A Consideration of the General Intoxications
which may result from Bacterial Invasion
during the Puerperium.

with illustrative cases.

by,

William Hugh Hill.

(M.B. C.M. Ed. 1896).
A Consideration of the General Intoxications which may result from Bacterial Invasion during the Puerperium.

Part I. Retrospective.

Among all the advances made in recent years in the scientific method of dealing with disease, surely one of the most outstanding is the introduction into midwifery practice of those principles by which Lister has revolutionized the art of surgery.

"In his normal organism" Bacon has said "Ignorance of a cause depresses the effect; and this aphorism is strikingly borne out when we come to consider the earlier means taken to correct the disease known as 'Puerperal Fever'. Perhaps in no branch of practical medicine has ignorance of the cause led to more disastrous results than in the method of dealing with acute puerperal cases, before the introduction of antiseptic precaution.

It is interesting to the respect to glance at the views held by Enynens and eee with respect to the Cause of modes of treatment of such cases - to see how various symptoms, complex.
2.

...ations, and sequence of acute infection were seriously regarded as causes by different observers, and how they treated their cases accordingly.

The term "Puerperal Fever" was first applied to the condition by an attempt to consider, about two hundred years ago by Trotter in his work on fevers published in 1716.

The earliest work on the subject to which I have been able to refer is that of Finckland published in 1754. Even at this early date he seemed to have a more comprehensive idea of the nature of the disease than some of his successors nearly a century after him.

In the Preface to his work he opens thus:

"Every fever which arises from any disease in consequence of pregnancy or delivery, and happens during the time of lying-in, may properly be called a puerperal fever, though some writers use the term by way of emphasis to distinguish a particular kind of fever from the milk-fever, or any other incident to women after delivery, because as they tell us "the Puerperal" is the most dangerous of all children-fevers."
However, if by the general term they had particularized any one disease incident to pregnancy in women, it might have answered a good purpose; but the fever arising from an inflammation of the uterus, or from absorption of uterine blood from the peritoneum of the same kind, and as violent and dangerous as a fever which happens to childbed women from an inflammation of the abdominal viscera, or from an affection of the uterine effusion at extra. Most of the symptoms accompanying it are common in all these disorders; even the continuance pain and soreness of the belly, which are said by some to be characteristic of the feverish fever, are common to serious diseases in childbed.

And continuing he says, "Suppose we find the uterus free from modification or the appearance of a diseased state, it does not follow that it has not been concealed in bringing on the appearance we meet with in opening the other body. Observe not the suppuration in the chest and in the abdomen often the consequence of the inflammation following amputation limbs. In cases previously discussed? Yes. After death,
there having been a discharge, the late look 
false, and has not the least appearance of being 
her instruments to do much injury."

In his opening chapter, after reference to 
several cases, he continues—

"From all which Causers it is evident that 
an inflammation of the uterus, and a con-
sequent absorption of putrid matter from 
the part, will bring on what is now called the 
"periperal fever; and that the inflammation 
of the abdomen is frequently the Con-
sequence of the fever thus brought on."

In this latter paragraph he totally discount-
ences the idea that the disease can possibly 
be the result of the non-secretion of milk, and 
describes that phenomenon to be the effect of 
rather than the cause of Periperal fever.

Again, speaking with regard to the Causion, 
he says: "But there are other causes besides (4) 
inflammation which bring on a Periperal 
fever; for it sometimes happen the compressed 
blood lodges in the uterus after delivering and 
putting from access of air, forms a most 
acute passion; in it part absorbed, and 
ends on a fatal fever. . . . . . . . In like manner (5)"
when a fever arises from part or all of the afterbirth remaining undelivered, the symptoms of danger appear till puerperal fever takes place."

In dealing with the treatment of this condition he says, referring to Case XXIII which he has just previously described, "I should never have been glad if the uterus could have been washed out with antiseptic injection; but this is scarce from a variety of obstructions, so seldom practiced. "He had been attending, just previous to the case, a man who was suffering from a punctured wound of the thigh. The opening was made to let the amount of damage beneath the skin be considerable. The wound became unhealthy & the trouble is by draining and washing out with a mild antiseptic. Struck by the rapid improvement in the patient's condition, the idea occurred to him that if he were to employ a similar line of treatment in the case of the woman he might have corresponding improvement.

In his third chapter, dealing with the means of preventing childbirth fever, he strongly condemn interfering in cases of normal labour.
and especially the practice of removing the
placenta forently. It remarks—

"Indeed I have wondered how to describe a
practice so difficult to introduce, the labor
the uterus immediately after the birth of the
child to remove the placenta, I could ever have
seen place. .......... There can be no doubt
that more danger is to be apprehended from a
lossy bringing away of the placenta than by
any other part of the process of delivery; not
only because small portions may be left behind
capable of bringing on a particular fever but
because more room will be left in the uterus
for blood to lodge and coagulate, and to
the source of future mischief."

"The immediate contraction of the placenta
was the practice in fashion when I was
paid to Dr. Snellie; I think I have seen it
and lately even in the lands of those who
frequently performed the operation."

However he daily recognizes the possibility
of "retained placenta", and in the "regular" he says

"If in such a case the whole afterbirth is left,
the consequence is still more likely to favor
fetal in their with the a greater degree of"
Intemperance; and therefore removing as much of it as possible, in this instance, seems of two evils, to be choosing the less.

And he further adds, "I have observed, if blood

lodge, and congregates in the affected districts of the

lungs when the pleurisy comes away before

the ulcer has had time to contract; which is

another proof that we should not be over

hasty in allowing it."

One way to prevent this is by

liberally quoted from the best interesting

and useful work. Kirkland's ideas, however,

were far in advance of the prevailing opinion

of the profession at the time, which he lived,

and his views, more so as they approached to

the truth, were not adopted by those who

followed him. This is amply borne out by the following taken from a work

published in 1876. The author, Dr. evening

purposes fewer, introduces this subject thus:

"This species of fever is so rare imports

especially to women in childbed, and is

usually the most fatal of all the disorders

to which the live is liable. But notwithstanding
of the prevalence of it in all ages, its vital nature
has remained to the present time a subject
of much dispute and uncertainty.

It is proceeded, like other fevers, by a
rigor which is commonly most violent, and when
attaining during the time of labour, may be
confounded with the pains of parturiance.

In whatever stage of the disease a favourable
termination may happen, it would seem as
if the commencement of the patient's recovery
were not marked by any critical resolution
of the fever as depending on an alteration
of the humours, but that the cure is generally
effected, either by a spontaneous lodging,
or a long-continued exchange by stool of
the phlegm or rather, the existence of which
in the stomach is usually coincident at the
first attack of the disease.

Dealing with the Cause of the Disease the
article continues: "The most immediate Cause
generally described by authors, are a
stoppage of the perspiration, the hot face
and body, the retent of febrifuge drugs
after delivery, sudden frights, too rapid a
separation of the placenta, and finding the
abdomen too tight." 

Within these few years the fever has been treated by several writers, most of whom have differed from each other in their sentiments of the nature of the disease.

Denman, whose work was published in 1815, viewed phthisical fever as a febrile disease, which presented many modifications but which he did not attempt to classify, and the cause of which was quite unknown; but he suggested that it might be due to "a redundancy of the great aery of the side, the secretion of which appears to be much entangled in the line of generation."

He, unlike many of his kinsmen, was opposed to bleeding as a means of treatment but strongly advocated both purgation and enemas. He gave 3-6 grs. doses of a powder composed of "Two grains of tartar and antimony rubbed up with a couple of the powder of Sepilll Cancerorum," when the disease showed signs of abating, he used Salvis, fructus, and also Thubert and magnesium.

Hannay, who also wrote a treatise on the fever, in great part agrees with his
Previous mentioned author's statement.

Dr. Dulme expressed in his opinion that "the proximate cause of feverous fever is an inflammation of the intestines and omentum," and for the Confirmation of this he appeals to post-mortem examination.

He describes this as the result of the tension of the gravis uterine upon these parts.

"The omentum" says he in the latter stage of pregnancy is at times like a flax, which in its natural situation, or be crumpled or carried up by the gravid uterus in folli or drapery when the securd, it is thought not infrequently the danger of a strangulated Circulation will be greater.

This view was called forth the objection that if the hypothesis were true one would expect to meet with the disease before rather than after delivering, and would reasonably anticipate the condition to be relieved by the removal of the Cause.

For sake prescrib'd work upon the subject base upon his observation made in 1768-1779, but especially in reference to the study he had made of it during its prevalence.
in London from December 1769 to May 1770. 

This view was that "Now and then it seemed to be occasioned by catching cold, or by some errors in diet; but often by anxiety of mind." The first two, at any rate, of these causes are still regarded as factors affecting by a large proportion of the lady of today.

Proceeding to discuss the clinical phenomena associated with the disease he adds: "The loss of strength was so great, that few of the patients could bear in bed without assistance, even as early as the first or second day after the attack. The cattle, from first to last, was not obstructed, nor deficient in quantity, colour and the quality of the discharge seem to be the lead altered from its natural state; a presumption that the disease was not at all affected." Of this point he was convinced by making considerable pressure above the pubis with the hand, which always caused pain; but when the same degree of pressure was applied higher, between the stomach and umbilical region, it became almost insupportable.

...... Where the disease proved mortal, the patient usually died on the 10th or 11th day.
from the first attack. In those who died of the fever the omentum was found suppressed; an inflammation of which part or of the intestines to Leake, concludes to be "the forerunner Cause of the disease."

While of Manchester, a little later (1791), he believes the disease to be due to a protopathic tendency of the humour and advocated a cool regimen and free access of pure air to the patient, and also favoured, as far as possible, the upright posture; this idea doubtless being that firstly drainage would be more free from the uterine cavity, and in addition the rejection of any phlegmasia or exudate into the uterus. This idea, however, has been held by any better reception than and those of Denman obtained nearly twenty years previously.

Ligation may also be made if Thores Young Professor of Midwifery in the University of Edinburgh who, in an address to the Philosophical Society, states that:

"Suppurative fever, strictly so called, is i..."
Every instance the consequence of contagion 
de the fact that: “the contagious matter of this 
action is capable only of producing its effect 
in consequence of a peculiar disposition 
given by delivery and its consequence.”

And in support of this leading he remarks
that “for many years the disease was
altogether unknown in the Lying-in Ward
of the Royal Infirmary at Edinburgh, and
after it was once accidentally introduced
into the hospital, almost every woman was
in a short time after delivery attacked with
it. Although prior to her delivery the new-born
child been five weeks together, not only to the
same wards with the infected, but even in
the very next bed.” And he further states that
“it was only eradicated from the hospital
in consequence of the wards being entirely
emptied, thoroughly ventilated, and
heavily painted. After these processes.
fourteen females on the hospital remained
as free from the disease as formerly.”

The reluctance of the profession to adopt
the epidemic theory of the disease was again
disproved more than fifty years later when
Semmelweis showed the possibility of producing the disease by poison conveyed on the fingers of the attendant, who had been engaged in postmortem work. He later states his opinion that any putrefying organic matter, and especially the discharges from women who had expelled children, was capable of producing the condition.

Notwithstanding the fact that he showed that he had by antiseptic methods reduced the mortality from 16% to 1.27% in an epidemic extending over a year, the principles he advocated were rejected by his contemporaries.

It might be expected, when the opinions held as regards the true nature of the disease were so opposed and various, the methods adopted in treatment fell a corresponding variety and diversity. Some maintained the bleeding was essential while others with equal rejoins condemned the use of the lancet. One section placed their reliance on the use of febrifuge, another advocated the employment of electrics, and as was to be imagined, others again contested the various modes.
But unfortunately, whichever of these means or combination of them was adopted, the disease generally terminated fatally and it is possible that, in a proportion of the cases, the patient may have suffered equally from the treatment and from the disease.

Coming down to more recent times, we find in the early sixties of the last Century, just previous to the dawn of antibleptic days, there diversity of opinion on this all important topic was even the rule rather than the exception.

Matthew Duncan in his book published in 1873 quotes from the Monatschrift für Gehirnkrankheiten (Aug. 1864, p. 55) the replies to the following question:

"Is the contagious origin and extension of fever from epidemics certain, probable or possible, according to the present state of science?"

The answers to this question are most interesting as affording an idea of the opinions held by high authorities at that time regarding the nature of fever. These replies were as follows:
"There is no doubt of the origin and extension of purpura fever by contagion (Oppolzer, Skoda, and Rokitansky of Vienna).

In the development and propagation of purpura fever, the chief thing is a predisposition produced itself in the individual, to different and transient forms of inflammation; from it alone, without contagion taking place, purpura disease may occur. At local septic infection, this is contagion, first takes its appearance when the epidemic has reached a certain degree, and the contagion a certain intensity of efficacy. On an individual not predisposed, contagion may continue tooad.

(Bichow of Berlin).

"Purpura fever consists according to the meaning of the words, in a disease of the blood produced by infection with decomposed animal matter. Infection generally comes from without; more rarely it is self-infection. The contagiousness of purpura fever (by inoculation of specific products) must be denied; on the other hand, inoculation by means of animal or..."
"Catauresic poison may be well admitted."
(Lange, q Heidelberg.)

"Puerperal fever, like hospitals gangrene, is produced by noxious effluvia."
(Hecker, of Munich, and Schwarz, of Potsingen.)

It was with the object of defending our maternity and lying-in hospitals against the attacks they had been made upon them, at the time that Matthews Bunyan published his book "On the Mortality of Children and Maternity Hospitals."

In this work he brings forward arguments and statistics to dispel the belief that had been held by Le Fort that while the mortality in maternity practice in private was 1 in 212, yet in hospitals it reached the enormous proportion of 1 in 29.

Bunyan states that: "The mortality from puerperal fever following first labours is about twice the mortality from puerperal fever following all subsequent labours taken together," and Le Fort remarks that, "as the number of a woman's labours increases above 9, the risk of death from puerperal fever following..."
labor increases with the number."

He denies that the mere duration of labour
for 24, 95 dangerous to the mother, or that
the aggregation of women in a hospital
favors to relieve the mortality.

In his ensuing the occurrence of
Puerperal fever in hospitals and in private
practice he says:

Puerperal fever, or metritis, is to be a
bleed of insufficient and false hypotheses.
I do not believe that there is any such thing
as an endemic. I feel certain, and believe I can
prove, that an Epidemic of Puerperal
fever never occurred. .......... Both doctors
and people seem ignorant of the fact that
there is a regular and practically constant
mortality from puerperal fever all around
them.

The clinical that the disease is "preventable."

Horace Barlow in 1874 published
his work on the Puerperal Disease. In
his area series of clinical lectures he
broadly divided the opinion of his term into
four closures.

The first includes those whom he terms the "Locality" who hold that the primary factor in the disease is an inflammation of one or more of the generative organs or uteruses, and that the fever and other phenomena are subsequent or secondary to the primary local inflammation.

Among those who adopted this view were

Inrigs, Hattie, Beau, Jacquemin, Prof. Pajot, and Beane of Lyons.

The second group includes those whose views most nearly correspond with the modern teaching and who held that the puerperal fever was analogous to surgical fever and the more grave forms were identical with septicemia and pyemia.

This group includes such eminent names as those of Sir J. G. Simpson, Cruveilhier, Raciborski, Harvey de Chevigny, Piissy, Bouilland, d'Espinose of Paris, and Spiegelberg of Berlin.

Dr. James J. Simpson in a paper written in 1853 clearly brought out the analogy between surgical and puerperal fever.
"I. The anatomical condition & constitution, peculiarities of those who were subject to them."

"II. In the pathological nature of the attendant fever."

"III. In the morbid lesions left byilder absence."

"IV. In the symptoms which accompany lack infection."

Prof. Schroeder of Erlangen defines
"feverless fevers as all those diseases of
"feverless women, which are caused by the
"absorption of septic matter & lead to it
"being "nothing else but poisoning by said septic
"material from the genital organs."

The third class were those who held
that the disease was an "essential" or symptom
fever, and was produced by epidemic, endemic, & contagious causes, and
they, as opposed to the localists, considered
that any local manifestations were secondary
to, and not the causes of, the genuine fever.

This was the view held by Fortner Barker
himself & was the position he took up in a
discussion on the subject held before the
New York Academy of Medicine in 1857. This opinion was also shared by Prof. Dr. Smith at the same meeting.

In the debate at the meeting of the French Academy of Medicine in the following year, who was also the new head of Guérard, Dubois, Defrance, and Bengau.

Among others who agreed with the teaching may be mentioned: Lorcq (1855), Tarsia (1858), Monnet, Isburg, Fox (in a paper on diseases occurring in the General Lying-in Hospitals of London 1833-1835) Ivory Kennedy of Dublin (Hospital Lympic Diseases) and W. Clinton of Dublin.

In the fourth group contained those who held that puerperal fever was not a separate Syphitic disease, but that under the term were included all the Syphitic diseases such as: Scarlet fever, Syphilis, Malignant Syphilis, Syphilis Hospital, Gangrene, Leptoceraemia and all severe primary inflammations, when they attack a woman in the puerperal state.

The Conception of the Disease to one which was shared by many of the obstetricians of
Great Britain, including, Tyler Smith,
Robert Barnes, Brandon Hicks, Nate Davis,
Graeley Hewitt, W. Playfair, Lynn Williams,
& Steinman of Glasgow.

In his book on the Rueperpea diseases, Rusper
Smyly comes up to conclusions thus,
"If there be a fever which is peculiar to
Rueperpea women and is therefore appropriately
damed Rueperpea fever."

II. "The symptoms of this disease are
Essential are not the consequence of any
local lesion, and it is as much a distinct
Disease as typhoid fever, typhoid fever, or
Relapsing fever.

III. "It belongs to the Class of Lynotic Diseases
and results from some unknown blood change.

IV. "We are ignorant of the specific
Causes of these blood changes, as we are
of those which develop Relapsing fever,
Scarlet fever, or any of the other Lynotic
Fever."

V. "The determining cause of this Fever
May be either Epidemic influences, Contagion,
Infection, or probably parasitical Materia."

VI. "Every of the local inflammations may
occur in the purpuric woman without purpuric fever, and on the other hand, purpuric fever may be so severe as to destroy life without sufficient local disease to account for the symptoms or explain the cause of death."

VII. "The specific cause which develops the exanthemata such as scarlet fever and smallpox may develop the specific disease with intense malignancy in the purpuric woman, but this does not transform the disease into a purpuric fever."

VIII. Septicaemia may be developed in a purpuric woman either from auto- or hetero-genetic or hetero-genetic injection without purpuric fever, but the infection may also complicate purpuric fever."

It may be urged by some that the study of exploded theories and hypotheses, and of old and abandoned modes of treatment, is only so much time wasted and can be productive of no good, but the road which leads to knowledge is one which has many turnings and by-paths along which we may wander only
In order to gain some idea of the appalling mortality associated with purpurea fever, we have to depend almost entirely upon the figures furnished by hospital statistics.

The estimates of the mortality in private practice of earlier years were especially liable to errors, and even under the present system of notification and registration it is to be feared that the figures are not altogether to be depended upon. Most especially is this the case in matters when we try to ascertain...
the actual number of cases of puerperal fever that occurs, for even if all the cases that are fatal or are properly regarded, it is almost certain that a large proportion of the cases that terminate favourably are never ascertained. To quote from Matthew Duncan,

"Medical men are mortal, and have an indisputable tendency and an inalienable right, to say nothing of what looks like a want of success."

Matthew Duncan states that it is impossible to get any idea of what the mortality from this disease in normal practice was—a statement with which Longly fully agrees. While Mr. Clifton estimates the death rate from puerperal fever in normal to not less than 1 in 100.

Turning to the records of some of ourlying-in hospitals in the early part of the 18th Century, a time at which the death-rate from puerperal fever was probably higher than at any other period of the world's history, we find the following startling results.

In the Hôtel-Dieu at Paris 38% of the women delivered died from the disease.
occurring in London in 1768-1770 the
paucity of some of the Hospital's New Year
early every woman admitted died.

Although the improvements in sanitation
and general cleanliness of the institution
in the earlier part of the 19th Century were
accompanied by some diminution in the
death rate, yet it was not till the intro-
duction of antiseptics into obstetric practice
in the year 1870, some 80 years after
their adoption into surgical practice, that
we find the contrast marked.

Prior to the year 1877, the General
Lying-in Hospital in London had rarely
been free from puerperal fever and
at times the mortality was enormous.

Thus in 1858, of 71 women delivered,
14 died; in 1861, fourteen died out of 175,
while as late as 1877, 9 deaths occurred
out of 63 deliveries. Repeatedly had the
hospital been closed and hundreds of
pounds had been spent in cleaning,
painting and in the attempt to rid it of
the evil influence which seemed so
inseparably associated with it.
In October 1879, after having been closed for two years, the hospital was once more opened, and from the date antiseptic details were carefully adhered to. The results of this were the gathered from the following figures:

<table>
<thead>
<tr>
<th>Year</th>
<th>Admissions</th>
<th>Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>1883-1886</td>
<td>5,833</td>
<td>0.68%</td>
</tr>
<tr>
<td>1881-1877</td>
<td>3,773</td>
<td>1.69%</td>
</tr>
<tr>
<td>1880-1884</td>
<td>2,585</td>
<td>0.61%</td>
</tr>
<tr>
<td>1884-1889</td>
<td>2,150</td>
<td>0.41%</td>
</tr>
</tbody>
</table>

Boehr gave the following continental figures:

- Berlin: 1861-1874, Mortality 1 in 154.
- Prussia: 1859-1875, 1 in 125.

Others in the Record of the Berlin Statistical Registry give the mortality in

- Berlin: 1877-1896, 1 in 250.
- Prussia: 1582, 1 in 200.

Clement Dodson gives the figures of the City of London Lympne in Hospital for the five years 1892-1896. Out of 2,932 admissions, there were only three deaths - 2 from Relapsis, and 1 from Pulmonary Embolism (iron septic). (It is of course after the introduction of antiseptics.)
The statistics furnished by the bacteriologist in Paris show that the mortality from fever and feverous fevers has been reduced from 9.9% (during the years 1858-1870), to 1% (in 1881), and has since dropped still further, while the records of the Foundling Hospital at St. Petersburg indicate a decrease from 3.7% before to 0.7% subsequent to the introduction of antipycnics.

The contrast exhibited by the return of these various situations since the recognition of the bacterial factor in the disease and the practice of modern methods, is as gratifying as it is striking.

But it is highly probable that the decrease in the death-rate, however marked, is not nearly so conspicuous as the diminution in the total number of cases which become septic — in other words, it is the prophylactic treatment of to-day which has been mainly instrumental in reducing the number of deaths from pyrexial fever.

Encouraging as these results are, you know that we know the cause of the disease and the manner in which it may be avoided.
we cannot but confess that even the figures furnished by modern statistics leave very much to be desired.

Taking the returns of the Belvedere Fever Hospital, Glasgow for the period from the end of October 1897 to the beginning of June 1899 we find that out of a total of 57 cases of puerperal infection admitted 31 proved fatal - a mortality of over 54% among cases actually infected.

In the returns of the Registrar-General for Scotland for the month of March of the present year (1900) we find that 4185 births were registered in the 8 principal towns while 12 deaths were recorded from puerperal fever - a number exceeding the total deaths from typhoid fever, and greater than half the deaths from septic fever in the same area for the month.

The difficulty does not lie in the amount with the cases conducted in our maternity and lying-in hospitals but rather in those cases which occur outside our general practice. Midwives in such institutions are practiced under conditions differing
totally from those which surround
Exterior Cases. The environment in the
former is, as a rule, all that could be
desired: ventilation and sanitary arrange-
ments are perfect, and everything that the
Patient comes in contact with is "clean" in
the surgical acceptance of the term, while
the accoucheur has every facility for cleansing
his hands and instruments, and intelligent and
trained assistance when he may require it.
In the other class of cases, on the other hand,
how often the surroundings of the Patient
are deplorable, and how difficult it is some-
times to attain even a moderately clean
atmosphere in which to work on his hands.
In confinement may, and often does, take
place amidst the utmost squalor and
filth—in ill-ventilated and over-crowded
Dwellings, the Patient in many Cases hearing
her ordinary electric, offensive and foul to
the last degree. The difficulties one has
in practicing apathetic midwifery under such
circumstances are great enough, but they
are often increased tenfold by the
Presence of some, doubtless well-meaning, but
ignorant, injudicious and interfering person in the shape of a "midwife", whose only qualification for the poor may be that she herself is a mother. Many times to the practitioner called to cases where he finds that this "attendant" has prepared the way for further trouble by making a Magnus Examination (!) with too great precautions than smeared her fingers with nencia bata.

It is extremely probable that if an analysis of the opinions of general practitioners could be taken to ascertain what class of cases causes them most anxiety, the majority of replies would almost certainly be "purposal fever.

Only those who have been unhappy enough to encounter such cases can know and appreciate the mental strain under which a conscientious medical man works, who has a "purposal care" "go wrong" on his hands. Let a man starting to practice have his first midwifery case or go septic and he will probably find that it means ruin to him as an accoucheur.
But even when all is said, it is to be feared that medical men themselves are not altogether free from blame, and it is a question whether the very grave importance of attention to details is fully brought home to some of them, until they have learned by sad experience the terrible calamity that may result from, say, it queer so little, want of care at such moments.

In all but an infinitesimal proportion of such deaths, one can see the inference to be drawn is that "someone was blUNDERed"—it may be the medical attendant or it may not be, but while the facts remain, & in whatever direction the truth may lie, he generally has to bear the blame.

The practice is with such a subject can elicit in constant dread of the worst. Confinement, the attendant said it would follow a similar course, and this naturally raises the question of the propriety of attending other maternity cases while one has a case of mushroom fever on hand. Often in calving & isolated country practices there
Can only be one solution to the difficulty, but the question can only be properly answered by solving the mystery of the source of the infection, and it is the duty of everyone who encounters such infected case to investigate them in every way in his power, in order that he may if possible determine from what direction the mischief originated, and to take suitable steps to prevent its recurrence. If such precautions are taken and thorough antiseptic methods are followed, it is probable that the risk of carrying infection from one patient to another is not very great.

The following paragraph taken from one of the leading standard works of today is worthy of notice and calls for comment:

"The satisfactory explanation however has as yet been offered of the extreme susceptibility of temperate homes to the influence of pathogenic microorganisms. It is clearly not their absorption through the skin or continual in the genital tract, which is alone at fault. Such trouble..."
Continually occur in women who have undergone operations about the vagina and uterus. When micro-organisms must be present in the are after delivery, and yet holding and analogous to puerperal fever."

This paragraph resolves itself into the question: why is a woman immediately after delivery more susceptible to septic infection than a woman, who though not recently confined, has just undergone an operation on the genital tract? But this evidently presupposes an affirmative answer to the question. Is the former case more susceptible to such influence than the latter? Clearly, the answer must in a great measure depend upon what is implied by the expression "operation on the genital tract." Some operations in this region are of a minor character and can hardly be said to carry with them a great risk of septic infection. We get a more perfect analogy if we compare a puerpera with a woman
Who has recently had a large sub-
smear fibroid removed from the
uterus by the process of Enucleation.

There we have in both cases an increase
in the area of the genital tract, due to
increase in the size of the uterus, asso-
ciated with a solution of continuity of the
external surface of the organ, manifested
in one case by the area of placental
insertion, and in the other at the portion
of the organ from which the fibroid
had been Enucleated, the base-like "capsule"
with its large cervix remaining behind.

In both instances there is an hypertrophy
of, and an increased vascularity in,
the mucous membrane of the uterus.

It is well recognized that the danger
in this operation of Enucleation to the
risk of Sepsisiaemia Developing.

Although the circumstances in the above
conditions cannot be regarded as causal,
of, yet we can consider them as
pre-disposing towards, Sepsisiaemia,
since we have to deal with the formation
of a relatively large raw surface in a
Highly 20.0 causal state, and which from its nature does not permit of healing by
first intention.

Again referring to the comparative risk
of sepsis after postpartum & after
operation on the genital tract, what
Gynaecologist would how undertake any
operation on the region with so further
precautions against sepsis, than such
as are so often employed in everyday
practice as Confinement Cases—probably
Consisting in no more elaborate pre-
parations than merely dipping the
hands into a solution of some antiseptic?

Surely to those facts, apart from other
considerations which will be dealt with,
the Line at any rate to some extent, an
Explanation of the risk a pelvicural woman
runs from sepsis.

**Part III—Anatomical, Physiological, and Physical.**

It is very essential to keep prominently before
the anatomical structure and relations of
the parts with which we are now concerned.
The arterial supply of the female
generative organs to the shown (Fig. 1) in
the photographic reproduction I have made
from Hyrtl's well known plates.

The ovarian artery (br. of the aorta) is seen
courserg along the upper border of the broad
ligament, supplying the Fallopian tube and
ovary and splitting up into other branches
on the surface and sides of the uterus.

We also find the uterine artery (br. of
Int. Ves. or Int. Iliac) running in the broad
ligament towards the Cervix uteri which part
of supplies 8 branches upwards to communicate
between the branches
of the ovarian supplying the body of the uterus.

The uterine arteries (g.) as a rule are also
found to have the same origin as the uterine
to-day arising irregularly from the ovarian,
artery itself or from the middle Thaomordial.

In combination with its fellow on the opposite
side it forms the hypogastric artery of the leg (h)

Branches of the Internal Pudic supply the
external genitalia.

The whole of these arteries unite to form an
Extremely rich anastomosis in these organs

Leg II and Leg III (after Ueda) when the bimammary

...
MUCOUS MEMBRANE OF CERVIX.

The surface is folded forming the "arbor vitae," and is covered with a columnar-ciliated epithelium. The racemose glands of the cervix open into the recesses. The connective tissue is very vascular, and there is no demarcation between the mucous membrane and the muscular layer.

Vertical Section through Mucous Membrane of Body of Uterus.

- Columnar epithelium (cilia not represented); gg utricular glands; et et interplancular connective tissue; ss blood-vessels; m, m muscular wall (considered by some to be a muscularis mucosae).
of the normal mucous membrane of the Cervix and Body of the uterus respectively, which condition is enormously increased in the pregnant state.

The arrangement of the different blood-vessels of the Pelvic organs is an extremely complex one. The bladder, rectum, ovario uterina, and vagina have each an intricate plexus associated with them. (Fig. IV)

The vaginal plexuses are two in number, one outside the muscular coat and one in the utruncreal tissues.

The uterine plexus terminates in the ovaries, while the Pampiniform or ovarian plexus lies within the fold of the broad ligament, communicates with the testicular vein, passes into the Inferior Vena Cava.

In addition to these, extensive plexuses are found under the Peritoneum and in the Broad Ligament.

The plexus surrounding the lower part of the rectum opens by means of the Superior Haemorrhoidal been into the Portal system in the way establishing a communication betw. the Pelvic and Portal venous systems.
Fig. IV.

The Venous Supply of the Female Generative Organs - (Huschka).
The venous system is shown in Fig. 4.

(After Suckling.)

Attention may here be made to the condition of the blood. It was formerly believed that during pregnancy a condition of pallor existed and so strong was this belief that amnecese was often performed to relieve the associated symptoms. Gradually, however, it came to be recognized that these symptoms (headache, palpitation, shortness of breath etc.) could be equally well, if not better, explained on the ground of there being a condition of anaemia present rather than feblhosis. It was found that while the total amount of blood was greater, yet it was relatively less rich in albumin and red blood corpuscles, but fibrin & transudate were increased.

Cageauw considered the condition as analogous to chlorosis. Willcocks of London, however, showed that while in Chlorosis the haemoglobin was diminished, yet it was the individual cells that were less rich in the constituent, but that the diminution was due to the decrease in the number of the red cells relative to the volume of the serum.
Thudston, as the result of his observations, found that in the majority of cases, evacuation of foetal blood showed the formation of fibrin to be excessive and early, and to result in a leukocytosis as invariably present.

During the first two days of the puerperium the number of red blood-corpuscles is still at a minimum; after the 4th day a gradual rise is observed. It has also been stated that there is a slight reduction in the haemoglobin, with an upward tendency during the puerperium. An important feature which he records is the leukocytosis forcible during the puerperium, averaging according to his observations from over 25,000 per c. m. on the first day to between 10,000 and 12,000 per c. m. about the 10th day. This leukocytosis (chiefly in the polymorphonuclear variety) he believe is probably the direct result of the fibrin, secreted in the maternal blood during pregnancy. The diagnosis will be made clear by the prolonged duration of leukocytosis.

The disposition of the lymphatic system is of no less importance than the haemorheology, and is considered.

The lymphatic vessels of the external genital...
and of the lower fourth of the vagina open into the inguinal glands. Those of the upper third fourths of the vagina, along with those of the cervix and bladder, (according to Tappay) open into the hypogastric glands which lie beneath the peritoneum, between the external and internal iliac vessels;—according to Le Barr, they pass to the obliterator gland (Gland of Culmin).

The lymphatics from the uterus join those of the utricle and Fallopian tube and open into the lumbar glands.

The great richness of the vascular supply and the course of the lymphatic vessels, are factors of the highest importance in the consideration of septic processes involving this region. They give us an indication of the extreme danger which may result from the introduction of poisons into blood in the locality, and of the course by which such poisons may be absorbed, and in a manner prepare us for the effects immediate or remote which may follow such absorption.

It is also necessary to bear in mind the relation of the uterus and vagina to the
Surrounding organ and tissue - the close association of the uterus to its anterior and posterior aspects to the peritoneum & its proximity laterally to the cellular tissue to the broad ligament; the relationship of the vagina to its surrounding connective tissue, and anteriorly to the bladder, and posteriorly to the rectum & pouch of Douglas. - See Fig 6 (after birth).

We must also bear in mind the change which occurs in these parts during pregnancy and labour, and keep in mind the fact that there is a direct means of communication between the external air and the peritoneal cavity via the vagina, uterus & Fallopian tube.

With regard to the anatomical relation of the post-partum uterus our knowledge is still somewhat incomplete. Darbre had by means of frozen sections added much to our knowledge of this state. As he remarks he is somewhat apt to regard the uterus after labour as an empty cavity. While however he says guard against falling into this fallacy, we must not lose sight of the fact that although there is no "cavity" in the general accepted sense, yet, as the writer says, we have got to deal with
a "potential cavity."
In the earliest stage of the pregnancy the uterus is, as ought to be, well contracted. This tension is temporary and after a brief relaxation sets in. Periodic contractions or "after pains" tend to prevent the accumulation of blood clot or other products, and to expel them. If, however, any portion of placenta or membranes be adherent and be not removed, or if from any cause the uterus be rent, and these periodic contractions are not sufficient to expel the clot or other matter we are able to have them retained within the organ forming the most suitable medium for the development of bacteria and their products.

But once if these clots etc. are expelled from the uterus, once tearing enters the vagina, that action becomes strong and forceful to further aid their expulsion. Other forces which come into play must therefore be considered.

If a surgeon were dealing with a wound, analogous to the placental site in the uterus, where there might be an accumulation of after products, he would provide means whereby these might be removed, by placing a drainage tube.
In selecting his drain he would take due care that it would not be likely to become blocked with these waste products by reason of any inequalities or irregularities of its internal surface, and moreover that it would be of such a material that it would not be easily occluded by pressure from without. In addition he would try so far as possible that the drainage should be aided by the action of gravity.

We must regard the baignis in the light of the drainage tube supplied by Nature during the process, let us therefore see to how far it sufficiently fulfills the functions demanded of it.

Fig. V already referred to shows the normal baignis in transverse section and Fig. VI (choir of the Female Cadaver, after Perugio) the same in longitudinal section. The former demonstrates the fall of the wheel the surface baignis is thrown and the latter shows the axis of the channel, and, that in addition to its external extremity not being the most dependant form (when the body is in the horizontal position) that there are pockets - the fornices - to which product may lodge.
Changes however take place in these parts during labour. The great dilatation of the vagina as the birth greatly increases its dimensions and consequently the folds during the puerperium are much exaggerated by the facility of the vaginal walls.

Fig. VII and VIII (vertical serial sections of the pelvis and organs during the puerperium) taken from Barbour's work show these changes and we can readily understand how easy it will be for coagula and other debris to lodge there if the necessary means are not enforced to remove them.

These two figures (VII and VIII) along with Fig IX (vertical oblique section of pelvis and organs during the puerperium) and Fig X (transverse section of pelvis and organs during the puerperium) from the same source show well the "potential cavity" of the uterus they became manifest by dilatation well blood clot.

In addition the natural drain—the vagina—is particularly prone to have its function as such more or less interfered with by pressure from without tending to obstruct its times. This is likely to occur.
Fig. III.

Vertical Medial Section of Female Pelvis and Organs - End of 3rd Stage.

(after Barbour)
from either a distended rectum or bladder or both,—condition particularly liable to be met with at this time.

Local regard to the forces which tend to expel these products from the region we have to consider: (i) the action of the abdominal muscles, (ii) the action of gravity, and (iii) intra-abdominal pressure (atmospheric pressure) — normally the muscles of the abdominal wall by their contraction compress the abdominal contents, and by increasing the intra-abdominal pressure, aid the expulsion of the contents of the hollow visceræ (uterus, bladder, or bowel).

From the great distension of the abdomen during pregnancy the muscles of the abdominal wall are stretched far beyond their normal limits. After the evacuation of the contents of the abdomen the condition is extremely lax, and the muscles being placed in a position so neutral similar to that of an elastic band that has been over-stretched, being unable to take up this "slack," act as a mechanical disadvantage for a considerable time. They are therefore unable to bring the requisite amount of pressure to bear upon
Fig. IX.

Vertical Oblique Section of Female Pelvis—End of 3rd Stage (Barlow)

Transverse Section of Female Pelvis. Below the Brim—End of 3rd Stage (Barlow)
The abdominal contents in order to expel any foreign matter that may lodge in the vaginal passage.

2. With regard to the other power—the action of gravity—it is evident that so long as the body is in the lying-in or position gravity cannot play any very active part in keeping the vaginal passage clear.

Yet it is chiefly in this position that we have got to consider it, for it is thus that the greater fear of the patient is expressed.

It is so uncommon occurrence to meet with timid or “nervous” patients, especially primiparas, who have the greatest fear of rising at all in bed, for the first few days at any rate, or of sitting up in bed even for a few moments from fear of “catching cold.” They like their food morning or afternoon are not satisfied at all even to use the bed-pan. Of course I do not for a moment mean to assert that these patients ought necessarily to get out of bed, or even to sit up for any length of time, at least during the early days after confinement, but elevation of the body, if the actual sitting up in bed during the performance of these necessary
acts, adds greatly to the patient's comfort
and efficiency of performance, and in
addition greatly facilitates the drainage
of lochia ecle from the vagina.

III. Intraperitoneal pressure, maintained
by atmospheric pressure, apart from augmentation
by action of the muscles of the abdominal wall,
certainly plays a part in helping to expel the
lochia along the line of least resistance, and
it may be, and not infrequently does occur,
especially if the passage is forced upon by
a distended uterus or bladder, or by the
condition continuing, that the "hindrances"
may not be inconceivable.

If it be recognized in surgery that
after many cases of injury there may
be considerable extravasation into the tissues,
but where there is no bound to apart from
a chemical action, we can get a condition
produced in which there is a rise of temperature,
increase in frequency of the pulse, flushed tongue,
loss of appetite, feverishness for a day or two,
si it not possible that the may occur in
earlier days of the puerperium, occasionally,
in cases where the drainage from the uterus
49.

As interfured with, next with similar phenomena due to a like cause, namely the absorption of free fibrin ferment. If this be possible, though the circumstances of the Case are not completely analogous, then we may have a non-septic form, like the so-called "Traumatic Fever," set up simulating some of the features of a slight septic infection. It is likely some the sepsis may play a part in "Traumatic Fever" in Surgical Cases, how it is, what is the origin of the septicphile organism that are necessary to produce it? Is the Case to which we are attending it will be evident that the opportunities of an invasion by organisms are infinitely greater than they, as a rule, are in the Case of Surgical Traumatic Fevers. While the root reason therefore that our Advantage should be perfect.

Up to this point we have regarded the Faroentral side of the uterus as the area alone through which infection may occur. It was to write to home a mind how very often ulcers of the Fallopian Canal, the Peritoneum, may exist in the cervix, vagina or Funiculum.
Lacerations of the Cæsæa are of extreme frequency in labour, occurring in about one third of the cases—52.8% according to Emmet. Quite possibly however there are lacerations that heal without leaving any trace of their occurrence. Many cases escape notice as the term of labour is not altogether.

 Tears of the vagina are also of frequent incidence, probably existing in many more cases than is commonly thought. We must not confine our attention to the grosser lesion which are of severer occurrence, for it is likely that microscopiac lesions occur in the vagina in most cases of labour, and are so minute that they might escape notice even if looked for. Simpson remarks: "But even in ordinary cases the vaginal mucous membrane is almost always fissured, or torn more or less deeply, at its lower extremity."

In all probability there is a certain amount of tearing of the hymen and often of the vaginal orifice, and there may be further extension of the lesion.
involving the pubis, ischiium, and labia minora.

Lacerations of the perineum are very frequently not well and may vary in size and extent from the very minute fissure to a tear of great depth involving the whole perineum and even the rectum and its sinuses.

Although many of these lesions are in themselves of comparatively insignificance, yet they are all of the greatest importance as possible channels through which infection may occur. It is well to remember that the very smallest breach in continuity of surface, or the most minute blood clot may, if opportunity occurs, be the starting point of the very gravest forms of sepsis.

Part IV - Bacteriology.

The view now generally accepted as the causation of Purpuric Fever is that the disease is the result of the absorption of bacterial poison or toxins through a disturbance of continuity in the genital tract.
it may be with or without the entrance of the bacteria themselves into the blood stream and consequent deposition of them in distant organs or parts of the body.

It is still a matter of controversy whether the fever is of certain of the Syphilitic diseases are capable of giving rise to Syphilemia fever. Some observers hold that Syphilis fever may be communicable to a Syphilemic woman and produce a condition which, if it is not identical with, yet bears a close resemblance to, what we know as Syphilemic fever that we are unable to distinguish between them. I have not seen a case which could be distinctly traced to Syphilemic infection although I know women confined in the same houses where Syphilis fever existed without the effect. But negative evidence such as this is of little importance. Our knowledge on the point, and on the relation which some of the other Syphilitic diseases bear to Syphilemic fever, we probably do not define until we have a more complete.
acquaintance with the bacteriology of their diseases themselves.

With regard to *B. pyogenes* our knowledge is, more definitely, until a comparatively short time ago it was believed that the *Streptococcus pyogenes* and the *Streptococcus pyogenes* viridans were quite different. But more recent investigations have established their identity, and it has been long recognized that

*B. pyogenes* could be communicated to a woman during the puerperium and puerperal fever results. In connection with the relationship of these two disease.

an interesting case came under my observation in March 1897.

(See Case I p. 84).

When we come to consider the bacteriology of the female genital cases we find that even those investigators who have devoted more time and energy to the subject are not by any means as one in the conclusion they draw
different from their observation. Generally speaking in any way that there are two
classes—those who follow it to the main
the teaching of Böderlin, and those
on the other hand, who are inclined to
accept the views of Krönig as the most
correct.

Böderlin, who was the first to describe
a particular form of the cell, which
occurs in the normal bony secretion,
found that when the secretion, which he has
termed the "Böderlin bacillus," is present,
and the bony secretion is acid, there is
a perfect guard against infection.

Should Lactose, the reaction of the secretion
become alkaline as it does in the peror-
peration, the bacillus disappears, and it
may be found, and infection may occur.

In order to guard against this he
advocated the employment of injections
of Lactic acid in order to preserve the
acid reaction and thus prevent the
invasion and development of pathogenic
organisms which prefer an alkaline
medium.

Krönig and those who follow his
teaching, however, look at these as
more bacteria of bacteria to be found in
the vagina, and these are only capable of existing in the absence of oxygen.
(anaerobic) and two of these (non-pathogenic streptococci) he has described. He says
that the pathogenic bacteria are rarely met with, and claims that the vagina's
environment has the power of destroying pathogenic microorganisms, whether it
be normal or not. He has noticed today
to what constituent of the secretion it is
that this influence is to be ascribed.

At the 17th International Congress of
Medical Sciences (Section of Obstetrics and
Gynaecology) held in Paris in August 1900,
the observer Krönig (whose views
practically coincided with those of
Dange of Leipzig) stated on his belief
that the chief organismic Cause of febrile
fevers were the Streptococcus pyogenes,
the Staphylococcus aureus, the Pneumococcus,
the Bacterium coli, the Bacillus diphtheriae,
the diphterioccus pneumoniae and certain
anaerobic organisms.

These two authorities (Krönig and Ringe)
do not, with certain exceptions, favour the theory of "auto-genetic." They apply the term "auto-genetic" to an infection set up by bacteria which although pathogenic have previously to labour outside on the external genitalia or in the urethral canal as saprophytes. They therefore do not regard as auto-genetic, a periurethral infection arising from an already existing gonorrhoea. Among other bacteria which they say do not exist as saprophytes in the urethral canal and cannot therefore be regarded as auto-genetic sources of infection, they mention the Streptococcus pyogenes aureus, and the Bacillus coli. This statement, however, may be compared with the results obtained by Bernoi (Thesis de Paris 1906) which are contained elsewhere (p. 59.)

They maintain that "uterine infection" is far the more important, and they attach especial significance to the hands of the obstetrician as a source of infection, yet also regret insufficient
Lactobacii, and leucii of the genital tract as important predisposing factors. They further maintain that the extension of the infection is most common when the primary source is within the uterus. Less common when it is at the cervix, and rare when it is in the vagina and perineum.

Dr. Webster, at the same Congress, broadly divined the micro-organisms which he considered capable of producing the disease into two groups. The first, the aerobic bacteria, the Streptococcus aureus, the Gonococcus and the Bacterium coli; the second the anaerobic bacteria "including the ordinary septic and putrid bacilli and others less known." He also held the view that certain of the leptoplates may under special circumstances become endowed with pathogenic properties.

While agreeing that the subject of auto-infection is one "to be judged," he believed that there may be cases in which pathogenic microbes, already present in the genital tract, may become active during the pregnancy without the
Superaddition of other bacteria from without.

 Pestalozza of Florence states as the result of his practice that he has found the streptococcus to be by far the most common organism present, and to be the only one he has found in puerperal sepsis and in septic abortion. The Bacillus coli he has only found in cases of decomposing Liqueor Amnii and Staphylococci in small abscess of the uterine wall. He maintains that the procuring of aseptic results is best achieved by practice based chiefly on the care that was taken to render surgically clean the hands and instruments of the accoucheur, and also the external genitalia of the patient. He strongly disapproves of the attempts that some make to render the vagina care aseptic and also the practice of using, as a matter of routine, vaginal and intra-uterine injections during the puerperium. In the Event of infection occurring he regarded well in favour the immediate employment of
the mire uterine touches.

It appears that disagree with Peckelozza as regards the attempts to render the vagina aseptic, arguing that, as sepsis phylogenetic like on a pathogenic action. Efforts in this direction should not be regarded as altogether futile.

But on the other hand to disapprove is the countenance entirely the idea of autogenous infection, holding that the mucous membrane itself is a sufficient safeguard.

Bennisi, who has made researches into the bacteriology of the uterus and vagina during pregnancy draws the following conclusion:

Examine the uterine secretion in fifteen cases and it was found to be acid in all of them. Organisms were not very abundant, and differed considerably from those found in non-pregnant women.

Of the autogenous bacteria, Staphylococcus aureus was only found in two cases and in small numbers. Streptococcus pyogenes was also present in two cases only.
while the Bacillus coli was found in four cases. Sèvère also reported that certain bacilli were present, including diplococci ("Par.
- gonococci") and "Par." Come bacilli.

The results of his examination of the vaginae secretion showed that micro-organisms were not very abundant, and the bacteria from the higher portion of the vagina in the neighbourhood of the cervix were almost entirely anaerobic.

The most important result of his search, however, was in the fact that no aerobic "pyrogenic organisms were found" and "not a single colony of Staphylococcus albus.

Of the anaerobic bacilli, the most abundant were the Bacillus ketonicus (Kalle) and the micrococci fortides (Billion).

Almost half of the bacilli present belonged to the yeasts-like forms of fungi and there were many different kinds of so-called "scarcines."

Experiments with these anaerobic organisms were made by inoculation...
into guinea-pigs, and it was found that only some of them were capable of producing abscess formation, the pus being very dark-coloured and extremely fetid. Cheltenham (Derbyshire) in relation to the subject of auto-infection, states to the belief that purpuric poison may develop and be found fetal in an apparently healthy woman, yet the patient may have been infected by the hands of the obstetrician or his instrument. (In this connection see Case II p. 88.) The latter attaches much more importance to the careful cleansing of the hands and instruments than to any attempts made to render the vagina aseptic.

P. W. writes in relation to this subject of auto-genaria, states that whereas both in the pregnant and non-pregnant state he has found organisms which may be pathogenic present on many occasions, in the lower part of the cervix, yet the upper part of the cervix and body of the uterus were free. He ascribes this community to the cervical mucous and he also says that these organisms are most abundant
During the puerperium there is often labour.
Streptococci, Staphylococci, Gonococci, and Bacilli Coli were present both ante- and post partum, and also in the non-pregnant. In 27% of Cases he found non-
pathogenic Staphylococci.
All Lachlan Concerus in their opinion, and considers that the absence of organisms from the uterus and tubes may be due to the protective influence of the Acrobece resinae.
Kelly held that the importance of the presence of pathogenic organisms was quite the reverse, and that when Staphylococci are present and especially the two virulent forms of Atroc, and above the uterus is much less then when Streptococci are found, when the chance of general infection are much greater. Bacilli Coli, he states, are frequently present, and the Gonococci are particularly liable to be associated with infection of the Fallopian tubes. The case is more case of pelvic peritoneal
septicaemia to the Streptococcus pyogenes and Erysipelathii. He also mentions the
occasional presence of a rarer form of bacillus first described by Welch and Tuttell (1892) - the Bacillus citriogenes capsule was occurring in some cases of dysentery after abortion. This bacillus only flourished in the complete absence of oxygen and its presence is associated with the production of foul-smelling gas.

Clark and Ritchie state that in cases of puerperal fever, Streptococci may often be found in a condition of purity and may be met with great horror in the Capillaries of the human organs although the examination of the blood during life may yield negative results.

The defence lines which tend to prevent the Invasion by and development of pathogenic bacilli may be briefly summed up as follows.

During normal conditions the genital walls are in apposition. This fact alone cannot be regarded as sufficient to prevent the Entrance of these organisms, but it is aided by the secretion of the vagina which by done authorities is supposed to be potent only when it is borne low. By others
Equally effective when it is abnormal. Most observers agree that the secretion has some protective power, but they are not agreed whether the protective power lies solely due to its mechanical action, or to the presence of the non-pathogenic organisms, or their chemical products.

Secondly we have to deal with the protective power of the epithelium, which according to Krasavitz acts as a safeguard to the underlying tissues so long as it preserves its integrity.

During the febrile process both these defender are liable to be at fault. The benign reaction is altered by the presence of the toxic discharge from the uterus, and troubles of continuity in the genital tract are common.

Thirldly we have to deal with the phagocytic action of the polymorphonuclear leukocyte. Which has the power of attacking and devouring the harmful organisms.

Part V. - Modes of Infection.

Whatever be our view held as regards
the possibility of autogenic infection, and
this seems very reason to suppose the
cases as originate in this way, then can
be little doubt that in the majority of instances
the active agent in the disease is heterogenous.
Infection may occur either during or after
labour and the weight of opinion lays the
blame in the great proportion of cases
upon the hands or instruments of the
obstetrician.

The organisms may be introduced into
the cause during the preliminary vaginal
examination owing to imperfect precaution,
being taken to render the hands, as far as
possible, aseptic; and it is to be feared
that in many cases the cause lies in the
direction of the most pernicious order.
But even if this has received a due amount
of attention, the fingers are particularly
liable to become fouled while being
introduced into the vagina, by contact
with the external genitals of the patient.

The chances of infection are therefore
much greater if operative procedures be
called for, be they manual or instrumented.
It is readily understood how it is best to
injection will be proportionately increased
when the whole hand is to be passed into
the vagina, and there further when it is
necessary to enter the hand within the
uterine cavity. In these cases of internal
version, in which it is necessary to pass
the hand into the uterus the extent of
infection are probably less than at first
sight. They may appear for the reason
that the hand is on the foetal side of the
entrance, and therefore separated by
them from actual contact with the wall
of the uterus. Of course there is also the
attendant danger attached to passing
the hand through the vagina and uterine
cavity.

Undoubtedly the manipulation which
is now known to be followed by uterine
infection is where it is necessary to
introduce the hand into the uterus for
the purpose of detaching the placenta—
whether it be to separate it from the lower
uterine segment in cases of placental
abruption, or from the body of the uterus in cases of
"adherent" or "retained" placenta

In these operations since the forepart may be somewhat tardy, and require the actual separation of the afterbirth from the uterine by the forceps, from the chance of minute portion being left behind, and from the proneness to haemorrhage after the operation, it is obvious that the dangers of sepsis developing are much increased.

Again there is additional liability to infection where instruments are used. Although the days are, let us hope, passed in which the practitioner has content to take his forceps from his pocket and introduce them into the vagina after carefully wiping them with his pocket-handkerchief, yet it is by no means certain that every precaution is taken in all cases to have the instrument as sterile as possible. The risk of aseptic infection by means of "asci- traction" forceps is probably a little greater than with the older variety on account of the junction of the traction from with the blade forming
Arteries rather difficult to keep perfectly clean.

There is another point in connection with those forceps which may give rise to trouble. In their forming the instrument where the trichlor hydrate is made of metal, it often happens that the hollow interior of the handle communicates directly with the external air by the hole through which the rod of the locking-plate passes. This cavity is apt to become filled with fluid when the instrument is immersed, and if this remains after use the fluid gradually escapes from the interior of the handle causing the instrument to rust and giving rise to further trouble.

To obviate this I have fitted to my forceps a metal collar through which the rod now passes and which shuts off this cavity entirely and so rid the of the annoyance at another source of danger in the entrance of air into the genital passages. Although this may not be a very common occurrence under ordinary circumstances, yet there are conditions under which it may easily happen.
Probably the most frequent way in which air gains access to the thing by means of the ordinary Huggins's syringe, either from want of care in ascertaining that the instrument is completely filled with fluid before introducing the ligule, to by drawing air into the syringe through the syringe-end as being constantly below the surface of the fluid, etc. I have lately to gain entrance when the double-end is used instead of the syringe.

I have seen the accident occur by a somewhat peculiar combination of circumstances which I have not been described. The patient during labour was lying on a "spring bed," the springs of which were rather loose. The hips were supported by the rigid framework at the back of the bed, so that the shoulders being about the centre of the bed there, on account of the looseness of the springs, on a somewhat lower level than the hips. The patient, as is common, had turned her feet downwards, in order to stifle her cries.
in the bed clothes, thus causing the upper part of the body to be semi-prone. The result of this position and the slight elevation of the hips, was that the attitude practically became the "Lins" or incised pectoral. And so introducing the finger into the vagina an immediately entered. I have seen this happen I think in two distinct occasions.

Lastly when it becomes necessary to plug the uterus or vagina an is almost certain to get a sepsis.

Another important key in which dysse may develop during the puerperium is from laxity cleanliness of the patient and her surroundings. If the external genitals be not kept scrupulously clean, if stool linen and bed clothes be allowed to remain in contact with the patient, fever is soon set up and he less produced a very potent source of infection. (See Case III p.)

Levamisole and defecatus sanitary arrangements are considered by some to be fruitful source of poison which may bring about
Part VI - The Action of Bacteria

Let us now consider how the organisms may produce their unfavorable effects.

The pathogenic organisms which we have to deal with are divided into two classes. The "Parasites" group which live and thrive in or on healthy living tissues, and the "Saproxytes" whose habitat is on dead matter. There are some of the former group which can under certain circumstances exist in the surroundings favorable for the Saproxytes and are termed "facultative Saproxytes," and in their absence we have "facultative Parasites."

This is extremely important and examples are found in the case of Streptococci of a group, and Pneumococci, which are often at work as Saproxytes in the mouth, and bacilli of the Pseudomonas which may be found in certain orifices of the skin under similar conditions. I should perhaps cite -
-Stanley Arnold, then "faecalbacilli saprophytes" may take on their parasitic action.

If dermaloid tissues (such as blood clot or portions of retracted placenta) become invaded by saprophytic organisms putrefactive change ensue up. The saprophytes multiply and produce the ptyonos which when absorbed give rise to a general intoxication to which the term "Ptyonemia" has been applied.

If we are dealing with a purely saprophytic infection then organisms cannot enter the general circulation and multiply in the blood and living tissues but remain localized while the toxins which they manufacture are absorbed.

In other words we cannot have a condition of "Ptyonemia" produced by a purely saprophytic infection (i.e. by "obligealong saprophyte").

Unless the organisms happen to be "parasitic" in most of the pathogenic bacteria are, they may remain localized or not. If they spread beyond the local seat of infection they
may do so in one of three ways:

1. By the blood stream
2. By the lymphatics
3. By direct extension along the mucous surfaces.

1. In entering the blood stream their fate may be various.

2. The condition of the blood may be favourable for their growth and development, i.e., the blood may be sufficiently toxic to these bacteria to inhibit their growth and to destroy them, and the infection then terminates.

They may escape destruction by the blood, however, and pass as Emboli, without necessarily multiplying, to distant organs or tissues and be there deposited. There they may persist to remain latent for a time, or they may once develop and produce a "secondary" or "continent" focus of infection. The organisms, if they settle upon the endocardium of the valves of the heart, may set up an infective process.\[\]
and from this may invade the circulation and produce a condition similar to that above to be described — a general blood infection.

Again the state of the blood may be favourable for their immediate growth and development, and if this occur a general blood infection and intoxication is set up. There are here the elements themselves present in the bloodstream multiplying and producing their poisoning and in this condition the term "Septicaemia" has been applied. It is maintained that the term "Septicaemia" can strictly speaking only be applied to those conditions where the presence of organisms in the blood can be demonstrated by cultivation.

Again the organisms may invade the thrombi in the veins and from these infected plugs portions may become detached and pass into the circulation. If arrested in the heart an infective endocarditis may occur. While if they pass through the right heart they may
become arrested in the lungs thus producing "septic invasion". In the case of infective Endocarditis there may be subsequent detachment of infected masses of fibrin and the production of further attachment (Sunday) and general haemorrhagic infection.

The pulmonary area is the most usual site of embolisation from the primary case. Since it is the systemic area of the circulation as a rule where the primary infection is found, whereas, however a condition of septic Endocarditis is by the systemic circulation may also be involved in the secondary field.

Rarely the Portal area is the site of these embolisation foci, but it may become so if the primary infection invades the area of the hepatic plexus around the lower part of the Ileum. Since these Communicate by the Superior Mesenteric local bed with the Portal System and in this way he may have septic deposits in the liver.
II. Where the infection spreads by means of the lymphatics, the organisms may pass by these channels to the various saes and set up inflammatory affection there (pleurisy, pneumonia, pericarditis, etc.). Or they may be deposited in the lymphatic glands and thus from secondary foci of infection, at general blood infection may occur. Should they pass thence by way of the thoracic duct into the blood stream.

III. And may have the direct extension along the mucous surface by the Fallopian tube to the peritoneal cavity.

Part VII. Clinical Phenomena

The clinical phenomena associated with all three forms of general bacterial intoxication (sepsis, dysenteria, and pyaemia) present many features in common.

Headache, weakness, chill or rigor, rapid pulse, rise in temperature, thirst, loss of appetite, dyspnoea are among
the most serious symptoms set with.

The onset is usually within the first
four days of the appearance, usually
after the fight.

In dealing with such a disease as this,
no great stress cannot be laid upon
the extreme importance of recognizing the
early and earliest manifestations of its presence.

Is there then any symptom or group of
symptoms that we can clinically observe
which is likely to raise in our minds
suspicions that epidemic scabies may be
imminent and thereby put us on the alert?

It requires a very great acumen or
degree of experience to come to a diagnosis
when all the growth signs are present.
and the disease is well developed; but
then unfortunately we lose the valuable
delay and the golden opportunity of
turning the scale in favour of our
patient may have slipped beyond our
reach.

Probably the most obvious phenomenon
and that which calls for least while to
ascertain is thus recorded by the bacteriologist,
Their bowels, from what I have seen done, do appear to be the sign upon which we ought to rely for the earliest evidence of the disease. There are these signs, which I would suggest as being of even greater importance at the present day.

Increased frequency of the pulse, insomnia, and headache. These begin as by no means infallible but the presence of any one of them ought to put one on one's guard and to be forewarned as to be forearmed.

The increase in the pulse rate is almost universally manifest before one can attain evidence of a rise in temperature - at least of a rise in any degree. If on sounding our patient we find the inclination sufficient appear hot, the pulse instead of being between 70 and 80 per minute, (and usually nearer the former,) is 90 or upwards. Even though the temperature be not markedly raised then we ought at once to lower our suspicion around this, and, hot as it should be, very likely rise.
presence of the doctor may be sufficient to increase the frequency but if this be the cause the pulse will on a rule soon quiet down—therefore it is best to allow a little time to elapse in order that the patient may become accustomed to one's presence before making the observation.

Sure are other causes undoubtedly, which may make the pulse false such as when the patient is anemic from chronic anemia — such causes however, must be sought for and eliminated.

Insomnia during the feverence, again, appears to be a point which is worthy of more attention than is often bestowed upon it, and he should always take a point of inquiries how our patient's sleep is. There may be other causes for insomnia such as severe "after-fever" or a restless baby, and such causes must also be excluded.

Headaches, which is sometimes a great security to the third symptom
which calls for notice, and although
in itself may appear of little importance,
ought not to be lightly passed over.

In addition to these signs there is
frequently a peculiar nervous depression
on the patient's face which strikes the
immediately — a condition that can hardly
be conveyed in words — and that suggests
to the physician that all is not well.

The truth can at least be said
with safety that the presence of any
of these symptoms or combination
of them ought to place us on guard on
the future, that even although no
active measures be taken at once, yet
another visit would be needed within a
few hours. Some forebode can always
be found for the visit, so as not to
alarm the patient, a point that ought
ever to be lost sight of. Still, how much
they may often be gained when may
take all the difference between life
and death; and though it may possibly
entail some inconvenience yet the
occasion will arise when one will feel
emptly repaid for the little extra trouble. It may and does happen that a patient has a severe fever during the night and is seriously ill for some hours, and from consideration for the physician who may have been present all day, at the confines next, he may not be at once summoned, and the first he may hear of it is when he pays his ordinary visit on the following day.

Attention to those seemingly unimportant details will often prove the importance that hangs upon them.

If the temperature be taken in the axilla we are, if not careful, likely to get a wrong record. During the fever period the patient often perspires freely and if the axilla be not carefully dried before placing the thermometer in position a false reading may easily result. This can readily be obviated by taking the temperature in the mouth, but this is a procedure, however, to which some patients naturally raise objection.

In *Papillomia* the temperature rises.
Usually to 102° or 103° or may be even higher, & the pulse is increased to 180 or more per minute. This may or may not be a region or feeling of chilliness, and if there is it is usually not repeated.

The skin is a little hot and dry but there may be profuse perspiration & the face is flushed. Frequently the headache is intense and there is delirium, thirst, loss of appetite and the tongue is usually covered with a white or greasy film. This may be poisoning, and if the condition is not relieved delirium may supervene, the tongue becomes dry and brown and delirium ensue. There are delirium, abdominal tenderness and distension, and the tongue may be suggestive of yellow due to excessive I. It is extremely offensive.

If the amount of poison absorbed be sub-lethal and the source be early removed, the patient usually recovers.

In Septicaemia, the onset is rapid after inoculation and regains are usually short and repeated. Temperature is high.
throughout 103°-106° or even 108° but if
less severe forms may fall to 101° or even
lower between the rises. The severer
forms may be rapidly terminated by
a fatal issue. Pulse is very rapid
120-160. and Cardiac pulsations soon
detected. Headache is usually severe,
breathing is rapid and thin and may be cyanotic.
Sodium may occur and more rarely
anemones. The condition may pass into
Albinism followed by coma. Occasionally
there is an intense red of the skin and
sometimes purpure spots above them.

There are usually local beginnings of
blisters on the abdomen and joints may
be affected. The abdomen may be distended
and is frequently dilated with gas from
paralytic action of the gut. The bowels may be
nearly or completely stopped.

If there be a wound of the genital organs
visible, the relief is usually indefinite and
beneficial and may be covered with a gauze
dressing. There may be tenderness in the Course
of the lymphatics or over the lymphatic
glands.
The prognosis is usually grave.
These symptoms of the great danger of
infection exist that localize the lesion
(as in the case of Pyaemia) since the bacteria
are present in the blood itself.

In Pyaemia the onset is sometimes more
gradual and may be preceded by general
paleness. The initial rigor is severe and
the temperature runs to 104°, 105° or 106° F.
This is usually followed by profuse
diaphoresis and decline in the temperature
to 102° or 101°. The rigor is usually
repeated. The pulse soon becomes rapid,
soft and thready. It may be irregular and later
ruminating and uncountable.

Tenderness is usually marked over the
abdomen which may be distended.
There may be signs of local suppuration.
Especially of the Pyaemic area, but notice
also the secondary ones. Any otherwise
unsuspected abdomen is difficult and often
impossible to make out, and the course of
the temperature will then the chief guide to
suggest that they are present.
There is frequently some albuminuria present.

The constitutional symptoms are those and the weakness extreme and the intellectual functions in a state are not impaired.

The prognosis is necessarily unfavorable, that even in cases where the urine is free from albumin, and to regard the case as in a more favorable light on account of the false impression created by the apparent improvement in the patient's condition, after the rise of temperature. Such hopes are however as usual unfounded, and death usually ensues in one or two weeks. Some cases of the disease dragging weariness or for a lengthy time.

In all the forms of the disease the symptoms may be modified by the presence of complications, such as peritonitis, cellulitis, pleurisy, pericarditis, Enterovesical or other infections, meningitis, pulmonary embolism and metastatic abscesses, etc.

It was already noted in considering the state of the blood in the parapertussis, a dangerously toxic is a sign which cannot be
Part VIII - Illustrative Cases.

I have selected the following half dozen cases from my note-book as showing some of the clinical forms the disease is likely to assume.

Case I. March 1897. - Pyemia -

The patient Mrs. B. was attended by a midwife and qualified aid, who went through until the attendant found herself unable to disengage the child's head.

(The presentation was a breach.), when the forceps came into use. The cord was now fastened, and the child had been forcibly extracted (dead) at the expense of the perineum, which was very badly torn. The patient was in a state of collapse from hemorrhage and the interior was enormously distended with large clot.

The interior was cleared out and thoroughly done, and the patient rallied for the
true being, but in the course of a few days developed the symptoms of a violent attack of "puerperal fever".

On a subsequent date when I saw the patient for the first time both legs were swollen and tender and showed a slight diffuse redness over their surface. On making free incisions it was found that diffuse suppuration was spreading along the intermuscular septa and throughout the whole extent of both legs with large masses of dead and sloughing tissue. Nothing short of amputation of both legs could have been of the least avail - a procedure which could not for a moment be suggested and which in itself would certainly have proven fatal. The patient died a few days later.

Some months afterwards the "midwife" was attended for an attack of "febrile erysipelas", and it was then ascertained that she had suffered from similar attacks on previous occasions and had only just recovered from one when she attended Mrs B. in labour. Although it
was impossible to prove the point absolutely, yet the probability was great, that it was from the source that Mr. B. the infected
and the Streptococcus Pyogenes which it has ever produced "Ehmer's fever".

Case II. Septicaemia - Perioph Cellulitis

(See Chart I)

On the 8th October 1898, I was asked by the practitioners to whom I was acting as an
assistant to see Mr. A., whose confinement
he had attended two days previously.
The labour had been perfectly normal and
there were three important facts in
connection with it. When he arrived
labour was well advanced and the Child's
head was already closing the Pelvis.
At the time progressing well his head
examination was therefore made. The placenta
and membranes were expelled completely,
in about a quarter of an hour after the birth
of the child and by the nature of the
alone. It was not even necessary to touch
the placenta but of the vagina with the forceps
as it: Sometimes the case if it cannot be removed by
Presumed from willet. There was no imminent
obstipation and no doubt was given after
labour. These views before being allowed
fully perfectly assumed the improbable

Contamination coma have occurred
During labour is absolutely nothing had
been pressed from without into the vaginal
passage. On the third day of the fever-
remission, when I was asked to see the Case,
lost the slightest suspicion nor disturbance
of anything being abnormal for when the
medical attendant had visited the patient
on the previous day she appeared to be well.

When I saw her for the first time on
the day mentioned at 5 p.m. a glance was
sufficient to show that the patient was very
seriously ill. The expression was anxious
and the face pale rather than flushed and
the breathing rapid. There was silence
Indescribable weakness, and principally
so deep the previous night. The pulse was
138 per minute and the temperature 103°.

Of slight degree pain was felt generally
over the lower part of the abdomen which
was increased for not remarkably so. The pain
Chart I (to illustrate Case II)
was aggravated by poisonous on the abdomen with the hand. The breath was pearly
and foul-smelling, and the patient, being
and the clothes which had been changed
and previously coated and became worse.

On a long way from home and
had no doctors, I was, borrowed medicine to
be applied to the abdomen and the whole of
the bed clothes and linen to be removed, and
the patient made a clean a possible while
I obtained the necessary for doucheing.

At 8 p.m., 3 hours later, the temperature
had risen to 104°, and the pulse to 140
per minutes. The pain was slightly greater on
the left side. Otherwise the symptoms were
unchanged.

The exterior genita were low cleaned
thoroughly with antiseptic solution (Carboxy
Chloride 1:40) and the vagina washed with
the same. Eosinorinum failed to relieve
any fear of the part exposed to view.

Quinine Sulph., gr. 5 were administered in a
Concentrated Solution of Mep. Sulph and
instruction were given to the patient here.
Dose, gr. 5 two hours later.
At midnight the temperature had risen to nearly 106° F. (105.4°). The grain of chloride was given in half an ounce of brandy and the patient again dozed. Posthumly before she was given an ounce of brandy in half of her dose with 5% Carbolic acid. A few minutes later, the grains of chloride were removed but rolling to ease for particular notice.

Instruction was given for the patient to be given 2% Brandy four hourly and shown. She seemed worse had she at once recovered. On the following morning the alteration in the patient's condition was marked and clear. Pleasure. The temperature had fallen to 97° and the pulse to 108 per minute, and she also had a few hours gone a sleep.

There was slight return to the left side of the abdomen. She has three clay-coloured stools during the day but these have no faeces.

At 8am Colonel (for Mr.) was given, the brandy continued and the patient again dozed. There is change was now more copious and blue-coloured. By evening the temperature had
temperature was 101.4° and the pulse 120.

At the pulse was rather quick & thin. A mixture containing op. thym. brom (1/2 dose) and Dr. Stephenson's mercury (3 M Listlew) was given along with the brandy. The diet was chiefly beefsteak, chicken soup, buttered eggs and milk.

The temperature for the next four days fluctuated between 100° and 102°. The atonie was douches once and the urine three daily. A little indigo was suspended in the solution used. This was urine slight yellow in colour, and the left side of the lower part of abdomen and a degree of fulness. Once he made one in the left formica.

On the evening of Oct. 11th the bowels once but he was thought to have been due to a breast on the right. On the next day there was a mixture containing op. thym. bromide & Dr. Bromide was given at night.

The appetite was poor; feverish, channeled, constipation and general feeding had to be adopted.

On the evening of the 12th breast grew on the left mamma developed, but was removed by the lancet and grew no further trouble.

The secretion of milk has entirely ceased.
What was the source of the infection in this case? Was it "auto-genetic" or was it due to the putrefying discharge on the patient's liver causing hepatic infection of the general tract? Though the former may have been the case yet the latter solution appears to be the more satisfactory explanation.

In regard to the question of attending other labours, even when one had a confirmed one on hand, it may be mentioned that John always tried to attend another woman in confinement while he was in attendance on the patient, and she passed through an uneventful puerperium.

**Case III. Supracement.**

I was sent for on the morning of 21st October 1898 to see Mrs B. (multipara) who had been confined four days previously. I understand that the labour was hasty and that the patient had quite well until the previous evening. She had passed a restless night and when I first saw her at 9 a.m., the temp. was 99.5° and the pulse 120.

The cheeks were fairly abraded and the patient extremely offensive. There was slight...
Another attack was now discontinued, but the patient was drowsed twice daily with hot antiseptic solution.

There was considerable tenderness of the whole buccal mucous membrane, and the edges and lip of the tongue looked raw, but the latter received by washing the mouth with Potassium Chlorate & Chloroform.

On the 16th the temperature gradually fell to 101°, but the patient, while Condition was still very unpropitious. The was relief to the delirium and the patient improved.

Suspicion of Dr. Pemberton. The hence using her removed to a more cheerful room and allowing her to be visited by some her friend.

She rapidly improved in this respect.

So there were still slight fever and loss of appetite. She was ordered a mixture containing Lic: Bismuth & Chin. St., Soda Bicarb, 2 drs., Comm. 2 drs, Phosphorus and Infus. Gent. 20.

On the 21st the temperature suddenly rose again to 102°, for which no obvious reason could be found. By the 25th it was again normal and from this day she made an uninterrupted recovery.
Lumborum of the abdomen and slight headache. A vaginal douche of Oxybolic
Acid (1:40) was given and a few hours
later when the patient was seen the tem-
perature was 102.8°.

The uterus was thoroughly doused out
with a weak antiseptic solution but neither
of the Cat Flew away. Buckland was applied
to the abdomen and Gurn. Sulph. Froth and
Concentrated Solution of May Sulph. were
given. At 4 p.m. the temperature had
fallen to 100.6°. The uterus was again
douchmed out in the evening and 15 p.c. g.
Sol. given. At 7 p.m. the temperature
was 100° and at midnight it had fallen to 99.4°
and the dose of Soln was repeated.

At 8 p.m. on the following morning the
temperature was normal. The uterus was
touched six times during the day. On the
next day the temperature rose slightly to 99.1°.
The douching of the abdomen was continued and
the temperature again became normal.

On the next day 24th October while douching
and the uterus was being examined the placenta
about the size of a bean came away.
The had a slightly offensive odour. From the
beginning the patient made a rapid recovery.

The instructive point here is that although
the small piece of decomposing cancellous
bone was still retained for three days after
the first manipulation of deposits, yet the
Constantino washing of the uterine cavity
prevented the further development of
febrile symptoms.

Case IV. Septicaemia (Pyæmia) + Peri-Abdomen.

In March 1897 I was asked by a fellow
practitioners to see a case which had
been called to attend some months before
the patient. Long before the patient's illness
during the postpartum. She was not
present at the confinement. It was on the
6th day of the postpartum that I saw the
patient, an elderly primipara.

Her condition was then alarming and
dangerous. The temperature was 106°, the
pulse extremely feeble and uncountable.

She had been ill for some days but on this
morning acute pain in the chest had
suddenly developed associated with extreme
sympoma and Eosouria. There was a
slight derbice line of the skin. The abdomen
d was swollen and markedly tender.
The perineum was badly torn and the wound
which showed no signs of healing, very
bleeding and covered with scabs although
there was slight foul discharges from
the vagina. A diagnosis of deep
perineum tuberculum was made chiefly
on the ground of the acute onset of the pain
on the chest, associated with the marked
cyanosis and collapse in an already
Septic Case. It was only to be expected
that the patient died within a few hours.

Inquiry revealed that the Confinement
had been attended by a "midwife" and
that the perineum was born at the end
of labour. The patient suffered considerably
from pains he perceived the pains of which
the "midwife" appeared to the perineum
a fomentation made of "Log" which had
been infused in hot water. Mercurially
this came into contact with the perineal
wound and doubtless in this way the
infection originated.
Case V. Papamemia.

On the 15th April 1897 I attended Mrs. G. in her confinement. Labour was uncertain and the membranes were noted to be extremely thin and greasy, and from mere inspection it was exceedingly difficult to say whether they had all come away or not. I thought that probably they had, but as there was an element of doubt and I did not feel justified in exploring the uterus, it was resolved to keep a particularly close look-out for further developments in the case. On the afternoon of the third day the pulse was 120, the rectum suddenly 36\frac{1}{2}°. The bag was dorsed with a premenstrual thump in the whole uterus. Carefully washed out with the result that a thin crust of membranes about the size of a plum fell away. The temperature then began to return to normal and the recovery was uninterrupted.

It may be mentioned that the "after-pains" in the Case were severe — a common occurrence where anything is retained within the uterus.
Case VI  Sapremia (?)

On the 10th November 1808 attended Mrs Jane L. The position was B.O.F.
The second stage was prolonged but the vertex rotated to the front. The perineum was
slightly torn during the passage of the head.
Two sutures were inserted. The vagina's
atrophied and the wound dressed with
Iodoform. During the first 48 hours it
was necessary to draw off the urine.

When I saw her on the evening of the
third day, up to which time she had been
well, the abdomen was extended and
the complainant of abdominal pain. I felt
the pulse was 100. The temperature
normal. Socha's reaction had not appeared.
Perineum burned locally and he bled over
the skin. Reticulum greatly extended.
Uterus had not moved since day of confinement.
The vagina had been regularly douches
three daily.

A turpentine foetal inoculation was applied
to the abdomen, a glycerine suppository
inserted and Gavri. Sulph from administered
along with a concentrated solution of Bagn. Sulph.
The result has thus proved that action was obtained, the pain and tenderness of the abscesses disappeared, the pulse became regular and the wound the suppuration has ceased. The provincial house treated perfectly. The operation, the incision to be entirely dependent on the lowest state of the patient. I considered the early stage of suppuration, with the important differences that the latter was not offensive and it was done of that other case.

**Part IX - Treatment.**

When we come to consider the treatment of the disease we can conveniently do so under two headings: 1) Prophylactic or Preventive and 2) Treatment after infection has occurred.

1) Prophylactic.

In view of the fact that as many of the cases the infection is introduced at entry the extreme importance of ensuring absolute cleanliness of the patient, the surroundings, and all the cases to follow will be evident.
The external genitalia and the whole of the
Skin surface in their neighbourhood, should
at the commencement of labour, receive a care-
ful cleansing, first with soap and water,
and then with some antiseptic solution.
It has been suggested by some that the genital
should be shaved, but this is practically done
under ordinary circumstances. It is
lowered more considerably whether this
precaution ought not to be taken when all
manual or instrumental interference is called
for.

When done thirty years ago antiseptic
principles were first introduced into symp-
to hospitals, the original method of
sister in all the fathers of whose attend
were strictly adhered to. It was found
however the hygienic nurses complained
for use. Every day midwifery practice
and many of the less important steps
were therefore omitted. The use of 16
douches was generally the favour,
and to such an extent that it was held
regularly not only post but ante partum.
The scope of the means of cleansing was
As first restricted to the beyoncé, but
once long as became customary to bed
ate the alien cavity from purum as
a matter of routine. Unfavorable results
lowered the case to numerous that the
practice has been abandoned. Cheekets
such as introducing air and repair and
sometimes been performed by the theme
there recorded.

In time came to be recognized that
through clearing of the lands been
of much greater importance than
attempting to tender the beyoncé aquatic.
The practice therefore of giving a
preliminary beyoncé doubtless has how
been almost entirely discontinued under
special circumstances. Should particularly
indicate it — such as the presence of a
pernicious influence on the possibility
of the yeawage having been contaminated
by the insurgent of an uninstructed mind.

It is therefore to the purification of the
lands and instruments that the failure
came more the given. The final relief to
say appear as being rather to render the
lands surgically clean. Closer investiga-
tion, however, soon proves to us the
great difficulty we have to encounter
here.

Numerous experiments have been made
by different observers with an immense
variety of antiseptics, and solutions
with a view to ascertain which means
of purifying the hands lead to the best
results. In ordinary surgical work it is
customary to soak the hands in
soap and hot water and then to turpentine,
scrubbing once with a soft brush and
thereafter to make use of some antiseptic
after the grease and grosser impurities
have been removed.

Professor Hürbringer was the first
in 1897 to advocate the use of alcohol as a
detergent. He maintained that it be
allowed to evaporate any antiseptic until
the fatty secretion of the hands had been
first removed and for this reason to
employ a pure alcohol. He did not claim
the alcohol to be itself an antiseptic.

Kienzle, who made some sucesse.
experiments in this direction claimed that not only was the use of alcohol necessary in purifying the hands but that alone the hands might be rendered impotent. He found that even after the use of hot water soap and an antiseptic (Cerros, Safarin, H. Carbol., Lysol, or Chloroform water) he failed to attain the sterilizing result which he states he easily procured if alcohol were employed.

Kronig on the other hand whose experiments were limited to the skin of the cadaver contaminated with Escharose bacillus, claims that the skin can be readily sterilized by means of alcohol.

Schréfer agrees with Remicke as to the belief of alcohol and maintains that not only the rounded hands but also those infected with ointment or aching can be completely sterilized by alcohol.

The claim that in well as being a mechanical barrier of dirt, alcohol also acts as an absolute germicide.

Schréfer also agrees with Remicke
and stitches in to the value of alcohol in their relation.

The following results were obtained by Ludham-Grace. Various means of cleaning the hands were adopted and a strip of sterile linen was placed under each hand-fold and then dropped into a culture tube.

In the first set of experiments, the hands were in their home-room condition, i.e., not purposely infected with organisms.

1. Simply washing with hot water and soap + hand towel + hand cleaner.

Out of Twelve Experiments, only one sterile dish then the hands had been air-injected with antiseptic; just as previously,


No better results.

111. Hot soap and water + Temperature.

Out of Six Cases - one sterile.

IV. Hot soap and water. Rinse after in sterile water & Soaked 4 or 5 minutes in alcohol.

Out of Twelve Cases only two were absolutely sterile.
In the second series of experiments the hands were artificially infected.

1. Hot Soap + water + Scrubbed in Spirit for 5 minutes.

Out of 9 Cases - all infected.

2. 4 in 1 had other hands washed in 1% chloro - Results similar.

In all 19 experiments first hands were washed in Spirit or the infected hands and in 2 cases were sterile results obtained.

In the third series of experiments antiseptics were employed - chiefly Perchloride of Iron etc.

The first set of three experiments were on horse flesh.

1. Hot Soap + water + Spirit for 5 or 5 minutes + per. chloride of Iron or from one to three minutes.

11 Cases - 2 sterile, 9 nearly so.

Second Set of Exp. Hands were artificially infected & the same method of purification were adopted.

13 Cases, 3 sterile, 10 almost so.

Taking the whole of these experiments the results are not nearly so satisfactory
was one would anticipate. The cheese
finds that the results improve in proportion
to the true agent in cleaning the hands
and he concludes, that alcohol is a reliable
of but the most reliable agent he possew
for this particular purpose.

Dexter recommends the use of very hot water
(to ensure one to get rid of the fatty deposits
upon the hands) and also a larger proportion
of soap. This washing should last about
five minutes. Then the hands are rubbed
in 90% alcohol by means of a brush. Then
the use of an antiseptic which is poured
upon them.

Boilstead employed a dry method
for which he claimed very satisfactory
results. He disinfects the hands by scrubbing
them with a brush and a spruce form
of dry soap made with alcohol.

The repetition of three experiments and
the results along sufficed to

demonstrate the difficulty of disinfecting
the hands.

One may conclude that a fairly satis-
factory result can be obtained by thorougl
Cleansing would be done and baths and
thus be greatly aided by some solvents
of fatty nature, such as excess of alcohol
(ammonia or soda) and alcohol, which
greatly enhance the value of the antiseptic
as afterward, use.

It is worth mentioning that Care scept
who taken hot to employ any cleansing or
anesthetizing agent in such a straight to
the Cause cracking or favouring of the skin.

Plaques that occur the difficulties of
cleansing the hand on a subsequent occasion
are greatly increased.

It is now widely recognized that many
antiseptic soaps when mixed with
only substance, lose their germicidal
action diminished. The has been shown
to be especially the case with Carbolic
acid when used in the form of Carbolic oil,
-a hydrosol or solution form of carbolic
since aid the fuller does this reply on
a vehicle for antiseptic, glycine has
been much employed in this place.

Wansleeben found that Glycine itself
has certain antiseptic power. Diluted
with water like less than 30% of Glycerin
be present it acted on a very feeble extent.
In 50% to 70% it was able to destroy
Staphylococcus Aureus - a more powerful
action than pure glycerin itself which
however acted more powerfully on the Bacillus
Coli than the diluted solutions.

It experiments with many substances and
with these exceptions only acid has power-
fully as a disinfectant when added with
glycerine than when water was used.
It found that the power of anaphylaxis depend
on greatly diminished by addition of Glycerin.

He concluded that Solution of Carbon
Acid in Pure Glycerin should not be of
6 strength less than 10% while if a less
strength has Employed Pure Glycerin
should not be over 1% Glycerin diluted
with water.

The question of sterilizing one's instrument
is much more readily solved. Portable
Sterilizers are now made of Continuous heat
and by means of one of these the foreskin
other instruments can in a few minutes
be rendered anaphyl. Infection by means of
daily instruments ought now to be a thing of the past.

Ergonomic examination should be performed as soon as possible, and we should restrict those influences within the harshest possible bounds. All cases should, as much as possible, be placed for diagnosis by external means.

The patient must be kept carefully cleaned after labour and in the event of there being any infection the greatest care and care be taken to keep the wound clean to promote early healing.

The nurse should be strictly enjoined to be allowed to employ a sponge for the purpose of cleaning the patient's genitals, a piece of soft material should always be used instead.

Natural drainage of the lochia should be aided by keeping the patient up in bed when it is necessary to use the bedpan.

The bowels should not be allowed to become constipated and should it be necessary to use enemata, no attempt should be made to guard against the introduction of any
into the phrenic.

Attention was to be paid to the patient soon
in order to control the force of the respiration.
Arrangements had departed. Situ d lines
must be in one person from the head and the
places under the bed for some hours so as
determine the case.

II. WHEN THE SWEAT IS ESTABLISHED.

The object which we have to aim at is to
(1) To prevent the absorption of fluid caused by
frequent from the original source.
(2) To maintain the strength of the patient and
favour the elimination of the toxaemia already
absorbed.

In order to prevent the absorption of fluid
from it is necessary to thoroughly cleanse
the urinary and intestinal channels. Lemon
antiseptic solutions may be used such as
Rectific, Perchlor., etc. Carbolic,
Raminade of mercury, Ipecac, Creolin, Pot.
Permannenate, etc. The former two are the
oldest of these known as probably how widely
employed. Objectors have been raised to the
use of Perchlorotic Solution to the point that
Poisoning may readily occur, but if due care be exercised and its use the danger from the
action is not great. Godson states that in the City of London Lying-in Hospital in the
10½ years ending Dec. 1896 there were 4608
women confined in the Hospital in all of whom
the vagina was douché of per chloride (1:2000)
with Epsom salts and a trace of mercuric bentonite.
The case that the clean, the clean vigour of
poisoning are probably those clear strong
solutions are used in douching the uterus of
the uterus.

The solution of the Bichloride of mercury
in ten verons® and in strong LGBT or less than
1:2000 are not act upon these uteruses.

A little attention to details will settled
of douching its recovery.

The interior genitae should first be
thoroughly cleansed with an Antiseptic 14.
Locostr. Saltn. 1:1000, or E. Carb. 1:40.

The vagina should be thoroughly cleansed by
thorough antiseptic before evening to be cleared
the interior cavity and then avoid the
possibility of conveying any infected matter
into the uterus from the lower part of the Conus.
An ordinary beginning bogus should be used for the purposes and set the instrument where on it: about to pass within the waters. The best form of this tube for cleaning the serious cavity is probably that known as Badini's. It should be made of silver or of German silver (pitted) and in shape somewhat resemble an ordinary silver caldron. It is deeply grooved down the back to allow the return of fluid in case and he take to see that the edge of the grooves is blunt. The "eyes" should be large and have their edges bevelled, and the lip should be solid to prevent the lodgment of foreign matter etcetera. The part to which the suction is to be applied ought to have a large head to enable the ordinary Huffman suction to be attached.

There are many other varieties of this instrument that takes the hot growths and worked advantage over the pattern with to hot breakable by the glass & celluloid into one (the latter cannot be boiled). It is easily sterilized, is emollient and promotes the free escape of fluid from the tissues of the
As stronger solution may be used for the
regime than is used for flushing the uterine
cavity. The greatest care requires to be taken in
intra-uterine doucheing and extreme gentleness
must be employed. The entrance of air due to
the accidental and the streaming fluid must not
be forcibly injected which may easily
happen if the finger is not judiciously
used or the catheter can be elevated too
great. For instance, weak solution of
antiseptics and abundance of the same to
be employed for intra-uterine flushing.
A little Iodoform, as suggested by Playfair,
suspended in the fluid is a quite which
then answers well in some of its action to
the walls of the canal and tends to keep up its
antiseptic action.

The douching of the regime should never be
introduced to any but trained attendant
and that of the uterine douche always be
performed by the Practitioner himself.
The foregoing will check the extra useless
douche in any particular
Case must needs be given where it
produce and the commencement of the case. Care should be taken to pass the tube over the lower part of the abdomen and by judicious pressure gently expel any of the solution that may remain in the canal after the douche has been completed. Absorption of paracresis antiseptic is hereby prevented.

If there be any suspicion of retained products, such as portion of placenta or pieces of membranes, the uterine cavity should be explored with the finger and the offending matter, if discovered, removed.

The use of the curved speculum for this purpose is always an exceedingly dangerous procedure in the post-partum state.

In cases associated with clitoral edema, Kindner advises that after the uterus has been warmed the interior should be dusted with Cauter's elastic glycerine (1:3). The cavity is then plugged with gauge sodden in iodine glycerine (1:3) powdered with 1 per cent. hydralazine. An ice bag is placed over the abdomen & Bogor administered.
The story that the mouth are unsatisfactory and that they rarely require to be repeated.

The fever associated with the disease is only a symptom and the genuine leading event is an acute diabetes fever. The routine treatment is trying to keep down the temperature by means of drugs. It is generally recognized that these ought to be employed whenever the temperature rises above a given height, or the fever tends to be prolonged.

It has been customary to regard the fever as an attempt by nature to counteract the disease.

A recent article by Prof. Jendrassik on the mode of dealing with fever is opposed to the opposite view of treatment. He advocates a continuous attack on the fever by therapeutic means. He says that though there be some evidence to favor the theory that high temperature may possibly prevent a general infection yet it has not been shown that it has any pronounced effect upon the life of organisms. He particularly favors...
The regular employment of these remedies of such drugs as Antipyrin and Phenacetin, and combining them, more bene than the application of Cold as a means of refrigeration. The belief that the depressing effect of such drugs as we do grow on is generally supposed. Whatever their one may take of the: it is probable that in Guine a we have a desirable remedy for accounting on. Except the decoder, though he Cannot claim for it that is in any way shortens the duration or acts as a specific. To be of any value the drug needs to given in full doses. Certainity less than great if it fail antipyrinie action is like obtained on a code. To Counteract the unpleasant Effect el sometime produces it is well to continue it with a little pce. Hydrobromide. it.

Although Guine is possessed of antipyrin and disinfective properties, it Cannot be said that the antipyrinie Effect is due to a direct action in the body on the Organism, producing the disease. For as far as we can say there is act by
neutralizing or altering the toxins these organisms produce. An antipyretic action is probably due to the diminishing the production of heat. The advantage of which it possesses over antipyrin and other bodies, is that while it acts profoundly as a reducer of temperature the action is not accompanied with the dangerous depression that at times occasionally accompanies the use of these other drugs.

It is well that while we attempt to control the fever, we should do so by any possible way and aid the elimination of the poisons by the natural channels.

A brisk saline purge is therefore often of great service at the very onset for it clears the intestinal canal, and prevents the blood serum without depression and also tends to promote the peristaltic action of the gut, and the consequent accumulation of gas, which in its turn stimulates peristalsis.

It's transformation of aqueous saline solution into the cellular tissue is:

(continued on next page)
but infrequently followed by excellent results. It doubtless helps to dilate the pores and favour the elimination by diuresis and also by the skin, as well as having a stimulating effect upon the circulation. It may be employed in quantities of 2 drops once daily or even more frequently. It is usually introduced beneath the breast, but may be injected into the flank or even the perineum. The constitution of the mixture by Calomel purges of the transference of saline solution (normal) works very well together.

In cases when the fever is very high, rapid slipping over the cold pack will yield good results, and the severe headache may often be alleviated by the use of the ice-bag or of Lister's cold-water coil.

The cold bath is a means of reducing the temperature to very objectionable limits. Rhodempic fever may be treated by hypertonic solutions or the application of mustard but if very severe hypodermic of morphia may be necessary.
In Hyperemia we have here a most valuable agent. It diminishes the heat, and lowers the temperature by dilating the peripheral vessels & increasing the flow of blood through them. It increases the perspiration and helps to compensate for the great loss thereby. The indications when we find the pulse rapid, feeble and irregular, with a weak and not strong heat, and a tendency to delirium. It may be given in the form of good Brandy, whisky or Champagne the latter somewhat being of specific value when there is a tendency to sickness. Brandy may be administered in doses of three to five ounces every four hours or more frequently according to vision and demand. So long as the pulse becomes weaker and stronger, the skin and tongue more moist and the appetite improving, and the ulcers diminish we know that the administration of
121.

alcohol is doing good. Other remedies
such as Sop. eph. amom., Strophanthin
and Ave tonica must also be employed to
aid the heart.

If vomiting and diarrhea are troublesome they
may sometimes be relieved by a mustard
leaf over the epigastrium and by the
administration internally of Bi-nut with
perhaps advice Hydromel and bread,
and as already stated a good dry Champagne
often effects a most beneficial sedative
effect upon the stomach and can often
be retained when other medicines are rejected.
Occasionally the eating of a piece of cheese
or sipping small quantities of very hot
water will tend to stop sickness.

Where sleeplessness is the trouble the
Bromide may be tried. It was found that
I found an dose of 15 to 20 gr. usually acts
well and a decided y suppression of the effects

The preservation of the patient during the
illness is a matter of the first importance.

Food usually requires to be given in a
fluid's form or accordance the Constant diet.
and any more of the bread, and it must be
readily assimilable. Brey tie chicken combo
both, and eggs are quite the article of all.
Drink can easily be given formula to children
with aneline or special curd in small or
tin water. If the formula being milk
Koumious may be substituted for it.
The nutritive value of milk may be enhanced
by the addition of Plasmon (an excellent
Soluble Combination milk; protein will
bicarbonate of soda) or Somatone (milk
peptides) or g Carbohydrate in the form of
gsugar or of some of the starchy foods as
Cornflour or arrowroot or some of the
present prepared infant food (Blengies,
Heliers, melted milk etc).

Carbohydrates are of great importance and
they are the chief food "sours" and
Thick-legs, especial value upon Sugar
is an article of diet in fever. The best Sugar
is milk sugar from its comparative lack
of sweetness. If we give large quantity
of sugar we believe the amount of ketonemia
hath to be increased (which is already
increased) to hurt further harm upon the kidney.
Batmode drink is a soothing and pleasant drink of the third to great.

As food, try tea and beet extract as two rich values and chiefly acts by stimulating the gastric secretion and increasing the desire for food.

The 'cream' health value of eggs is important. The yolk and white may be strained, after being mixed together, and then added to warm milk with or without the addition of alcohol.

The white of eggs is rich in albumin, and of one or two while he broken up, strained through muslin and added to water they volumes of water we get a valuable food for such a patient. It can be made attractive by the addition of a small quantity of 'lemon' extract and the appearance and taste are agreeable and the nutritive value high.

An important consideration in to give nourishment in small quantities and frequently has as the same time to hang it so that the plate does not tire.
It may be necessary to presoak the food
but such preparations are considered to promote disorders.

When dislocations are present, soups and meat extracts are better avoided, and Bismuth, China Bismuth Salicylate, and Solf are useful. In Compl Co. n.

free done, is often given with good relief in these cases where there is a tendency to dislocations.

In cases where dislocations cannot be taken by the mouth in sufficient quantities, it may be necessary to supplement it by parenteral feeding. The intramuscular route of the pre-digested one is much less preferable in retaining the body. For Opium it is added with advantage.

**Serum Therapeutics.**

The hope was held out of finding in *Streptococcus* serum a specific for purpura fever, but unfortunately up to the present no such agent has been realized.

The serum differs from such sera in being anti-tetanoid rather than anti-locovirin and does not contain any anti-locovirin.
It is antibacteric in its action and
lends the multiplication of cretins to
the disease. It is of so much therefore
to administer it with a view to
inhibiting the toxins already produced.
Unfortunately it becomes greatly in dis-
power and when it is prepared from one
source may have little or no action
on an infection produced by an aman
from another source.

The results obtained by different observers
have been very conflicting and though in
some cases its use seems undoubtedly to
have been attended with benefit, in many
cases the results have been disappointing.
It is usually administered in doses of
10 to 30 c.c., but it soon loses its potency.
It requires to be injected with strict
aseptic precautions, and the area into
which it is injected should not be massaged
to aid its absorption. The tube or syringe
should not be opened while one is ready
to inject the serum. Occasionally, as
in the case of other sera, fatalities
follow its employment.
Doubling improved methods of preparation and standardisation will be made in the future and it is hoped that in it we will get find the specific that has been so long desired. At present we can say that even good results do not follow its use, as a rule fortunately it does no harm.

References. (over).
References.

2. Ibid. Preface
3. Ibid. Chap. 1. p. 66
4. Ibid. Chap. 2. p. 70
5. Ibid. Chap. 1. p. 83
6. Ibid. p. 133
7. Ibid. p. 158
8. Ibid. p. 164
9. Ibid. p. 168
11. "Introduction to the Practice of Midwifery" Denman. (1805)
13. ---- " " " " " p. 465. "
14. ---- " " " " " p. 465-6. "
15. ---- " " " " " p. 465. "
18. Ibid. p. 143.
19. Ibid. p. 84.
20. "On the Mortality of Children and Maternity Hospital"
   - Matthew Duncan (1870) p. 128.

21. "The Periphereal Disease - Clinical Lectures at the
   Bellevue Hospital" - Forbes Barker 1874.
   Lecture XIX. p. 124.

22. Ibid. pp. 448-449.


25. "On the Mortality of Children and Maternity Hospital"
   - Matthew Duncan (1870) p. 17.

   1900 - Simply.

27. Ibid.


   Address at St. Thomas Hospital London 1888.

30. Ibid.

   June 1st July 1890.

32. Quoted by Simply. "Address to Obstetrician" - Meeting
   of British Medical Chs. June 1st July 1890.

33. "An address on the use of anesthetic in surgery
    with special reference to Brodman's Salvarsan"  
   - Clement Godson. British Medical Journal
34. "System of Medicine" - Clifford Chubb Vol II p. 635.
42. "System of Medicine" - Clifford Chubb Vol II p. 635.
43. "System of Medicine" - Clifford Chubb Vol II p. 635.
44. "System of Medicine" - Clifford Chubb Vol II p. 635.