The

Toxaemic Theory

of

Albuminuria Gravidarum

being

Thesis for MD (Ed) degree

by

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Banwell, Somnath
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Ever since Sever of Guy's in the year 1842 announced his remarkable discovery to the world, the subject of "The albuminuria of Pregnancy" has been constantly under discussion. Since it is our purpose to treat the subject from an entirely different point of view, the fact that he explained the symptoms by a *mechanical theory* which for long held the field, does not here concern us.

Let us consider the views of Braun who taught that *premature* albuminuria of *Eclampsia* always depend upon *Bright's disease*; nor accord more than a *passing salute* to the teaching of James Tyler Smith Leishman who maintains that *Eclampsia* arises from the effects of a *nerve reflexion* existing eccentrically in the uterus, and that the albuminuria *is due to the condition of high arterial pressure* without fully *explained*. At this stage are the reasons...
which have led us to select this particular view of the pathology of albuminuria. Provided we may in passing mention one which is by no means the least potent of their number. In nearly all forms of toxemia a well marked sequence of events happens in the history of the case, which mark the different stages of the disease. When we find a condition of malaise in a child, it may be with vomiting, followed at a later stage with a well defined rash, and characteristic pulse and temperature chart, and at a still later stage with neurotic symptoms, enlarged heart and may be subsequently albuminuria. We think of scarlet fever, and our minds rapidly realise in these symptoms the effects of toxins acting on the different organs. Similarly in lead poisoning, and we submit that the same sequence of events of albuminuria reasonably suggest the toxemic story.

With regard to the actual conditions of the urine itself, there seems little room for doubt. There is an increase in the actual amount of urine passed, due for the most part to an excess of water. The output of chlorides is also increased...
other normal solids viz. phosphates, sulphates, urea & uric acid, as well as the specific gravity, are diminished. 

But more important than these variations in the amount of normal constituents, is this, that a foreign element, viz. Albumen appears. It has been found that the existence of this is contemporaneous with the existence of other symptoms of greater or less importance to the patient, some of which are the heralds of approaching danger. Briefly put, the following are the chief dangers which are associated with the Albuminuria of pregnancy.

1) Serous effusions may take place into the cellular tissue and cavities of the body. Examples of these are found in: Oedema of the limbs, scrotum, ascites, oedema of lungs, hydrothorax, oedema of brain etc.

2) The loss of Albumen in the System constitutes, if excessive, a really grave danger.

3) Intrauterine death of the Fetus may occur with decomposition & debility, danger to mother & Dehydration.

4) Eclampsia, or pre-eclamptic conditions may arise in pregnancy or labour. It is wise to point...
that
out, Eclampsia may occur without
any preceding Albuminuria, but in
the majority of cases — 84% — this
condition precedes the convulsive
seizures. On the other hand, in
most cases of Albuminuria, Eclampsia
does not supervene. Albuminuria
is a distinct disease which may,
or may not, be accompanied
by Eclampsia.

5) Hemorrhages such as Epistaxis
or Hemoptysis, pulmonary appoplexy
may take place. But pale the forms
it may take, that of post-partum
hemorrhage is the one which is
most grave to be dreaded.

6) Closely connected with the foregoing head-
ning is the series of Changes which
may occur in the eye. Hemorrhages
into the retina, Albuminuric Retinitis,
Atrophy of the optic disc, + paralysis
involving loss of accommodation must
be named.

7) The Ear may be the site complained of.
There, local hemorrhages may also
occur, or deafness may arise
from swelling of the Eustachian tubes.

8) Paralysis of different kinds are
common. Thus it may be an ataxia,
and accident which frequently happens
during labour, Paraplegia, or Apoplexy.
(9) The kidney is a very common organ to suffer. The nature and mode of these changes, however, will be more fully discussed later on. It is sufficient here to state that permanent Chronic Kidney change may take place, or the lesion may be only of a temporary nature, in which case it frequently shows a disposition to recur at future pregnancies.

(10) Abortions or Premature labours are common. They may possibly be accounted for by the defective supply of nutrition in the mother’s blood, or by an excess of poison circulating therein.

(11) Such briefly are the disorders gall the different systems in the mother. In the alimentary system, a great depauperated appetite or obstinate vomiting may be the first thing to arouse one’s suspicion. The renal symptoms may not be quite satisfactory, and one’s attention may be called to the fact that a diuretic may pass in the 24 hours has taken place and the urine on being examined will show the changes above detailed, and sometimes signs of destruction taking place in the kidney substance, or an inflammation in the mucous membrane of the bladder.

Without going more fully into them,
for we consider we have mentioned
the essential points, we may say that.
But briefly such are the symptoms
of albuminuria gravidarum.

If these are the symptoms, what
is the cause of them? This is the question
which we have set ourselves to try
to answer in the following pages.

It is essentially a blood
change and the only point played
by the kidney is that of eliminating
the deleterious substance. Such is
the contention of those theories
who champion the cause
of the hemicraniæ region of album-
uría or unammonia gravidarum.
As to the exact nature of the change
which takes place all are not
fully agreed. If then in this
thesis we appear to assert some
views more dogmatically than others,
it must not be understood that we
have lost sight of that fact or
that we are confident of command-
ing to the minds of others, theories
which have approved themselves
to our own. With this reservation we
proceed to pass in review some of the
more likely views which may reasonably be taken as subject.
Professor Byers of Queen's College, Belfast. This is one of the ablest exponents of this view, in a recent publication has ventured to define the theory. He states that:

"The symptoms are caused by the action on the nervous system centres of a poison which arises as a product of tissue metamorphosis, elaborated in part by the mother, and also by the foetus, and which provided it does not accumulate in too great amount, and that the eliminatory organs are working properly is got rid of without any ill effects. If however any of these organs, especially the kidney, liver and intestines, get too much to do, then the poison is not eliminated and its increased accumulation affects the nerve centres, or, the same thing may occur if the function of the excreting organs is interfered with as in Constipation, or when the kidney is in that condition which Leyden has described as being peculiar to..."
pregnancy, or when there are
changes in the renal organs
or liver in the form of pseudo-
lymphomatous degeneration, pro-
duced it may be by the poison
in its circulation through them.
It is in this way that the
presence of albumin is of such
importance clinically. The
high tension & increased irrit-
ability of the nervous system
in pregnancy are also "elements
in the problem." Byers is suppos-
ed by Herst who is strongly of
opinion that a failure in any
of the circulating organs, even that
of the bowel, by interfering with
the removal of toxins can cause
the onset of the symptoms, and he
records a case in support of
of his view. Two days after being
confined fits supervened with
coma, suffused face, rapid and
fetid pulse, high temperature.
The patient had been constipated
for two days. A purgative
was administered and pro-
duced a wonderful effect. The
symptoms disappeared entirely &
did not recur.
Having enunciated the toxæmic theory of the pathology of the condition under discussion, it may not be out of place at this stage to refer briefly to the reasons which have led us to adopt this view of the vexed question. Briefly put, they are as follows:

I. There is a close analogy between the symptoms of other pathological conditions, such as Typhoid Fever, which are known to be forms of toxæmia, and albumæmia, and just as the presence in the blood after the putrefaction of these symptoms explains them, so it is reasonable to assume the same explanation of Albumæmia in gravid women. This point is referred to by Professor Byers &c. in the following terms: "The prodrömata, gastriæ & cerebral symptoms, the rapid occurrence of febrile disturbance in the action of the brain, the post mortem rise in temperature, the nature and frequency of nerve disorders, that follow and which yield their analogy..."
in the nervous conveying upon
Syphoid fever and Diphtheria, 
probably caused by toxalbumi
vis, are scarcely to be explained 
ed unless by the theory of 
blood poisoning.

II. It satisfactorily explains not only these cases, which come
strikingly under the term "Album
miria" but also that unsatisfactory
Class of Cases where fits super-
vene without any albumen be-
ing present in the urine.

III. It affords an explanation of those cases where after the con-
fainment has been successfully passed, various Neuroses set in.
These neuroses, according to Prof
essor Simpson of Cambridge may
set in any time up till im-
bolition of the uterus has be-
come completed. That such
neuroses do occur is supported
by the evidence of Ross & Bury &
who cite two cases. In one of
these instances the patient suf

0' Trance. July 10th. 97. p 86. 87.
0' Peripheral Neuritis by Ross & Bury p 358
fixed from severe vomiting all through her pregnancy. This ceased a few days after delivery, but three days later headache supervened. This ultimately entirely disappeared.

IV. It explains how these true honoured treatment, found by experience to be so valuable, acts. The practice of depletion, by purgation, sweating, diuresis and bleeding, has been employed for many years, and probably acts by relieving the system of toxins. But that will be discussed more fully at a later time.

V. It suggests a new form of treatment that of diluting the poison by means of saline injections, which having been tried on purely theoretical grounds has been found to be of great practical value. Its value we cannot explain on any other grounds than that of a toxidemia.

VI. It satisfactorily explains why pemphigous cases are more liable than multiparous to the affection.
Those who expounded the mechanical theory, stated that, as in tumors, in hydrominos, the pressure on the ureters is greater than in multiparae. But this explanation is negatived by the fact that by no means a large proportion of cases of ovarian or fibroid tumours, cases in which the mechanical element but very largely, show albuminuria. The same objection can not be brought to the explanation which our theory furnishes. A first attack of albuminuria does one of two things in certain procreative patients (viz. 1) It either uses up all the available fodder in the system, on which the poisonous toxins may feed or (2) It produces a new substance which is antagonistic to the toxins themselves. In this way the patient becomes immune after a first attack.

I have attended the confinement of two such patients. In the one case a chloroform was used, Coprosis albumenuria, necessitated the termination under chloroform of the pregnancy at the six month. In the second there was a history of marked albuminuria.
edema, sickness etc. during the last two months, with Eclampsia at full term. Here also Chloroform was administered, and a living child delivered.

When these two patients had entered upon their second terms of pregnancy I advised them to have their urine examined from time to time. This was systematically done during the last two months of gestation, and no albumen found. At full term each passed through a normal labour and had a live child.

**VII**

*Albuminuric Gravidarum has been artificially produced by the injection of a gravid rabbit of Besum which has been removed from an affected patient. And as a result, it has been found that gravid animals are much more susceptible to the effect of the poison, than non gravid animals. These experiments we shall refer to more fully, at a later stage.*

Proceeding then on the assumption that the poison is the cause of these conditions, let us try to investigate the nature of the poison.
That view that

I. Suppressed sweat may constitute the

poison in me, for which a good deal can

be said. Certain number of Album music

and eclampsia cases show a history of

a preceding chill. The superficial

capillaries' extract, sweating is in

vigour and soon the patient be

comes profoundly ill. Following

upon this observation it was

inferred that these ill effects were

occasioned by the suppressed constit-

uents of sweat passing into the

circulation and causing toxemia.

The idea that sweat may be noxious

is no new one. Indeed refer-

ences to it are not wanting

in the classics. A recent Spanish

journal called El Siglo Medico,

in its issue dated August 22nd-

1897, makes the following quotation

from an old Latin writer:

"Take the sweat of a horse from

between the ribs of the right side,

and with this wet the puncture

of a lanceet; this wound will

be mortal. This action has

been performed with desired

results."
This is less fully described by Mr. Benthall, who states that he read the following in a work entitled "Mappae Cluniacae" Collection of Recipes (recipe No. 263)

"Sudorem Equi, quem mi des
"Parte inter Coecas habuit
"Sume, el annige Sagittam. Hoc experimentation est utiliter"

The difficulty in obtaining materials in sufficient quantities has hitherto handicapped experimenters in this line of investigation. Rohrig, who led the van, made only a single injection of normal human sweat into a rabbit, and came to the conclusion that its effect was lost. Desirous the next observer was more enterprising, for we found that he procured sufficient of the reagent to enable him to make fourteen injections. Strangely enough he arrived at exactly the opposite conclusion from Rohrig, and has placed it on record that in his opinion "the sweat of healthy persons does not elicit any toxic substance." By this I
presume he asks us to consider it innocuous.

with this uncertain condition of our knowledge I always was by no means satisfied; I so decided to renew the study of this subject; and it is to him that we must look for authoritative information as to the toxicity of human sweat. His experiments were conducted for the most part upon dogs, from them he ascertained these facts and deduced the following conclusions.

Injected into the blood, sweat causes the death of a dog following upon an average dose of 15 C.C. per kilogramme of the living animal; and a rabbit with a dose of 20 C.C. after an interval of from 24 to 48 hours. The duration of the illness, the gravity of the symptoms, and the dose necessary to cause death vary with the sudoriferous glands have performed their function.

Ovide Compte de la Société de Biologie, Séances du 19 Décembre 1876 et du 29 mai 1877.
For instance sweat, secreted under violent muscular exertion possesses a toxic efficacy exceeding by one fourth, or even by one third part, the ordinary toxicity. Furthermore, other things being equal, sweat obtained by artificial subcutaneous means, exhibits a minimum of toxicity. The effect on the circulatory system is most pronounced. From ten to twenty seconds after the injection has been given, the pulse suddenly becomes small and accelerated; from 120 pulsations per minute it mounts up to 240 or 300; simultaneously the arterial pressure rises and attains sometimes 200 mm of then rapidly falls to 70 mm. This crisis over the pressure gradually falls of reaches a point below the m"hal pressure; the heart becomes calm and beats with greater energy. I have observed that at the moment of most severe distress in the circulatory system, when the pulse is most accelerated the excitability of the modulating nerves of the heart remains
The sudoral poison therefore acts chiefly upon the heart exciting centres and the muscular fibres of the heart.

The mechanical phenomena of respiration are modified in number, amplitude and form. In one experiment which may be regarded as an average case there were twenty one respirations per minute before the injections, nine after the injections during the hypnoid stage, and twenty during the stage of prostration. In brief, the respiratory movements show, not rather by their form than by their number, that the nerve centres are infected by the sudoral poison.

The mean temperature normally falls in the course of the nitric venous injections, but it is rapidly recovered, and after about four hours it rises above the normal by from one to a half to two degrees. It coincides with general cyanosis, lasting attacks and lasts for about two hours; undergoes
Thereafter a sharp reduction from a half to one degree, and oscillates for a considerable time about this febrile temperature. One of two things then happens. Either the patient recovers by degrees to the normal during the following days; or death may ensue, in which case the temperature falls pretty quickly below normal.

Upon the Nausea producing Centre and the Spinal marrow there is a direct action. In this poison I can affirm that there is a direct action of this poison upon the nausea producing Centre, for I have observed vomiting to occur at the begining of injection of Concentrated extracts before the occurrence of any of the phenomena of congestion. The sweat produced during and after muscular effort is more productive of vomiting than the sweat produced by artificial means after prolonged repose. There may be adduced as evidence of an
effect produced upon the nervous system, the shiverings and tremblings. Which in the end involve almost all the muscles; shiverings and tremblings which are thrown into rhythmic action by the inspirations and in some case, short form movements of the limits, and spasmatic contraction of the diaphragm.

One of the most remarkable effects of poisoning by sweat is this: produced upon the coagulable constituents of the blood. In two dogs, four hours after the injections, although the febrile reaction was at its maximum, the number of red blood corpuscles had diminished by about one million per c. Millim. On the following day in each they had diminished by over two millions; and a month later, though recovering the patients were still dusenite.

If the malady lasts for a certain time sugar disappears from the blood, and from the liver at the moment of death. At this moment also the urine is albuminous. The
Phenomenon of urinary secretion is therefore more or less profoundly affected by the presence of sweat in the blood. Immediately after the introduction of the poison the proportion of urea of chlorides, of phosphates in the urine is increased.

If account be taken of the quantity of urine secreted it will be found that the total amount of these substances eliminated during the two days following when the infection is slightly below normal. The greatest difference is presented by the chlorides, then by urea, last by the phosphates.

To sum up, if we take a summary of the symptoms described in this article, we come to the conclusion that sweat contains some unexpectedly poisonous substances, occasioning more or less derangement of all parts of the organism, disturbing the ultimate phenomena of nutrition, modifying the composition of the blood, substances the properties of which possess a
"Strong analogy to certain nids-Novio to sculls."

These experiments, valuable as they undoubtedly are, would not in themselves justify us in arriving at a practical working conclusion, if they were unsupported. Fortunately, however, for our argument, observations in another direction strongly substantiate and confirm some contentions which these experiments suggest and seem to justify.

Students of skin diseases have been struck by the variations in affections of that nature with the quantity of albumen which is being passed. It has frequently been observed that album with improvement in a troublesome case of Psoeca is, in a persistent former at condition, album in the urine makes its appearance, and at first small, in amount, it steadily increases as that improvement proceeds. Physiologists have removed hair from a healthy dog and
Then carefully covered its skin with a solution of Gutta percha. The animal soon began to show signs of distress, and an examination of the urine passed soon afterwards, revealed the existence of albumen, an element which had not been present previously to the Coating process having taken place.

It is also an experience of common occurrence in the practical of Dermatologists to observe in cases of progressive albuminuria, signs of atrophy of the skin, such as pallor, thinness, etc. This although apparently extraneous to the cases of proteins just noticed, is also helpful to us in our study.

The above facts seem to give some ground for following these conclusions at which Semmelweis arrived.

1. There is a constant relation between
   (a) The degree of activity of the Cutaneous functions
   (b) The existence of albumen in the urine.

Semmelweis further noted that that relationship also varies (c) with the quantity of displaceable albuminoid in the blood serum.
If it be for the moment conceded that sweat, passed into the circulation, may act as a poison, a consid. ev. of the factor of CLIMATE in relation to Albuminuria calls nat. morally for at least a precaution. The effect of a warm dry atmosphere is to reduce sweating. A moist surrounding medium, has consequences the process. If it be the case that suppression of sweat is a cause of Albuminuria we would ex- pect to find that condition more prevalent in districts of Countries where the Climate is for the most part a moist one. The follow- ing statistics appear to have a bearing on the subject. They give the number of deaths from Renal disease and Albuminuria, proportionate to the total number of deaths in some of the large cities with the mean annual temperature in these Cities. The figures are compiled from published registers of Causes of death.
<table>
<thead>
<tr>
<th>City</th>
<th>Jan</th>
<th>Feb</th>
<th>Apr</th>
<th>Mean Temp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aberdeen</td>
<td>49</td>
<td>89</td>
<td>95</td>
<td>47.0</td>
</tr>
<tr>
<td>London</td>
<td></td>
<td></td>
<td></td>
<td>50.3</td>
</tr>
<tr>
<td>Edinburgh</td>
<td></td>
<td></td>
<td>107</td>
<td>47.2</td>
</tr>
<tr>
<td>Dun dee</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Melbourne</td>
<td>110</td>
<td></td>
<td></td>
<td>57.4</td>
</tr>
<tr>
<td>Glasgow</td>
<td></td>
<td>142</td>
<td></td>
<td>46.9</td>
</tr>
<tr>
<td>Paris</td>
<td>266</td>
<td></td>
<td></td>
<td>52.4</td>
</tr>
<tr>
<td>Bombay</td>
<td>2800</td>
<td></td>
<td></td>
<td>80.6</td>
</tr>
<tr>
<td>Genoa</td>
<td>4303</td>
<td></td>
<td></td>
<td>61.0</td>
</tr>
</tbody>
</table>

The comparatively colder cities of Great Britani and Australia come first, Aberdeen occupying a bad pre-eminence in that respect. Genoa with its almost-tropical climate has an exception which, for reasons which have been already alluded to, does not extend to Bombay.

The Registrar General for England and Scotland in his reports gives further valuable information on this subject. From them

On the Pathology of Albuminura by W. Howes, Dickinson MD (Cantab) Second Edition 1891.
we learn that the proportion of deaths from pulmonary to the total number of deaths from specific causes in Great Britain in the year 1863 is thus displayed:

<table>
<thead>
<tr>
<th>Country</th>
<th>Deaths from Pulmonary Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scotland</td>
<td>109</td>
</tr>
<tr>
<td>Wales</td>
<td>131</td>
</tr>
</tbody>
</table>

Of the several divisions of Scotland:

In the mainland rural districts 1 in 103 was from this cause.

In the town 112.

In Scotland 188.

Great Britain with her military outposts ranged in almost every quarter of the globe has very exceptional opportunities for collecting information. For we have the unwavering factor of the Constitution and the British soldier, with the varying quality of the climatic element which surrounds him in the different districts. It is therefore a reasonable inference to make, that the climate is an important factor in producing the difference which
we found in the health of men located in these different parts of the world. Army Medical reports collected under the superintendence of Dr. Graham Balfour furnish the results of a series of experiments in geographical medicine of great value.

<table>
<thead>
<tr>
<th>Country</th>
<th>City</th>
<th>Number of Troops</th>
<th>Number of Cases per annum</th>
<th>Death of Strength 1 &amp; 2</th>
<th>Mean Temp.</th>
<th>Hygromel. Well &amp; dry hill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceylon</td>
<td>Colombo</td>
<td>802</td>
<td>8</td>
<td>3205</td>
<td>82.5</td>
<td>6.4</td>
</tr>
<tr>
<td>Bengal</td>
<td>Patna</td>
<td>35222</td>
<td>8</td>
<td>4855</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>West Indies</td>
<td>Portau</td>
<td>1458</td>
<td>8</td>
<td>6226</td>
<td>80.1</td>
<td>8.1</td>
</tr>
<tr>
<td>United States</td>
<td>New.York</td>
<td>78615</td>
<td>8</td>
<td>585</td>
<td>80.4</td>
<td>4.3</td>
</tr>
<tr>
<td>Newfoundland</td>
<td>St. John</td>
<td>292</td>
<td>4</td>
<td>12.573</td>
<td>41.7</td>
<td>2.4</td>
</tr>
<tr>
<td>Nova Scotia</td>
<td>Halifax</td>
<td>3218</td>
<td>4</td>
<td>—</td>
<td>43.4</td>
<td>3.1</td>
</tr>
<tr>
<td>Cape of Good Hope</td>
<td>Graham town</td>
<td>4009</td>
<td>4</td>
<td>7418</td>
<td>68.2</td>
<td>7.0</td>
</tr>
<tr>
<td>Malta</td>
<td>Malia</td>
<td>3060</td>
<td>8</td>
<td>4588</td>
<td>67.0</td>
<td>6.3</td>
</tr>
</tbody>
</table>

It is to be observed that attacks of album mucosa are more frequent in Bengal than in the other Presidencies, a difference which may possibly be associated with the greater moisture in its climate. In Newfoundland with its exceptional humidity the album mucosa disorders would appear to be...
even more frequent than in the United Kingdom so far as we can venture to draw conclusions from the small number of troops imprisoned in that island of mist. With the higher temperature on the subtropical shores & islands of the Mediterranean Sea where a tropical or nearly tropical climate is tempered by a vast circumference of ocean, albumen becomes less frequent. In the subtropical range, which is thus comparatively exempt from albumen viridis, lies the Cape of Good Hope.

In whichever direction we leave the moderate temperature range we find albumen viridis less common. In our own country the Colder Hebrides are comparatively free while the Shetland islands with their imperial summers of uniformity of cold weather are less affected than any other part of the Kingdom.

Dr. Dickinson as a result of
His studies on the subject arrived at the conclusion that "albuminuric patients are after remarkably susceptible to the depression influence of damp and relaxing climates and are readily be liberated by one which is dry and bracing. The desiderata appears to be mainly an even temperature with a mean between 60° and 70° and a dry air.

Although we do not claim that it has been uncontrovertably established, we submit, that in the foregoing statement 7 facts there are strong grounds for bearing the contention that these particular climates which re-strict sweating favour the establishment of albuminuria and that the albuminuria so produced is a toxemia, the result of the poisonous influence of sweat circulating in the blood. At the same time we do not lose sight of this other explanation is that the suppressed sweat sets up a nephritis and that the albuminuria may have resulted from that.
O'Landor Brunton says, we do not yet know whether the secretions of sweat which is usually looked upon as the sole function of the skin bear really the relationship to cutaneous activity which the secretion of bile bears to the function of the liver. And after alluding to the relationship of the non-duodenal gland (thyroid) and the glycogenic function of the pancreas, which is independent of the pancreatic-juice, he further states that if this idea be correct a complete revolution will be required in the views which we have been accustomed to entertain regarding the action of many remedies but chiefly to those belonging to the Classes of diaphoretics and purgatives. Perhaps the chief value of drugs of that nature is not due to the substances liberated through the secretions they cause, but rather...
to those which are returned from
the intestines and thence into
the circulating blood.

Dr. Luck states that convulsions
may occur epidemically in conse-
quence of atmospheric conditions
which probably interfere with the
function of the skin. The Ed-
inburgh Maternity hospital Ne-
urics lend their views further
support. At least they show that
an unusually high proportion
of such cases come from the
lower lying and damper atmosphere of
Scotland. In Wales I refer more
particularly to the abbercorn shire of
Monmouthshire, a particularly
damp district, in which I had
personal opportunity of obser-
vying for myself, for a period of
less than one year, besides ob-
serving the experience of others
who had been practising in
the district for many years.
Cases of albuminuria from eclampsia are comparatively fre-
guently. During that time I met
with three cases, one of which terminated fatally.

A view which regards ALBUMEN or ALBUMINOPS as the poison causing the symptoms, is we are aware, one which does not obtain much favour in the eyes of British and American observers. Yet meaner as it numbers amongst its advocates as eminent and so distinguished a scientist as Semmola of Naples, it cannot altogether be excluded from consideration, as such a treatise as this.

Semmola as a result of experiments which he undertook, proved that, 'The amount of Albumen which is passed during 24 hours varies directly with the quality of food taken. Thus there is four times as much albumen passed when a patient is kept on an exclusive meat diet, as there is when non-agitated foods constitute the exclusive dietary.

In a paper, "Novelles Recherches Experimentales et Clinique sur la "Malgue" de Bright", which was presented to the Academie de medecine of Paris & published in the Archives de Physiol opie in 1884, Semmola records his researches on this subject during years 1850 to 1853. of subsequent papers the latest may be abstracted in the Br. med. jour. 3d 23 art. 162.
He further demonstrated that urine
examined during digestion contains
more albumen than at other times.
In view of these facts, it is quite
unreasonable to suppose that they
can be explained by the
varying effect of a kidney
lesion, he inferred that:

Dr. *Albumen can appear in the
urine without a kidney lesion
being present, and that the
albumen eliminated by the urine
is in a constant relation
to the composition of blood; and
that its presence is accounted
for by the fact that certain
albuminoids, not being destroy-
ed and transformed into
urea, water & Carbonic Acid,
are eliminated by the kidneys
as useless.

Having reached this hitherto
place, it was evident. Next
further light regarding the vary-
ing composition of albumen is
necessary, before he could hope to
arrive at a practical result.
Accordingly Semmola undertook
A series of researches on the
properties of albumen, which enterte-
ated him in the year 1861 to sub-
mit to Académie de Paris the
following conclusions that

1. The albumen of different cases
differ as to coagulability or reaction
to magnesium sulphate and other salts.

2. The albumen in heart or liver
disease is allied to caseiniferous
albumen, whilst that of true
Bright's disease is more like
white of egg.

3. The alteration of the blood
in the albuminuric of Bright's
disease consists in the presence
of a non-assimilable albumen,
unlike by its molecular com-
position to contribute to the
maintenance and repair of
the tissues, and therefore leads
to its elimination as a
substance foreign to the body.

4. Diet to controlling in Bright's
has little or no influence in
symptomatic albuminuria.

Twenty years afterwards he had sup-
plemented this knowledge so that m.
1881 he was able to submit as the result of experiments which he had further made, that

1) The albuminoids of the blood in Bright's disease are more or less completely diffusible according to the more or less advanced stage of the disease, or the greater or less amount of albumen eliminated by the urine.

2) In the serum of healthy people or in those suffering from symptomatitic albuminuria, i.e., that in such cases as heart or liver disease the albuminoids diffuse only to a very slight degree, and that small diffusibility bears no relationship to the quantity of albumen passed by the kidneys.

To these communications he added this further information two years later that

1) In healthy patients who present transient albuminuria, the blood serum contains an excessive amount of diffusible albumen over that of healthy persons who are not albuminuric, and
that quantity is always in proportion to the quantity eliminated by the kidneys.

(2) In all cases of Albumenuria which occur in the course of dyspeptic diseases, the serum contains an excessive quantity of diffusible albumen, over that present in health.

(3) In cases of Albumenuria due to changes in pressure on the renal circulation, the albuminoids of the blood which diffuse do not vary from the proportion in health.

(4) The blood serum of persons attacked by Albumenuria in convalescence from Scarlet Fever contains a great quantity of diffusible albumen.

He used the term Hyper-albuminose to express that condition of the blood where there is an excess of diffusible albuminoids. This line of investigation then merely gave him the conclusion that the person of Albumenuria is a diffusible albumen which the kidney keys to eliminate, and in so doing courts its own destruction.

O. Translation for setting: (in a note to it)
ALBUMEN

Itself may be the poison which causes all the outward symptoms. In this view Semmola of Naples is supported by experiments similar to those undertaken by Claude Bernard. He injected albumen into the subcutaneous tissue of a rabbit, watched the symptoms which followed, the experiment in different stages, and ascertainment the lesson which followed upon the operation, by making a post-mortem examination. The chief lesson so caused seemed to be in the kidney and it is only the observations on that organ and the appearances which it presented, that we have recorded.

If the albumen injected was small in amount, it passed through a normal kidney, without causing any alteration in its histological elements, and without leaving any damage behind. A persistence in the process begins
to cause hyperresia with intra-glomerular hemorrhage, and hemo-
orrhage into and between the
tubules. The capsule becomes distended
by a mass after coagulating. Some-
times it is simply lifted up
and separated from the glomeruli
by an empty space. There is a
considerable migration of leuco-
cytes without any alteration in
the epithelium. Hyaline casts
appear in the urine. These are
the first steps in an inflamma-
tory process in connection with the
hepatic effort.

If the functional effort persists
for more than 6 or 8 days,
especially in cases where the
quantities of albumen injected
is more than a gramme for
every 1000 grammes of the animal,
the slow inflammatory process in
creases with cloudy swelling of
the tubular epithelium, fatty
degeneration, epithelial necrosis,
and thickening of the inter-tu-
berular connective tissue.
The histological alterations of the
kidney continues for some time
after the injections have ceased,
without causing a persistent
of the Albumen urinae. With the elimination of the Albumen by the Kidneys, there is always Albumen in the urine. The elimination of a certain quantity of Albumen with bile.

It has also been noticed that cases of Albuminuria Gravidarum frequently persist as cases of Chronic Bright's disease.

From these observations it seems reasonable to infer that

1. Albumen acts as a poison, just as Carcinoides or turpentine may do, and so may set up a nephritis, and at least, disorder of the hepatic functions; and possibly the other organs of the nervous system will suffer in the same way, if not secondarily to the kidney.

2. That the position of those who hold that all cases of Albuminuria Gravidarum are primary cases of Bright's disease is untenable.

Now if the Albumen circulating in a patient's blood were sufficient to account for the symptoms, there is a
A reasonable chance that a sample of that blood injected into the circulation of another patient would produce similar symptoms to a lesser or more severe degree. For obvious reasons this is a point which could not well be experimentally demonstrated. But in the absence of a suitable patient to experiment upon, an animal was procured for that purpose. Semmola withdrew a quantity of blood from a gravid patient who was suffering from albuminuria. He subjected this to analysis and found that it contained diffusible albumen in excess. This, he injected into the veins of a dog and found that symptoms of albuminuria, in proportionate to the amount of albumen injected, supervened.

Having then abandoned the more popular theory of the nephritic origin of albuminuria, he reasoned that the steps in the process are as follows:
1) Some interference takes place with the metabolic activity of the skin and other glands. Then there occurs
2) The presence of unassimilable Albumins in the blood takes place,
3) Which for the most part is eliminated by the Kidneys
4) And straightway produces Nephritis.

Although Semmola must always be credited with having originated and elaborated this theory, the claims of Dr. Güber to distinction in this connection are not altogether unfounded. Undoubtedly, in complete ignorance of Semmola's work, he put forward a theory of superalbuminosis, which being put briefly amounts to this:-

"The mother produces more Albumen than usual;
The Fetus is unable to consume this excessive quantity;
The surplus thus resulting accumulates in the blood,

D S. album misirie preserale" Paris 1870
by Madame S. Walker, Brownie p. 25."
then eliminated by the kidneys, and during its transit through this organ it gives rise to irritation which may end in nephritis.

The common experience of finding Albumen preceding or even existing in the urine quite independent of a renal lesion altogether, seems to add weight to hemorrhoid conclusions. In such cases, accordingly to Jacquin it has been found in the sputum, and we further have it on good authority that the bile of patients suffering from Bright's disease contains Albumen; and it is also located by the emunctories.
In those days when the presence of microbes in the system is found to underlie so many pathological conditions, and when as the result of the successful recognition of microbes as the undoubted cause of certain diseases, it is not unnatural that the presence of these organisms have been asked to account for the varied phenomena associated with Campylospora & Alburn enucria Gravidarum. Several have been, who have talked vaguely on the subject and with varying degrees of confidence have put forward suggestions on these lines, but it has been left to Dr. E. Blane of Lyons to recognize and separate organisms which are constantly present in these conditions.

In the March and April numbers (1891) of the "Archives des L'album minis spermatis, Paris 1890, by Madame E. Weiss, povine.
In Toxicology, he stated that he had found micrococci in the kidneys and urine of twenty-six albuminuric women. He failed however to find them in the blood. Yet cultures injected into rabbits caused albuminuric convulsions and death. Although the grounds on which he based his assertion are somewhat slender, he nevertheless avers that the microbes, and their products, produce a zymotic disease, and that the albuminuria is merely a symptom of this disease. He gives it as his belief that the site of entrance of the organisms is through the endometrium whose resisting power has been weakened by a previous endometritis. It does not seem to me that he has clearly made out his case. He has not proved that all patients who suffer from albuminuria have previously been the

Subjects of an endometritis. It is not consistent with the common experience of the connection between cases of hydramnios, twins, primiparous patients, and albuminuric conditions, and other cases which advocates of the mechanical theory put forward. Nor is it argued that moist climates so prolific in cases of albuminuria, favour endometritis. With these facts before us, it does not appear to us that the contention of a previously existing endometritis can be maintained.

Drusden paid some attention to this aspect of our subject. In "Beiträge zur Pathologischen Anatomie der Puerperal Eclampsie" he records his views. He was permitted to make post-mortem examinations of the organs of two patients who died of puerperal eclampsia. On the results there obtained, he

decided that there was no evidence of a bacteroidal origin for the toxins.

But again this result is somewhat discounted by the labours of Fauke who in 1892 claimed to have induced puerperal convulsions by injecting bacteria into pregnant animals.

Again it has been proved that those organisms which it is sought to identify as an explanation of the disease under discussion, have been found in the urine of healthy patients.

In the whole, with such a diversity of opinion amongst and painstaking observers in this department, we cannot see our way to accept the teachings of those who would ask us to believe that the origin of Albuminuric Gravidarum is to be found in the efforts of Bacteria, so for the present must content ourselves with the common and unsatisfactory verdict of "not proven".
IV. A suggestion has been made that:

URIC ACID

may be the poison. Dr. Alexander "Haig stated that the presence of uric acid in the blood causes arterial constriction and this by lessening the supply of the skin and the liver causes about those changes.

Apart from the fact that his view assumes our acceptance of a "vascular" theory of albuminuria, the point which is quite without the province of this thesis to discuss, and one in which we do not believe, we hardly consider it advisable to discuss this point at any length.

Since 1870, volumes have been written regarding the appearance of uric acid in the system. The subject is much too large to be tackled now. Besides the present knowledge regarding the pathology of uric acid urinary is so unsatisfactory that we prefer to leave it alone.

Dr. Alexander Haig in the British Medical Journal 1890 Vol. 1 p. 65.
For the same reasons we do not consider it necessary to more than mention that it has been suggested that -- Glucose -- is the irritant which, in the urine, so acts on the kidney in its transit through it, that it sets up a nephritis, and in that way causes albuminuria.

Even the most rabid advocates of this view must admit that in only a small proportion of cases tested has glucose been found. And further, not all diabetic persons have albumen in their urine.

This view likewise we do not consider worthy of any serious consideration.

True it is that Stumpf found an excess of sugar in several eclamptic cases before the fit appeared. But he lightly dismissed the subject, by suggesting it pass-
mig, that it was probably due to deranged liver.

Dr. Wmckel's treatise of midwifery p. 593.
The colouring matters of the urine have been suggested as the poisonoous elements.

In the year 1881 Felty and Ritter wrote a thesis entitled "Urinie Experimientale". The burden of this paper was to prove that healthy urine filtered and neutralised is poisonous to a rabbit in a mean dose of 40 c.c. per kilogramme of body weight. This means that the whole urine of 24 hours would kill the man himself if he had no true advantage in excretion, and was equally susceptible with the rabbit. The symptoms observed were myosis, accelerated respiration, somnolence, fall of temperature.

Dr. Thucidium selected the colouring matters as being the most probable toxins contained therein, and he thought that they were absorbed from the bowel for the following reason:

Dr. From a paper published by Dr. Allbut in The Lancet Febry 27th 1897. 579-582.
It is less in amount un-
d fasting animal or
(b) in urine obtained after sleep.
(c) It is greater in fatigued urine.
Where it is formed cannot
definitely be stated, but it is
probably absorbed from the bowel
and becomes poisonous only when
the liver fails to neutralise it,
or where the kidneys are not-
working properly. This can be
found by injecting such urine
into animals, when it is found
to be less toxic than normal.

2. Massieu's researches support
this statement, for he found
such urine twice as toxic as
normal urine, and in some
cases three times as toxic, as
normal urine.

Albut suggests that two dis-

tinct forms are present having
different actions. He one he
describes as

1 Convulsive
2 Comatricic
The existence of this distinction has
not yet been worked out, not proved.

2 De la toxine de la Seum. vi
Thése de Bordeaux 1873.
van der Velde, experimented with urine itself, although not specially with the colouring matters extracted therefrom. The test animal which he selected was the rabbit. He demonstrated this important fact that a gravid animal was much more susceptible to the poison than one which was non-gravid. To produce clonic contractions of the neck in a pregnant animal 2·3 c.c. of urine was sufficient; whilst in the non-gravid rabbit 5·1 c.c. was necessary to produce a similar effect.

VI. There is not much evidence to prove the acetone in the poison we are in search of. Yet Uccellucci found it to be present in 9 out of 137 patients. In most of them the acetoneuric lasted about 4 days. There were no fits. But the foetus was dead in each instance. Possibly in these cases the foetus constituted the test animal and was killed by the poison.

Revue Obstétricale Internationale Sept. 11th 1896.
Prager Medicinische Wochenchrift No. 33. 1893.
A salogogue ingredient of the urine has been mentioned.

In an article published by Dr. Christian Simpson M.D. it was pointed out that, the hypersecretion of saliva in pregnancy may reach many quarts in 24 hours, and that such secretion contains no Phyalui and less sodium salts than normal. This was explained by its possible nervous origin, viz through reflex nervous stimulation from the uterus.

Bouchard offers another explanation for its appearance. He says that one of the toxic principles in normal urine is a salogogue. He took a sample of normal urine, Y to eliminate the possible error of the effect of colouring matters, he decolourised it, and then injected it into a rabbit. The effect was to produce salivation. He then isolated this poison and described it as "a stable organic substance, not fixed".

"Article by Christian Simpson in Lancet July 10th. 97. P. 87."

"Auto intoxication in disease p 62 et seq."
"by charcoal, soluble in alcohol, and "district from the diuretic (urea) or "the narcotic toxi-, ri". The chemical "nature of the substance is un- "known, and although it has not "yet received a name its action "is very marked. If an al-
"convulsive extract of uric acid injected into a rabbit, the animal "exhibits salivation, almost equal "to that produced by pilocarpine, "and becomes comatose. So "it is found in greater amount "in blood than in urine, we "presume that the kidney with-
"draws it from it, these, previous "to excreting it by the urine.

IX. CREATIN.

It was suggested in 1853 by Wieger & Schottin, Zweifel inoculated it into the cerebro-
"cortex of apes, and found that symptoms not unlike eclampsia "supervened.
Treatment of Albuminuria Gravidarum.  

Whilst various theorists regarding the pathology of Albuminuria Gravidarum hotly contest the field of their endeavours to explain the causation of the disease, happily the same diversity of opinion does not obtain when reference is made to the subject of its treatment. There are several well worn lines of treatment which practically find universal favour and although many of these remedial measures with their own pet views, experience has so abundantly proved their value, that they have ceased to cavil, and no longer endeavours to gainsay their worth. What then are we to recommend to the prospective mother who finds herself the unhappy possessor of a superabundance of Albuminuric urine, and those train of symptoms which usually accompany it?
(I) Firstly then she must be directed in the words of the late Sir Andrew Clarke "to walk in the paths of Physiological Righteousness.

By this we mean that due attention is to be paid to regularity in all one's habits; a fair amount of exercise, preferably in the open air, must form a part of a daily walk is to be taken; undue exposure to damp or cold is to be avoided, and no risk of mental excitement is to be incurred.

So far all are agreed.

But when we touch on the subject of

(II) DIET

we reach more debatable ground. Laqueur affirmed that attempts to diet an Albuminuric patient were of no use whatever. On the other hand Sir Thomas Granger Stewart has instanced cheese, pastry and eggs as forms of food which he has observed are capable of inducing Albuminuria in certain persons, and

O' D'ancel July 27th 1847 p. 582.
O' Lectures on Important Symptoms: Albuminuria p. 145.
he mentions the Case of a med-
ical Colleague who whenever
he indulged in pastry or cheese
was pretty sure to suffer from
albuminuria with puffiness of
the eye-lids. Stockerius and
some others have stated, that
in animals, and in themselves,
they have found that when
egg albumen (uncooked) was
taken into the stomach in large
quantities, a portion of it was
excreted in the urine. Fausszahn,
Coats, and D'Arcy Power claim to have
seen albuminuria produced in
the same way. Loudon Brunton
however failed to produce Al-
buminuria by swallowing six
raw eggs in succession; and Dr.
Macquie swallowed the whites of twelve raw eggs
without producing album-
minuria. Sir Thomas Granger
Stewart also tested the effects
of some other articles of food
as cheese and walnuts,
and came to the Conclusion

"Food in Health and Disease," by J. Barrow, p. 407.
that although particular articles of diet reduce albuminuria in some people, yet the quantity of albumen is usually min-
ute, and it has little tendency to persist after the resumption of ordinary food. In this regard however to diet in albuminuria there is an almost general consent that richly nitrogenous food is distinctly prejudicial, and more especially so, if it consists of brown meats of e.g. or of highly spiced food. In view of these facts, and this additional one, that Gastric Cachexia is so common a feature of the disease, the clear indication is to administer food which is found to be readily assimilable, which will least-tary the digestive functions and which at the same time will furnish the smallest amount of nitrogenous waste, calling for elimination by the Kidneys. A glance at the chemical composition
of milk, reveals, some grounds for believing it to be a suitable food. On analysing cows' milk we find that it contains

a large quantity of a principle rich in nitrogenous termed Casein, as well as some other nitrogenous or albuminous substances in small quantity.

2nd. a form of sugar mainly Lactose or lactase (milk sugar)

3rd. a considerable quantity of oil or fat (cream or butter)

4th. Water holding in solution various mineral compounds or salts (chiefly chlorides, phosphates, Sulphates, of Magnesium, Calcium & Potassium, Sodium and Iron).

The irony which milk contains is only small in amount still it will help to counteract the anaemia which is frequently present, and altogether tend to raise the standard of the blood and enable it to fight the toxins. It has been found that the salts which suffer most in this condition are the phosphates and the Sulphates. Doubtless

0. Food in Health Disease 1. Barney F. 16.
Doubtless that deficiency will partly be made up by those which are present in the milk. The large amount of water, which holds these in solution will act as an excellent diuretic and by so doing tend to hasten the removal of the toxicic elements present in the blood, whatever they may be. This action is doubtless still further supplemented by the diluent effect on the blood. The blood is rendered more fluid, and in this way the poison is concentrated, and so less powerful. Tarnier went further than that, when he affirmed that it supplies the maximum food for forming toxins, and so starves the toxemia. In this view he is supported by Bernheim who states that "milk feeds itself, least of all foodstuffs to the generation of toxins". So far is Tarnier's belief in its
value, that in some cases these large amounts of milk prescribed are not tolerated he recommends that they should be administered by stomach pump.

If Semmola's views on the particular form of the poison circulating in the blood (i.e. a normal albuminoid due to imperfect elaboration by the skin, be the correct one, is there not here a further reason why milk should prove eminently serviceable. The mammary gland placed superficially to the deep fascia as it is, is essentially a skin gland). So that milk, in that sense is a product of the skin. That being so I think it is quite a reasonable conjecture to make, that the albumen which it contains is less likely to make a real call on the elaborative function of the skin, than albumen which have been produced in other ways. If the skin glands are really faulty,
as Semmola contends then we have in milk a food which highly nutritive as it is, yet placed on the already overstressed organ a very minimum of work.

For these reasons, and for others, above all, because its value has been empirically established, milk ought to be the staple, and in really bad cases, the only diet given. But if the economy is to be kept up on one food it is essential to know what amount is necessary and how it is to be given. According to Beren Hopper's & Voit's Calculation is the daily food for an adult shorn:

\[
\begin{align*}
\text{Contamin} & ~ 13.7 \text{ grammes of dry Albumen} \\
\text{Fat} & ~ 1.7 \\
\text{Carbo Hydrate} & ~ 3.5 \\
\end{align*}
\]

Based on this calculation it is reckoned that from 5 to 7 pints of milk daily will fulfill the necessary requirements.

6. Food in Health & Disease  p. 411
Seven pints of milk are estimated to contain 216 grammes of Albumin. Casein 17 2
161 3 - lactose.

The method of applying this exclusively milk diet is as follows:

If the patient's stomach will bear the sudden suppression of all other fluids of food, an event unlikely contingency, the full quantity of milk may be taken daily. But if the stomach shows less tolerance of the change, it should be made more gradually, and half a glassful or a glassful of milk should be taken at suitable intervals, and other fluids of food slowly and by degrees replaced by it. The milk should be as fresh as it is possible to obtain it and drunk at the ordinary temperature without having previously been boiled or flavoured in any way. It may be necessary for very small quantities at a time to give it frequently. But when on full milk diet 18 to 24 glasses of milk occur in each
In the 24 hours will have to be taken. Inconvenience may arise in the form of diarrhoea or constipation. The former may sometimes be corrected by giving a smaller amount at a time, and by giving it more frequently. Constipation may be remedied by an exhibition of the usual laxatives, or by including suitable fruits, such as prune, figs etc. in the diet. A little soda or Seltzer water after each glass of milk will usually suffice to remove the objectionable taste which is frequently present in the mouth.

A point to which not much attention has been paid, but which nevertheless is worthy of special notice is the following one. The various excretory organs participate in the rest which sleep brings and amongst these the kidneys. Possibly they may have a bearing on the phenomenon of puffy eye lids which is so commonly observed in albuminous patients in the morning. Whether or not that be the case, it certainly is a
fact, that relatively less urine, and that more highly albuminous, is found after sleeping than after a waking period. Jacobsen recommends that the patient should take advantage of any chance waking hours during night to drink a few cups of milk, so as to keep the urinary secretion active under its influence.

Although milk contains rather an excess of fat it is relatively deficient in carbohydrate constituents. In most cases this deficiency may be met by including a small quantity of the ordinary carbohydrate foods, such as tapioca, hominy, rice, corn flour, semolina, mung beans etc., in the dietary. The most sustaining of these is semolina, and in that account it is to be preferred.

Some attention must be directed to clothing. All the garments should be made of flannel or wool. This favours a healthy action of the skin, and by protecting from cold...
and damp, leaves the patient much less likely to contract a chill.

The posture of the patient is of considerable importance. It has been observed that the disposition towards albuminuria is much lessened if the patient can be kept in the recumbent posture. This accords with the experience of Francis Joseph Davies (FRCS Eng) of Townshend, Wrexham, who, in all experience in the last twenty years in which he has had to deal with nearly two hundred cases, assured me that he had never seen a patient who was put to bed and kept there until labour was over, develop eclampsia, provided always that the albumen in the urine did not exceed one half. I may say that it was his routine practice in these cases to confine the patient to a purely milk diet, and to give a combination of Chloral Hydrate (Synaps) and Iron Ferri Perchloridi, three grains daily. In these cases he states that a diminution of the
Albumen invariably set in with a day or two of the treatment having been commenced, the supervision of pits was an experience to him un

known. At the same time it must not be understood that he recommends the rest treatment to all his albumin

cases. On the contrary the albumen must exceed one third before that step is re-

commended; or there must be prodromata of eclampsia present, in which case the presence of absence of albumen in the urine is immaterial. When the patient has been put to bed, actual labour is kept off as long as possible—

The question of advising

—B A T H S—

is one which is surrounded by much difficulty. Theoretically the advantages and the disadvantages which are connected with their employment seem to be about equa


balanced. To raise the temperature of the skin, in order to cause dilatation of the superficial vessels and induce sweating, in the light of the time honoured views of the skin functions, might appear to be desirable; and certainly if we were quite sure that in proportion to the amount of fluid sweat which leaves the body, the blood is relieved of a corresponding amount of poison, no fault could be found with it. Unfortunately however, the latter fact has not been successfully demonstrated, and until it has been shown to exist, we must rather incline to the belief that the withdrawal of a large quantity of sweat leaves the fluidity of the blood relatively decreased and the concentration of the poison more pronounced. In that case, increased sweating would certainly do harm in proportion to the latent to which it is employed. Semmola however, as has
been already pointed out, attaches a new significance to
the Cutaneous functions; and
by modify my this newly dis-
covered (as suggested) function, it is not unlikely that in some
cases baths actually do good.
Possibly they produce their
benefit: for careful observers
have placed it on record,
that they have frequently
seen their employment follow
ed by marked benefit, not
so much through the secret
which they promote, as through
the secretion of some un-
known substance, as the Thyroid
Gland does, which passes
into the blood, and there
either diminishes the toxicity
of the circulating poison; or
by facilitating the more
perfect elaboration of album
inns, puts a check to its
further manufacture.
Whilst undoubtedly
there are certain cases in
which the administration
of baths are valuable,
in prescribing them we must
not be blind to their dangers.
Dr. Wylie, when I attended his clinics at the Royal Infirmary, Edinburgh, had for some time made a practice of ordering hot air baths in Bright's cases to induce free sweating. But a succession of unfortunate cases, in which their use was followed by pneumonia, induced him to discontinue their use altogether. Others have observed that their employment, not only has failed to ward off impending uraemic convulsions, but in some instances they seemed to hastened their advent. In these cases the result was possibly due to the increased concentration of urea.

We would therefore direct special attention to the great importance of keeping the patient on very large quantities of milk, so that whilst the baths are being employed as much as eight pints of milk a day may be given. In this way a two-fold safeguard is established (1) an increased diuresis, and (2) a free
elimination of solids by the kidneys. 2. The purity of the blood is not allowed to diminish and the concentration of the circulating poison is avoided. Winkel believed in the value of baths and recommended a bath of 100° F daily, after which the patient should be wrapped up in a hot blanket. Thus sweating may be kept up for a period of two hours. He has seen this treatment result in the patient carrying her child to full term, and the child seemed to have suffered in no way.

A good deal has been claimed for the Talmann hot air bath, and real benefit seems to follow its employment in forty cases. Those who hold the view that the poison present in albuminuria is uric acid would only be consistent if they gave this method a fair trial. So shows by Sibby has recorded a number of

Winkel of cit. p. 395.
Sonnerl Jan. 10th 1897. p. 110.
Cases of uric acid remia where its employment has resulted in great good according to the patient. The cost and cumbersome nature of the baths unfortunately place them for the present, at least, beyond the reach of rural practitioners; and a search of the records at Edinburgh Maternity Hospital does not reveal any history of cases in which they have been used. We have also from the literature on the subject been unable to learn that others have tried them. Thus we must own that we would like to see them given a fair trial in a selected number of Album mumia cases, as we believe they would prove beneficial.

Hydropathists, never backward in coming forward with their remedies, strongly recommend Turkish baths. Not every house which had an Album mumic patient had facilities for carrying out the treatment. So patients take them at public institutions. This practice produced a new
Source of danger V2: That of contracting a chill on the way home. So, it again fell into disuse. But the same change can not be brought against a simpler form of hot air bath, and this may be confidently recommended twice a week during the later months of pregnancy in cases where the amount of albumen is great. The method is as follows:

"Place a spirit lamp, or a small petroleum lamp, on the floor beneath a wooden chair; a piece of tinfoil plate may be attached to the under surface of the chair seat. The patient is seated nude in the chair, and her feet are immersed in water as hot as can well be borne; a quickly supply of woollen blankets, is placed to compass the patient and the chair, coming quite to the floor, and gathered about the neck. The patient ought to drink a pint of hot water, and usually in five, ten or twenty minutes will begin to perspire freely. These aids are specially valuable where the patient is suffering from an acute attack of pain. Patient is then wrapped in a cold sheet and placed in bed and blankets heaped up upon her. At the end of an hour, she will probably have slept and sweated freely the whole time. She is then to be rubbed down with warm towel."

"How nature cures by Emmett Bensmore M.D. p 32."
CUPPING. and RENIPUNCTURE

have been employed in some cases. The practice finds its justification in the assumption, by no means proved to be a correct one — that a congested condition of the Renal Vessels' Causes or aggravates Albuminuria. It is possible that the congestion, when it is present, is secondary to the edema and does not really bear a causal relationship to it. And certainly it is that the results of post-mortem examinations in cases which have proved fatal, make it clear that it is possible to have Albuminuria without any kidney congestion. But into the vascular theories we must not go as they are outside the scope of this paper. Suffice it to say that in cases of Albuminuria gravidarum where Bright's disease has been known to exist previous to the occurrence of pregnancy, the employment of Cupping over the thoracic region of the loins is distinctly useful. Advantage is
Taken of the known connection
between the superficial capillaries
through the sub-peritoneal plexus
of Turner and the renal veins to
deplete the organ of its super-
fluous blood, with a view to lowering
the vascular tension inside
of the kidney, and in that
account lessening the tendency
of the organ to filter an excess
of Albumen away from the
blood. We know that in offering
this explanation of the
action of Cupping, we accept
as granted a much disputed
theory of the relationship. But
we have done so because
we believe it to be a more
probable one than that which
maintains that the excess of
Albumen passed is due to
a failure in the reabsorptive
power of the portico of the
renal epithelium, rather than
to an excessive excretive capac
ity. Although we cannot
give any actual case in which
penicrulture has been followed,
but in a small leucerette in
the Lancet on Dr. Reginald Harms's
presidential address to the medical society of London delivered in 1896, the following passage occurs:

"Many times have surgeons cut down on a kidney in a patient with Albuminuria in the expectation of finding some gross lesion, and have been disappointed; yet when the wound has healed the symptoms of which the patient has complained have completely disappeared. The explanation that was usually given was that some constriction band had been divided, or that the results were due to the effect of the operation on the mind of the patient. But there is much to be said in favor of the view put forward by Dr. Harrison that the result in some cases at least is due to the relief of tension. We cannot doubt that vascular tension in some cases at least does give rise to Albuminuria. In other parts of the body more accessible than the kidney we can diminish CON to generation by "local blood letting"; so we have good "a priori" reasons
"for thinking, that it is possible to relieve a case of the Kidney, by punctures or incisions, and if this were done, it cannot be doubted, that at least in some cases the albumen in the urine would disappear, and the amount of urine excreted would increase. Instead of actual cupping some have found in leeches a most useful method of depletion. Dr. Bouchard states that a loss of Thirty-two grammes of blood can be effected by the application of two leeches. This amount he reckons removes as much total matter as can be done by means of 280 grammes of a liquid diarrhoea or by sweating to the extent of 100 litres. In support of this method Dr. B. Wriggins, D.R.C.P. of Barnsley records an illustrative case, which occurred in his practice.

Dr. Bouchard p. 133.
Dr. Lance March 13th 1897.
It was a case of Urini preg
nancy with Albumen in the
urine which the labour
passed off uneventfully. But
fourteen days afterwards
fits set in. After chioi
form and other means
had been unsuccessfully
applied, great benefit was
caused from the application
over both lumbs of one
dozen leeches. From this
point the patient rapidly
made a complete recovery.
Although some attention has
been paid to this method of
treatment, we do not feel suffici-
ently satisfied as to its value
to strongly recommend it.

--- VENIPUNCTA ---

We have a mode of treatment which
occupies a very different place in our store
of remedies. It is a method whose value has
long been very much under-rated. But
it was not always so. There was
when bleeding was the refuge of the
medicine man in all his professional perplexi-
ries. If a patient was thought to be dying
from Child-bed, it was considered prudent
to deplete him, in order to lessen the load of the disease on the unfortunate victim. In 1666 the Plague struck Londoners were bled by the thousand, and the protracted and exhausting sufferings of Typhoid and Typhus fever were by this means often unwittingly brought to a sudden termination. Nor were these wanting those who, in the exorcising of demons from those so possessed, believed that they possessed in the lauce a potent and speedy remedy. Things could not go on thus. With the spread of knowledge, it became clear that where good was aimed at, only too frequently did evil accrue. The result then was that the pendulum of practice swung to the other extreme, and from the error of one case, we passed into the not less flagrant one of complete divorce. But there are signs of our yet arriving at a true estimate of its worth and of our reaching the coveted "Verum in medias res".

There is no call to discuss fully the blood changes of the disease...
its hyperemic, hypertoxic, hydromictic condition. If we draw off a quantity of the fluid the immediate effect will be a
1. lessening of the amount — relatively very small — of poison
2. Diminishing of the congestion in the Kidneys and vital oral organs generally.
3. Flowering of the stimulation of the very excited heart, because there is less poison circulating in its w.irk and in its nerve structures.

In view of Mahomed's theory this is a consummation devoutly to be wished for, because it will lower the vascular tension and probably arrest the mischief before the eclamptic stage has been reached.

But it appears to us that in order to ensure its success, it will be necessary to repeat the operation from time to time, as the blood and its removed will be speedily replaced as ever.

Sir John Williams has recorded an illustrative case: A patient pregnant for the third time was at the eighth month passing urine, which by the ordinary tests appeared

Practitioner 1895, Jan.
to contain ¼ of Albumen. There were no eclampsic symptoms but it was considered advisable to bleed her. This was done to the extent of eight ounces. Immediate relief was obtained from her more distressing symptoms and in twenty-four hours all Albumen had disappeared. Both recurred, however, and the operation was repeated three times at intervals of a week, and each time with the same success as attended the first operation. His experience led Williams to infer that it is indicated where there is high vascular tension with a tendency to Cordial failure; and that it must always be used with great caution, and especially so in weak women.

\[\text{O}'\text{ }\text{Wrickel it is only right. It does not agree with this and expressly states that it shou}\]d never be used at all. Fordyce Butler declares it to be of great value especially as a prophylactic against Convulsions.

\[o'\text{ Wrickel op cit, p. 576}
\[o'\text{ Fordyce Butler, p. cit. p. 80}\]
In addition to the powerful argument of such a case as that cited by Billauer there are good theoretical grounds for employing bleeding. Frequently after the labour has passed the albumen disappears, may this not partly or largely be due to the haemorrhage which invariably takes place at that time. If so this is nature's method of combating the disease and is worthy of being tried.

Bouchard states that 32 grammes of blood contain 5-2 centigrammes of extractive substances. Now the daily elimination of these by the urine is eight grammes or one sixteenth of the daily total and probably more than that in pregnancy with such facts before us we cannot help thinking that in bleeding we have a most powerful and useful remedy which in bad cases might always be receive a thorough trial.

O': Bouchard p. 133.
Where the patient is under treatment for some considerable time, assistance can be obtained by the use of drugs, although on the whole it is better to obtain if possible the end in view by other means. That albuminuria can not be completely controlled by the use of any one drug is the view of Sir Thomas Grasquet Stewart who has expressed himself in the following terms.

Sir William Roberts and Professor Rosenstien have come to the same general conclusion as Dr. Samnels regarding the inefficacy of drugs to diminish albuminuria; and I have satisfied myself by a long series of careful observations that we have no right to credit any drug with the power of directly diminishing the discharge of albumen.

Sometimes the excessive Anemia may cause grave anxiety, and this of course must
be combated by the employment of worm either in the form of bland pills or better still in combination with chloral hydrate. This was the method employed by St. Darn's of Carm Carn, in a most extraordinary practice. It was his custom to give them in fluid form. Thus 8 m of Trich. Ferric combined with 81 m of syrup 2 of chloral hydrate was given in a little water, with sometimes the addition of a little white of egg, three times daily. The albumen although theoretically contra indicated did not seem to prejudice the value of the treatment in actual practice.

Excepting the dental disadvantage attending this course, he found it to be highly valuable, and in nearly all his cases perfectly satisfactory. If more than a quarter of the urine was albuminous, rest in bed was enjoined during the exhibitions.

It is possible that the constipation so frequently trouble some may be diminished by
by the use of iron. In ordinary cases this tendency can be counteracted by dietetic measures. An avoidance of constipating drinks such as tea, brandy etc., and the introduction of a large fruit element such as prunes, figs, tamarinds, dates, will all prove valuable. But if these fail to attain the end in view, laxatives, by preference saline laxatives must be called in to supplement their action. In such cases one must remember the therapeutical objection to potassium salts and avoid them. Barium either will suit or fluid form is very suitable. I have found a most agreeable and satisfactory way to be habitual as follows.

(\[ \text{g}\])

15. Barium carbonate

6th. belladonna

8th. Novomins \text{mg}, 6th

Digs capsule

big one or two at night as required.

Hempadi and Vicki waters quite hot before breakfast is also good.
It is always of the greatest possible value to attend to the procuring of bowel antisepsis. Perino naphthal qvmin in powder or cachet three times daily after food I have found valuable. And I find that in such treatment I have the support of Dr. Allbutt also who also speaks highly of its value. In the same way Salol is much employed. Charcoal gr. ½ combined with Bismuth subnitrate gr. ⅛ in a large tabloid qvmin three times daily I have got excellent results with. Charcoal shares this theoretical advantage over the others that it decolourises some of the pigments and purges others, and in this way readily removes a constant source of readily absorbable toxins. Hot water enemas periodically employed seem a reasonable way of lessening the amount of poison in the rectum or lower bowel. It is well spoken of by Dr. Allbutt who states that Chausier's symptoms of violent pain in the
Stomach must always be regarded as symptomatic of approaching convulsions, and as an indication for the Carrying out of bowel antisepsis on the above lines.

If notwithstanding these measures, oedema of the limbs and face, and possibly of the lungs should supervene and steadily increase, we must have recourse to depurative measures. These consist of Diuresis, Diaphoresis, catharsis, Cupping, and Blood letting. Cupping and blood letting having already been referred to need not again be discussed. Of the value of Diuresis there can be no doubt. It has been objected, that when fluid is removed, the poison remains in a more concentrated and therefore more virulent form. But the answer to that is two-fold: (1) A proportion of it is passed out with the sweat so that there is a diminution of the gross amount of poison left in the body; (2) Experience has abundantly proved that a reestablish
ment of the flow of urine is immediately attended by relief of distress. A hot bath with a blanket enveloping the patient and bath, is sometimes sufficient. But its action may be supplemented by the exhibition of a quart of water drink. Many give potassium acetate and by so doing lay themselves open to the charge of increasing the amount of poison, instead of driving it out. Potassium acetate is said to favour the evacuation of renal irritation, so it is not commendable. Rather, do we think that where the expense is not objected to, strychnin should be given. Although a comparatively new remedy, it appears to have more than justified its existence. A Coction of Scoparium, in doses of half an ounce every three hours, or Spirit of Juniper in dram doses every three hours until May have acted are also most serviceable. Viscum Virgin has for long been used in the Southern States of America for this purpose.
O'Barrow recorded a case in 1895 where its action was magical. He read it before the Society of Alumni of Bellevue Hospital, New York. Put shortly it is as follows.

A patient of twenty years age, complained of frequency and micturition, swelling of the legs. Her urine was almost solid with albumen and contained granular and hydralic casts. Fits came on, so the vesix was incised and the child delivered by forceps. Two hours afterwards, the fits having recurred, two drops of castor oil and five minims of triure of veratrum were given. The latter was given hypodermically, were given hourly until four doses were given. The result was that the patient soon showed a slight improvement. The pulse softened, the temperature fell to 100°, and there was no recurrence of the fits. In 24 hours off having a specific gravity of 1015. This showed a trace of album}

O'Farrell Dec 14th 1895 p 1525
with hyaline and granular casts. Uninterrupted recovery took place.

It is great value, Barrows says, that in such cases it promotes urinary secretion.

There is a certain class of cases in which digitalis is of value and is indicated. According to Barrows and that is where the blood tension is excessive. In giving it one must be on the watch to determine it, whenever the action commences.

The employment of Cocaïn is the natural treatment in the light of the pathology of the disease. We know from Bouchard's experiments that one litre of water per urethra is sufficient; one litre less per kidney, which would have eliminated 50 times more urine than in the healthy state, but the disturbance does not remove other poisons from it. Urea from the blood, but it removes other poisons from it.

But although the thie of treatment by hydrogogues is based on

1) Barrows, p. 409.
2) Bouchard, p. 132.
Diaphoretics have been recommended for the same reasons as prompted the use of cathartics. Whilst agreeing as to the value of the treatment, modern observers are not quite at one regarding the mode of their action. There are rather more than conjectural grounds for surmising, that in addition to the excretive action already recognised the skin has a secretive action, and that the secretion so formed passes into the general circulation, and there exercises some beneficial action of a nature not yet rightly understood. In view of the opinions expressed by Lauder Brunton, which have been already referred to, it is not highly probable that it is this less known, and probably infinitely more powerful action of the skin that diaphoretics owe their value, rather than to its excretive function. Hot air baths promptly act but as has been pointed out by Dr. Wyke of Edinburgh, may be followed by
Pneumonia, a most grave complication, and Pilocarpine have been much used, and produce sweating very promptly and very copiously. But it has grave disadvantages, for Cardiac depression and oedema of the lungs must be regarded as such. Some go so far as to say that its use may even determine an onset of fits.

Dr. G. Macalister is of that opinion and has recorded a case which he had, which he intends illustrates that point. The patient was one who exhibited marked Albuminuria with swelling of the face and limbs, and was greatly distressed. Twice he injected 1/3 grain of Pilocarpine Nitrate, and each time it was followed by violent convulsions and vomiting. This he attributed to the action of the drug. But we would suggest that this explanation is by no means satisfactory, and that the untoward circumstance was much more likely due to the irritation of the needle, and is really analogous to those cases where even
the simple procedure of making a digital vaguine examination, has been immediately succeeded by a series of convulsive seizures. Dr. John Phillips gave the subject a good deal of attention and has recorded 39 cases of convulsions in which he gave Pilo-carpin. In 9 of these dangerous symptoms at once appeared and 7 died. The mortality in his experience was so less, that he discourages the use of the drug. Dr. Herman shares his dread of it, and finds his objection is upon the well-known action of the drug to cause sweating into the Bouchecil tubes. And Dr. Proctor in the New York Medical Journal June 30th, warns against the use of pilocarpin which may follow the use of pilocarpin. It has been suggested that all men should be simultaneouly used with it.

0° Transactions of Obstet. Soc. Vol XXXI p. 354
0° " " " " " " " " " " " " " " 10° "
0° New York Medical Journal Jan 91.
0° Lancet Dec 25. '91 Lenderette.
An interesting point, although I cannot see that it can be turned to practical use, is the fact that if a sufficiently small dose of pilocarpine is used it really lessens sweating. It has been found that a dose ranging from 1/60 to 1/30 of a grain acts in this way.

In summarising up the opinions on the use of Pilocarpine we would submit that great discretion must be used in selecting cases where it may be applied, and that where there is marked cardiac weakness or any pulmonary embarrassment it should certainly be avoided.

The fact that Quinoline has been used as a diaphoretic in these cases, furnishes us with an opportunity of introducing a short consideration of its action at this point. Dr. J. F. R. Appleby used it in two cases where there were albuminuria and oedema, with surprising happy results. 40 to 50 mls. were poured upon the abdomen, and gently
rubbed in. In a few minutes the pulse became soft, and free diaphoresis set in. The recovery in both cases was good. He says "Guaracol possesses the advantages of ease of application, certainty of action, and speedy relief of urgent symptoms. Its pharmacological effect is to produce rapid and marked lowering of arterial tension, and temperature, along with free diaphoresis." F.R. Walters, M.D. (New) quite agrees with applicly as to the value of its action but can not explain it. "No doubt," he says, "it has an action of some kind, as albuminuria, but the action is probably indirect, and depends on the destruction of some other irritant." Dr. Seefeldt and Dr. Hoelscher have studied the action of guaracol very closely and they have given the following account of their views on the subject. After its absorption, free Guaracol is found in the urine in the space of half
an hour. Besides normal albumen, the blood contains other albumoides due to the morbid processes, and particularly products of the nutrition of the bacilli. The latter are very apt to produce chemical phenomena and to modify them, and so become toxic. As long as such toxic albumoides are found in the blood all the quercicoid absorbed is fixed, not upon the normal albumen, which is little apt to react, but upon those toxic albuminoids which form stable combinations with it. These combinations of coagulable albumen and quercicoid are no longer of a toxic nature, and they are profoundly modified by absorbing oxygen. The quercicoid sulphur of the albumen molecule is separated from the combination and forms by oxidation a sulphate of quercicoid while the remainder of the albumen molecule is discharged. The products thus set at liberty are eliminated from the blood chiefly by the urine. A very
The following prescription is stated to be effective in certain cases:

- Guaiacol m \( \frac{3}{11} \)
- Glycerin \( \frac{3}{10} \)
- Inst. Gent G. \( \frac{3}{11} \)
- F. Chloroformi \( \frac{3}{11} \)
- Aquam \( \frac{3}{11} \)

**Sig.** 3% every 4th hour.

In those cases by no means infrequent where owing to the caustic properties of the drug it is badly borne, Duatal (Guaiacol Carbonate) is recommended. In an article on that subject written by Professor Ogardin-Bedemetz in 1896, it is expressly stated that the objection does not hold good with regard to Duatal. It has these additional advantages:

- It is tasteless, slowly decomposed and exerts a controlling influence on fermentative changes in the intestines.
- Al Canal. Dr. Heel, in Zentralbl. Annalen der Münchener Krankenhaus 1896 speaks highly of this action in the intestinal canal, and re...
recommends it being given in powder form in wafers, in doses from 1/2 to 1 grain upwards.

Cases however will arise in which the foregoing lines of treatment will be tried but without avail. The question of inducing premature labour will then require to be considered. Unfortunately authorities do not seem to be any better agreed on this than they are on many other branches of the subject.

6th. Bartholomew advocates it strongly and asserts that under certain conditions, viz where there is serious eye damage, Paralysis, or Cardiac failure threatening, it should certainly be undertaken. In this way a patient may be saved from becoming a subject of Chronic Bright's disease. Trous and Galabin agree with this view.

Winkle on the other hand takes up a distinctly antagonistic position to them and states that it is always inadmissible to induce

01. Winkel op. cit p 409.
02. " " 578
03. " " 318
04. " " 576
premature labour. During the past
month, a case occurred in our
practice where premature labour was
brought on with most satisfactory results.

The patient was a primipara aged 31, and was completing her 8th month
of gestation. We were sent for
because of an oedematous condition of the face and limbs, with repeated attacks of sickness,
headache and pain in the eyes. The pulse was 112 and the respirations
36 per minute. In view of a previous experience where a primipara developed oedema of
the lungs and died suddenly within 24 hours of being first
seen, it was decided to hasten
labour. The urine I may say
in both cases contained albumin,
Sulphate of Quinine in 10 grain dose
was ordered to be given every
3 hours. At the end of nine
hours, she was seen and it was
found that the only result
produced was an increase of
the headache and marked limb
oedema. The treatment was
continued for another 12 hours
but with no better result. 1
os at this time could only
with considerable difficulty, ad
two fingers. Forceful dilatation
with the hand was then had re-
course to, with the result that
at the end of 3/4 of an hour
the application of forceps be-
came possible. The patient having
been placed under chloroform
a living child was safely de-
livered with forceps. The subseuent
history of the case was unex-
ceptional, and the patient rose
on the tenth day. In the man-
agement of this case I had the
assistance of J. McCallender, M.B. C.M. (Ed).
The course of this case makes
one regret that in the other
one already referred to, the
patient had not received the
chance which speedy delivery appears
to have given in this case.

Injections of glycerin in the
cervical canal after the method of
Pelvec, or modified, slightly is very
valuable and was followed in one
of the cases which I have to submit.
An account of the method will then
be given, an account which will be
found in Case No.1
Case I.

Twin, hydramnios, miscarried at 6½ month. Treated by rest in bed, milk, iron, chloral.

Sarah Lewis 32 years. Cam Carmarthen. consulted us when in the fifth month of gestation. It was her fifth pregnancy. She complained of a feeling of oppression with difficulty of breathing. She pointed out that she thought she was much larger than she ought to be at that stage, and appeared to be growing abnormally quickly. In a few days swelling of the face and limbs supervened, with occasional attacks of sickness. On examination of her urine showed 2½ alsbumen, but no tube tests. On this she was passing from 15 to 20 ounces daily. She was ordered to bed and put on a purely milk diet. This was given in quantities of half a pint every 2½ hours to commence with, and gradually increased until 3 days afterwards she was taking
taking a quart every four hours. This she tolerated well and except for the meanwhile presence of constipation, which however was corrected by giving a Tamarinden lozenge each night, appeared to be improving. At the end of a week the swellings in the limbs had somewhat subsided - the albumen had diminished to a half, but the respiration, and what was believed at one time to be the diabetic condition present were little altered, but if anything worse. A hot bath, after the manner described on page 72, was then administered daily, and was followed by great relief, which however proved to be only temporary. From the time she was first seen, she had taken of Tricit, Ferri Perchloridi m 8, Syrupi Choral Hydrali 3p, Glycerin F 7 in a warm usefull of water every four hours. This was continued. Suddenly, ten days after she had been seen by us for the first time, we were sent for hurriedly, and on arrival, found ourselves,
Called upon to superintend a marriage. It proved to be a case of twins (boys) with hydrops--mos. Both were dead. The after history of the case was uneventful.

**Case II.**

has been described on pp. 99-100. Treatment by Zinnumie, chloroform, fierceps.

**Case III.**

Treatment by Purgation, iron and whey.

Jane Davis aged 36 came under my notice at her 6th pregnancy. In enquiring into her previous history I found that she had had 3 stillborn children. She had suffered from postpartal septic--hemia at her third confinement and her last one had been characterized by eclampsic seizures, the child being still born. She complained,
of swelling of the limbs, asthenia, sickness and loss of appetite. An examination of her urine revealed almost 1/2 albumen. It was not thought advisable to put her to bed, but a course of purgation was suggested. She was asked to abstain from meat foods, and to restrict her diet if possible to milk, fruit and carbohydrate puddings. Milk was not tolerated at all well so was discarded in favour of alum whey. The whey was made as follows:

Half an ounce of powdered alum was dissolved in 2 ounces of water.

The milk of milk was heated to boiling point. The solution of alum was added to the milk, and the whole freely stirred together. It was then poured through a strainer. It was found that about one tablespoonful of curd was in this way removed from the milk.

This we found she assimilated perfectly. Beginning with 3 pints daily she rapidly increased it until ten pints were being taken in the 24 hours without any inconvenience. Along
with this soon in the form of chocolate-covered jelloids (made by Barnick Bros, London) were quietly in increasing doses. To commence with the equivalent of 9 grains of bland pills were given and steadily increased until at the end of ten days she was taking 45 grains daily. These tablets were given between the times of taking milk and were excellent by borne.

The first evacuation was induced by giving sixty grains of Compound Salak powder in a cupful of hot coffee, and the cathartic was kept up by giving night and morning one dram of Epsom salts combined with ginger. This gave two or three liquid motions daily. After the fourth day this did not seem to act quite so strongly as at first, so its action was supplemented by a daily enema of two pints of hot water intro-

duced by a hydrostatic irrigator. This line of treatment was followed by immediate relief of her more urgent symptoms,
and it was thought that the pregnancy was to go on to full term. But suddenly, after this time had been pursued for a little over three weeks, labour pains came on and she was after four hours labour, delivered of an Eighth month’s child. Immediately afterwards there was a very marked fall in the amount of Albumen passed. The future history of the case was uneventful.

The chief points of interest in the case are these:

1. Where milk was rejected, they even in large quantities was easily retained.

2. Iron in fairly large quantities did not exert any prejudicial effect on digestion which was already impaired.

3. The onset of eclampsia was averted.

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Case IV

Treatment of Eclampsie and a modification of Peber's method of inducing premature labour by the injection of Glycerin.
I was hurriedly called to attend Mary Elder, aged 21 – presented – on 7th June '97. She was unmarried, a fact which no doubt accounted for her not coming under notice before then. One was immediately struck by her facial appearance, which was pale, puffy, and jaundiced. Her previous history was good, with the exception of an attack of inflammation of the kidney's contracted 3 years previously. She had no malaise, no headache, but there was great swelling of the legs and abdomen present. She stated that she had been passing little water during the last ten days at least. An examination was made, and some urine drawn off by a catheter. This was found at the time to contain nearly 31/4 albumen. Whilst a more minute examination made subsequently of a retained sample showed in addition copious bile casts. Slight pains were present. She was put to bed and Remicin & 10 gravis doses
every 3 hours given. So little advance had taken place during that time, it was decided to hasten labour by means of Glycerin injections. The method employed was that described in the Text by T. Arthur Helm, M.D. (Ed.). The essential point in the process is that the glycerin is not injected into the uterine but only into the Cervical Canal. Accordingly she was put in the knee Elbow position. With a Curved needle Syringe one & a half ounces of Glycerin was slowly injected into the canal— the injection lasting four minutes. Although some passed back again in the vagina, the greater quantity of it was retained. Twenty minutes later I examined and found the external os had become dilated to the size of a two shilling piece. On inquiry to expectoration, I found the parts quite soft and the internal os beginning to dilate. With my finger to guide the needle I again injected into the Cervical Canal two ounces of
of Glycerin. An hour later — the patient had meanwhile not complained of pain — the internal OS was soft and palpable and readily admitted 3 fingers. The membranes could be felt quite freely moveable and separated from the lower uterine segment. I now repeated the injection but this time injected three ounces of Glycerin between the membranes and the lower uterine segment. Labour pains now set in and the rest of the case was left to nature. In eight hours she was delivered of a male child still born. The child appeared to have been dead for several weeks. Notwith-stand ing the unhealthy condition of the foetus, no reflex mischief followed. The puerperium, on the contrary, was in every respect normal in character. The points which I think are specially worthy of mention in this case are the following:

(1). The painless, steady, and rapid dilatation of the OS which followed the injections
The establishing of the contention, that in order to bring on labour, glycerin need not necessarily be injected into the cavity of the uterus — that its presence in the cervical canal suffices.

3. The possibly antiseptic action of glycerin in protecting the mother against septic infection from a partly decomposing foetus.

Pfluger (of Cologne) attributes the value of glycerin to its
1. Direct irritation of the uterus setting up uterine contractions.
2. Mechanically separating the membranes from the uterus.
3. Hygroscopic action, causing a transudation of liquor Amnii, an equivalent to rupturing the membranes.