicate it, nor am I in the habit of pushing its use when the temperature rises, with a disturbance of the heart's action, increase of delirium restlessness, or a certain state of drowsiness, or if the urine contains much albumen.

It is a fact worthy of record that since I have used drugs for intestinal antisepsis I have used little or no alcohol, the conditions of the patients not requiring it, this I look upon as a marked improvement in the treatment of the disease.

In my earlier cases not only was the amount of alcohol, from, much greater, but the death rate, was also higher. the complications were more serious, and the duration of the fever was longer, and I look

upon this being due in a great measure to the fact that no antiseptic treatment was used, and therefore the high rate of mortality was due to not only the more serious nature of the complications, but also to the then excessive use of alcohol which given to buy, and combat them.

From my own Experience I state, and with no hesitation that to give alcohol to children is most injurious, and the very small quantity which is required to produce symptoms of intoxication in them, indicates that they absorb it rapidly, and tolerate it badly.
Nearly all the good effects of alcohol where it is indicated are to be obtained by 4. 6. or 8 ozs of brandy in 24 hours, and I maintain that it is only in exceptional cases that more than 12 ozs of brandy in the 24 hours can be taken without inducing some of the worst symptoms of prostration.
But I think that there should be no hesitation as regards the use of alcohol when such clinical symptoms as the following manifest themselves.
A low muttering delirium passing into

stupor, with coma vigil present, derangement of the senses, with hallucinations of sight and hearing, urine and faeces passed unconsciously, there is also great muscular weakness, the patient lies on his back, and tends to sink down to the bottom of the bed, the lips and gums are covered with sordes, and the tongue dry and black, subsultus tendinum is also generally present. The pulse frequently running, small, weak, and irregular, the heart's impulse greatly weakened, the first sound almost or quite lost at the apex, the skin dry, high temperature, and there may be lividity and tendency to ecchymoses the breathing hurried and shallow, and may take on the type of Cheyne Stokes. I am glad to say that such a clinical picture as I have portrayed above is not often seen now, in fact where an antiseptic treatment is adopted, I feel certain that such a state of matters could not exist, and therefore I have no hesitation in saying that the progress that such a line of treatment is making amongst physicians in all parts of the world calls for special attention, and in addition I would say that observations are getting more numerous, and results

more favourable. I do not wish to lay any special stress on any particular way of carrying it out, as perhaps the best mode has not been arrived at yet: But I think that I have been able to make it clear that the possibility and the duty of maintaining intestinal antisepsis in the treatment of this disease is quite shown as the result of clinical Experience, and that it certainly brings about a lower death rate, and that this being so I state that it is our duty to follow in the antiseptic line, and that by so doing we shall not only promote the credit of our Science, but at the same time by diminishing very greatly the mortality from this disease, we shall be conferring an immense benefit upon suffering humanity.

The following Table will show the very great difference in the modes of Treatment of the cases under my care.

	deaths.	Days of fever.	Days of relapse.	Days in Hospital	No. of patients treated.
Ordinary Treatment.	9.	40·6.	10·6.	60.	110.
Antiseptic Treatment	2.	24·3.	1·7.	40.	90.