The

TOXAEMIC THEORY

of

ALBUMINURIA GRAVIDARUM.

being a

THESIS for MD (Ed) degree.

by

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Ever since Lever of Guys 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.

Not may we consider the views [1] of Braun who taught that Puerperal Albuminuria & Eclampsia always depend upon Bright's disease; nor accord more than a passing notice to the teachings of Tyler Smith & Leishman who maintain that Eclampsia arises from the effects of a nerve reflection existing eccentrically in the uterus, and that the albuminuria is due to the Conditions of high arterial pressure.

without fully [illegible] at this stage all the reasons

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[1] Lancet 27th 1897. p.
[2] ditto " "

which have led us to select this particular view of the pathology of Albuminuria gravid arum, we may in passing mention one which is by no means the least potent of their number. In nearly all forms of toxaemia 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 realises 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 its toxaemic origin.

With regard to the actual Condition 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. The

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 & vulva, Ascites, Oedema of lungs, Hydrothorax, Oedema of Brain etc.

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

(3) Intra Uterine death of the Foetus may occur with decomposition & subsequent danger to mother of Septicaemia.

(4) Eclampsia, or puerperal Convulsions may arise in pregnancy or labour. It is right to point

out, That Eclampsia may occur without any preceding Albuminuria, but in
0' 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) Haemorrhages such as Epistaxis or Haemoptysis, + pulmonary appoplexy may take place. But of all the forms it may take, that of post partem haemorrhage is the one which is most of all to be dreaded.

(6) Closely connected with the foregoing heading is the series of changes which may occur in the eye. Haemorrhage into the retina, Albuminuric Retinitis, Atrophy of the optic disc, + paralysis involving loss of accomodation must be named.

(7) The Ear may be the site Complained of. Here local haemorrhages 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 appoplexy, an accident which frequently happens during labour, paraplegia, or Aphasia etc

0' A text book of Obstetrics by Dr F Winckel translated by C Edgar '90. p 593

(9) The Kidney is a very common organ to suffer. The nature and mode of those 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 to an excess of poisons circulating therein.

(11) Such briefly are the

Disorders of all the different systems in the mother. In the alimentary system, a most depraved appetite or obstinate Vomiting may be the first thing to arouse one's suspicion. The renal functions may not be quite satisfactory, and your attention may be called to the fact, that a diminution in the amount of Urine passed 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 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.

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thology.

It is essentially a blood change & the only point played by the Kidney is that of Eliminating the deleterious substance. Such is the contention of those theorists who champion the ~~Toxaemia~~ cause of the toxaemic origin of Albuminuria ~~Eclampsia~~ in 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 commending 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 of our subject

Professor Byers of Queen's College Belfast, who 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 eliminating organs are working properly is got rid of without any ill effects. If however any of these organs, especially the kidney liver and intestines, gets 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

Lancet Jany 2nd 1897. p 29. 30

pregnancy, or when there are changes in the renal organs & liver in the form of paren-enchymatous degeneration, produced 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 irritability of the nervous system in pregnancy are also Elements in the problem." Byers is supported by Hirst who is strongly of opinion that a failure in any of the eliminating 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 his view. Two days after being confined fits supervened with coma, suffused face, rapid and feeble pulse & high temperature. The patient had been constipated for two days. A purgative was administered and produced a wonderful effect. The symptoms disappeared entirely & did not recur -

D' American Journal of Obstetrics July '96.

Having enunciated the toxaemic 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 <u>analogy</u> between the symptoms of other pathological conditions, such as Typhoid & Scarlet-fever, which are known to be forms of toxaemia, and albuminuria. And just as the presence in the blood of toxins in those symptoms explain them, so it is reasonable to assume the same explanation of Albuminuria in gravid women. This point is referred to by Professor Byers M.D. in the following terms:- "The prodromata, gastric & Cerebral symptoms, the rapid occurrence of nervous disturbance in the action of the brain, the <u>post mortem</u> rise <u>in temperature</u>, the nature and <u>frequency</u> of nerve disorders, that follow and which fuid their analogy

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Lancet Jany 2nd 1897 p. 29. 30

in the neuroses consequent upon Typhoid fever and Diphtheria, probably caused by tox albumins, are scarcely to be explained unless by the theory of blood poisoning.

II. It satisfactorily explains ~~those~~ not only those cases, which come strictly under the term "Albuminuria" but also that unsatisfactory class of cases where fits supervene without any albumen being present in the urine.

III. It affords an explanation of those cases where after the confinement has been successfully passed, various Neuroses set in. These neuroses according to Professor Simpson [1] of Cambridge may set in any time up till involution of the uterus has become completed. That such neuroses do occur is supported by the evidence of Ross & Bury [2] who cite two cases. In one of these instances the patient suf

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[1] Lancet July 10th 97. p 86. 87.
[2] Peripheral Neuritis by Ross & Bury p 358

fered from severe vomiting all through her pregnancy. This ceased a few days after delivery; but three days later neuritis supervened. This ultimately entirely disappeared.

IV. It explains ~~this~~ how that time honoured treatment, found by experience to be so valuable, acts. The practice of depletion, by purgation, sweating, ~~and~~ 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 viz 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 toxicid.

VII It satisfactorily explains why primiparous patients are more liable than multiparae to the affection.

Those who espound the mechanical theory state, that, as in twins, & hydramnios, the pressure on the ureters is greater than in Multipara. But their explanation is negatived by the fact, that by no means a large proportion of cases of ovarian & fibroid tumours, cases in which the mechanical element bulks 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 primiparous 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.

[redacted] I have attended the confinements of two such patients. In the one case two years ago Eclampsia with copious albuminuria, necessitated the termination under Chloroform of the pregnancy at the six month. In the second also two years ago there was a history of marked albuminuria

oedema, 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 Albuminuria gravidarum has been artificially produced by the injection into a gravid rabbit of Serum which has been removed from an affected patient. And as a result, it has been found that gravid animals are much more susceptable 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 know investigate the nature of the poison.

That view that.

I. <u>Suppressed Sweat</u> may constitute the poison is one, for which a good deal can be said. A certain number of Albuminuric & Eclamptic cases show a history of a preceding chill. The superficial capillaries contract, sweating is in abeyance and soon the patient becomes profoundly ill. Following upon this observation it was inferred that those ill effects were occasioned by the suppressed constituents of sweat passing into the circulation & causing toxaemia.

The idea that sweat may be noxious is no new one. Indeed references to it are not wanting O' in the Classics. A current 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 lancet; this wound will "be mortal. This action has "been performed with desired "results"

O' Lancet Sept. 11 1897. p699.

This is less fully described by M Bertholett who states that he read the following in a work entitled "Mappae Clavicula" Collection of Recipes (recipe Nº 265)

"Sudorem Equi, quem in dex
"tra parte inter coxas habuerit
"sume, et in linige sagittam. Hoc
"experimentum est utiliter"

The difficulty in obtaining material 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 toxic. Quercioli the next observer was more enterprising, for we find 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 eliminate any "toxic substance". By this I

O' Lancet Septi 4' 1897. p. 614.

presume he asks us to consider it innocuous.

With this uncertain condition of our knowledge Arloing was by no means satisfied; 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 deducted the following conclusions. ①'

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 of a rabbit with a dose of 25 C.C. after an interval of from 24 to 62 hours. The duration of the illness, the gravity of the symptoms, and the dose necessary to cause death vary with the conditions under which the sudiparous glands have performed their functions.

① Vide Comptes de la Societe de Biologie Seances du 19 Décembre 1896 et du 29 mai 1897.

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. Further more, other things being equal, sweat obtained by artificial sudorifics 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 m m & then rapidly falls to 70 m m. This crisis over the pressure gradually falls & reaches a point below the normal 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 moderating nerves of the heart remains

vitach." The sudoral poison therefor
" acts chiefly upon the heart exciting
" Centres and the muscular fibre
" of the heart.

The mechanical phen
omena of Respiration are mod—
ified 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 hypnotic
stage, and twenty during the
stage of prostration. In brief
the respiratory movements show,
but rather by their form
than by their number, that
the nerve Centres are infected
by the sudoral poisons.

The mean temperature commonly
falls in the Course of the vitral
venous injections, but it is
rapidly recovered, and after
about four hours it rises
above the normal by from
one & a half to two degrees.
It Co-incides with general shiv-
ering 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. ~~Of their poisons~~ 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 beginning of injections 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 axis, 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 cases choreiform movements of the limbs, and spasmodic contraction of the diaphragm.

One of the most remarkable effects of poisoning by sweat is that produced upon the corpuscular 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. Millimetre; on the following day in each they had diminished by over two millions; and a month later, though recovering the patients were still anaemic.

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 therefor 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 those substances eliminated during the five days following upon the injections is slightly below normal. The greatest difference is presented by the chlorides, then by urea, & least 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 excretically poisonous substances. occasioning more or less derangement to all parts of the organism, disturbing the intimate phenomena of nutrition, modifying the composition of the blood, substances the properties of which possess a

"strong analogy to certain bio-
"robic toxins".

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 & 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 along with improvement in a troublesome case of Psoriasis, or a persistent keratonous condition, albumen in the urine makes its appearance; and altho 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 previous to the coating process having taken place.

It is also an experience of common occurrence in the practice of Dermatologists to observe in cases of progressive albuminuria, signs of atrophy of the skin, such as pallor, glossetc. This although apparently contradictory to the cases of Psoriasis just noticed, is also helpful to us in our study.

The above facts seem to give some ground for following those conclusions at which Semmola arrived (1)!-

(1) There is a constant relation between
(a). The degree of activity of the Cutaneous functions &
(b) The Existence of Albumen in the Urine.

Semmola further noted that this relationship also varies (c) with the quantity of dialysable Albumenoid in the blood Serum.

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(1) Translations Medical & Chirurgical Soc. of London 2nd Series Vol 39 p. ... 301...

If it be for the moment conceded that sweat, passed into the circulation may act as a poison A consideration of the factor of

CLIMATE

in relation to Albuminuria calls naturally for at least a passing notice. The effect of a warm damp atmosphere is to induce sweating. A moist surrounding medium, discourages the process. If it be the case that suppression of sweat is a cause of Albuminuria we would expect to find that condition more prevalent in districts or Countries where the climate is for the most part a moist one. The following 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.

		Mean Annual Temp
Aberdeen	1 m 49	47·0
London	" " 89	50·3
Edinburgh	" " 95	47·2
Dundee	" " 107	———
Melbourne	" " 110	57.
Glasgow	" " 142	46·9
Paris	" " 266	52·4
Bombay.	" " 2800	80·6
Genoa.	0 " 4303	61·0

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

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

8' On the pathology of Albuminuria by W. Howship Dickinson M.D. (Cantab) Second Edition p 384.

we learn that the proportion of deaths from Albuminuria to the total number of deaths from specified causes in Great Britain in the year 1863 is thus displayed

In England 1 death in 106 was for this Cause
" Scotland 1 " " 109 " " "
" Wales 1 " " 131 " " "

of the several divisions of Scotland :-

In the Mainland rural districts 1 in 103 was for this Cause
" " towns " " 112 " "
" " Insular " " 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 unvarying factor of the Constitution of the British Soldier, with the varying quantity 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 find 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.

	A T.	Number of Troops	Number of years giving averages.	Death rate strength 1 in —	Temp. mean temp.	Hygrometer wet ~ dry bulb
Ceylon	Columbo	802	8	3208	82.5°	6.4
Bengal	Barbadoes	35222	8	4858	—	—
West Indies	Aldershot	14558	8	6226	80.1	8.1
United Kingdom		78615	8	5855	50.4	4.3
Newfoundland	St. Johns	292	4	12.873	41.7	2.4
Nova Scotia	Halafax	3218	4	—	43.4	3-1
Cape of Good Hope	Grahamstown	4009	4	7413	68.2	7.0
Malta	Malta	3060	8	4858	67.0	6.3

It is to be observed that attacks of Albuminuria are more frequent in Bengal than in the other Presidencies; a difference which may possibly be associated with the greater moisture of its climate. In Newfoundland with its exceptional humidity the Albuminuric 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 where a tropical or nearly tropical climate is tempered by a vast circumference of ocean, Albuminuria becomes less frequent. In the subtropical range, which is thus comparatively exempt from Albuminuria, lies the Cape of Good Hope.

In whichever direction we leave the moderate temperature range we find Albuminuria less common. In our own Country the colder Hebrides are comparatively free while the Shetland islands with their ungenial summers & uniformity of Cold weather are less affected than any other part of the Kingdom.

Dr Dickinson as a result of

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ibid p 394.

his studies on the subject arrived at the conclusion that
"Albuminuric patients are often
" remarkably susceptable to the de-
"pressing influence of damp &
" relaxing climates and are
" readily exhilirated by one
" which is dry and bracing.
" The desiderata appears to be
" mainly an even temperature
" with a mean between 60°. & 70°
" and a dry air.

Although we do not claim that it has been incontestably established, we submit, that in the foregoing statement of facts, there are strong grounds for ~~basing~~ basing the contention that those particular climates which restrict sweating, favour the establishment of Albuminuria, and that the Albuminuria so produced is a toxaemia, 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 viz that the suppressed sweat sets up a Nephritis and that the Albuminuria may have resulted from that.

Dr Lauder Brunton says.
We do not yet know whether the secretion of sweat which is usually looked upon as the sole function of the Skin bears 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 Myxoedema to the non-ductless gland (thyroid) and the Glycolytic function of the Pancreas, which is independant 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

Dr British Medical Journal 1894 Vol 2 p 853 in the Harveian Oration.

to those which are returned from the intestine and Skin into the circulating blood.

O' Lusk states that convulsions may occur epidemically in consequence of atmospheric conditions which probably interfere with the function of the Skin. The Edinburgh Maternity hospital Statistics lend this view further support. At least they show that an abnormally high proportion of such cases come from the low lying & damp atmosphere of Leith. In Wales - I refer more particularly to the abercarn Valley Monmouthshire, a particularly damp district, in which I had personal opportunity of observing for myself, for a period of less than one year, besides obtaining the experience of others who had been practising in the district for many years, Cases of Albuminuria Gravidarum & Eclampsia are Comparatively frequent. During that time I met with three cases, one of which terminated fatally.

O' The Puerperal Diseases Fordyce Barker 1874 p 112

II. A view which regards ALBUMEN. or ALBUMINOIDS as the poision causing the symptoms, is we are aware, one which does not obtain much favour w the eyes of British and American Observers. Yet inasmuch as it numbers among st its advocates so eminent and so distinguished a Scientist as Semmola of naples, it cannot altogether be omitted from Consideration, in such a treatise as this.

O'. 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 exclusive meat diet, as there is when non azotised foods constitute the exclusive dietary

O' In a paper "Novelles Recherches Experimentales et Cliniques sur la Maladie de Bright, which was presented to the Academie de medicine of Paris & published in the Archives de Physiologie in 1884, Semmola records his researches on this subject during years 1850 to 1853. Of subsequent papers the latest may be found abstracted in the Br. med. journal July 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

[2] "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 Circulating albuminoids, not being destroyed and transformed into Urea, Water & Carbonic Acid, are eliminated by the Kidneys as useless.

Having reached this halting place, it was evident that further light regarding the varying composition of Albumins was necessary, before he could hope to arrive at a practical result. Accordingly Senmola undertook

[2]. Op cit p 288.

a series of researches on the properties of Albumen, which enabled him in the year 1861 to submit to Academie de Paris the following contentions 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 Caseiform Albumen, whilst that of true Bright's disease is more like white of egg.

(3) The alteration of the blood in the Albuminuria of Bright's disease consists in the presence of a non assimilable albumen, unable by its molecular composition to contribute to the maintainence and repair of the tissues, and therefor leads to its elimination as a substance foreign to the body.

(4) Diet so controlling in Bright's has little or no influence in - Symptomatic albuminuria.

Twenty years afterwards he had supplimented this knowledge so that in

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Op. cit p 299

1881 he was able to submit as the result of experiments which he had further made, that

(1) The Albumenoids 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 Symptomatic Albuminuria, i.e. that in such cases as heart or liver disease the Albumenoids 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 transitory Albumenuria, the blood serum contains an excessive amount of diffusible Albumen over that of healthy persons who are not Albumenuric, and

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Op cit p 300.

that that quantity is always in proportion to the quantity eliminated by the Kidneys.

(2) In all cases of Albuminuria which occur in the Course of dyscrasic diseases, the serum contains an excessive quantity of diffusible albumens, over that present in health.

(3) In cases of Albuminuria 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 Albuminuria in Convalescence from Scarlet fever contains a great quantity of diffusible albumens.

He used the term Hyperalbumose 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 poison of Albuminuria is a diffusible albumen which the Kidneys try to eliminate, and in so doing Courts its own destruction

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⊗ Translation of Graves text: (in a note to it)

~~As already stated it has in some quarters been suggested that~~

ALBUMEN

itself may be the porsion which causes all the outward Symptoms. In this vein 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 ascertained the lesion which followed upon the operation, by making a post-mortem examination. The chief lesions 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 hyperaemia with intraglomerular haemorrhage, and haemorrhage with and between the tubules. The Capsule becomes distended by a mass after boiling. Sometimes it is simply lifted up and separated from the glomeruli by an empty space. There is a considerable migration of leucocytes without any alteration in the Epithelium. Hyaline casts appear in the Urine. These are the first steps in an inflammatory process in connection with the renal effort.

If the functional effort persist 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 increases with cloudy swelling of the tubular Epithelium, fatty degeneration, Epithelial necrosis, and thickening of the inter tubular connective tissue.

The histological alterations of the Kidney continues for some time after the injections have ceased, without causing a persistence of

of the Albumenuria. With the elimination of the Albumen by the kidneys there is always Albumenochezia i.e. Elimination of a certain quantity of Albumen with bile.

It has also been noticed that cases of Albumenuria 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 Cantharides, or turpentine may do, and so may set up a nephritis, and at least, disorder of the hepatic functions; and possibly the other organs & 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 Albumenuria Gravidarum are primarily cases of Bright's disease is an untenable one.

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 less 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, proportionate in degree 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 Albumin 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 D' Gübler to distinction in this connection ~~must~~ are not altogether unfounded. Undoubtedly, in complete ignorance of Semmola's work, he put forward a theory of Super Albumosis, which being put briefly amounts to this:-

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

D Da L' albuminurie puerperale" Paris 1890 by Madame E. Walker, Brussels 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 occurrence of fluid-ing Albumen preceding or even existing in the Urine quite independant of a renal lesion altogether, seems to add weight to Semmolas conclusions. In such cases according to Saccound it has been found in the faeces. And we further have it on good authority that the bile of patients suffering from Bright's disease contains Albumen; and it is also excreted by the enunctories

(1) Translation of Graves's Lectures (a note to it)
(2) " " " Med. & Chirurg. Society of London 2nd Series Vol 39 p 300.

III. BACTERIA.

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 Eclampsia & Albuminuria Gravidarum. Several there 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. Blanc of Lyons to recognise and separate organisms which are constantly present in these conditions. In the March and April numbers (1891) of the "Archives

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⊗ De l'albuminurie puerperale Paris 1890 by Madame E Waeckes-Breese p 25.

de Toscologne", 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 dosertion are somewhat slender, he nevertheless avers, that the microbes, and their products, produce a zymotic diseidse, 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 that he has clearly made out his case. He has not proved that all patients who suffer from Albuminuria have previously been the

O. Quoted by Galabin - Brit. Med. Journal 1891 vol 2. p 679.

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, favours Endometritis. With these facts before us it does not appear to us that the contention of a previously existing Endometritis can be maintained.

O' Leusden paid some attention to this aspect of our subject. In "Beitrage 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 thereby obtained he

O' Beitrage Zur Pathologischen Anatomie der Puerperal Eclampsie - Virchow Archiv. Band. CXLII.

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

But again this result is somewhat discounted by the labours of Faure 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.

On the whole, with such a diversity of opinion amongst able 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 Albuminuria 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 contraction &
"this by lessening the supply of
"the skin and the liver brings
"about those changes.

Apart from the fact that
his view assumes our ac-
ceptance of a "Vascular" theory
of Albuminuria, we deem which
is quite without the province
of this thesis to discuss, and one in
which we do not believe, we
have hardly considered it advisable
to discuss this point at any length.

Since the year 1890, 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 as a is
so uncertain & so unsatisfactory
that we prefer to leave it alone -

Dr. Alexander Haig in the British Medical Journal
1890 Vol I p 65.

I. For the same reasons we do not consider it necessary to more than mention that it has been suggested that ~~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 Diabetics by any means pass Albumen in their urine.

This this view likewise we do not consider worthy of any serious Consideration -

Ø True it is that STUMPF found an excess of sugar in several Eclamptic cases before the fits ~~Sugar~~ appeared. But he lightly dismissed the subject, by suggesting it passimy, that it was probably due to deranged liver.

Ø Winckel's treatise of Midwifery p 593.

VI. The

D' Colouring matters of the urine, have been suggested as the poisonous elements.

In the year 1881 Feltz and Ritter wrote a thesis entitled "Urémie Experimentale". 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 urine advantage in excretion, and was equally susceptable ~~as~~ to the rabbit. The symptoms observed were myosis, accelerated respiration, somnolence, fall of temperature. D' 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

D' From a paper published by D. Albutt in the Lancet Feby 27th 1897. 579-582

a. It is less in amount in a fasting animal or
(b) in urine obtained after sleep.
(c) It is greater in fatigue urine.

Where it is formed cannot definitely be stated, but it is probably absorbed from the bowel, & 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 distinct toxines are present causing different actions. The one he describes as -

1 Convulsive and the other as
2 Comaficic

The existence of this distinction has not yet been worked out, nor proved.

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[2] De la toxine de la Sécrétion. in Thèse de Bordeaux 1893.

Ø[1] 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 susceptable to the poison than one which was non gravid. To produce clonic contractions of the neck in a pregnant animal 23 c.c. of urine was sufficient; whilst in the non gravid rabbit 51 C.C. was necessary to produce a similar effect.

VII. There is not much evidence to prove th

Acetone

is the poison we are in search of –

Ø[2] Yet Vicarelli, found it to be presen in 9 out of 137 ^albuminuric^ patients. In most of them the acetonuria las-ed 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 & was killed by the poison.

Ø[1] Revue Obstétricale Internationale Octr 11th 1896.

Ø[2] Prager Medicinische Wochenschrift No. 33. 1893.

VIII A Sialogogue ingredient of the urine has been mentioned.

In an article published by ⊗¹ J. 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 Ptyalin and less soda salts than normal. This was explained by the possible ✱ nervous origin, viz through reflex nervous stimulation from the uterus.

⊗² Bouchard offers another explanation for its appearance. He says that one of the toxic principles in normal urine is a sialogogue. He took a sample of normal urine, & 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

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⊗¹ Article by J. Christian Simpson in Lancet July 10th. 97. p. 87

⊗² Auto intoxication in disease p 62 et seq.

"by charcoal, soluble in alcohol, and
"distinct from the diuretic (urea) or
"the narcotic toxine". 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-
"coholic extract of urine be in-
"jected into a rabbit, the animal
"exhibits salivation, almost equal
"to that produced by pilocarpin,
"and becomes comatose. As
"it is found in greater amount
"in blood than in urine, we
"presume that the kidney with-
"draws it from it, ~~them~~, previous
"to excreting it by the urine

IX. CREATIN.

(X) was suggested in 1853 by Wegis & Schottin. Zweifel inoculated it into the Cerebral Cortex of dogs, and found that symptoms not unlike Eclampsia supervened.

Lancet July 10th 91. article by Sampson

Treatment of Albuminuria Gravidarum.

I

Whilst various theorists regarding the pathology of Albuminuria Gravidarum hotly contest the field in their endeavours to explain the Causation of the disease, happily the same diversity of opinion does not obtain with reference to the subject of its treatment. There are several well worn lines of treatment which practically find universal favour; and although many observers cannot reconcile these remedial measures with their own pet views, experience has so abundantly proved their value, that they have ceased to cavil, & now no longer endeavour to gainsay their worth. What then are we to recommend to the prospective mother who finds herself the unhappy possessor of a Superabundance of Albuminous 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 of a daily walk is to be taken; undue exposure to damp or cold is to 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 debateable ground. Lapegue affirmed that attempts to diet an Albuminuric patient were of no use whatever. On the other hand Sir Thomas Grainger Stewart has instanced cheese, pastry and eggs as forms of food which he has observed, are capable of inducing Albuminuria in certain persons, and

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O' Lancet Feby 27th - 1897. V.p. 582.

O² Lectures on Important Symptoms: Albuminuria p 145.

he mentions the case of a medical colleague who whenever he indulged in pastry or cheese was pretty sure to suffer from Albuminuria with puffiness of the eye lids. (1) Stockvis 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. Naussbaum, Coats, an D'Arcy Power claim to have seen Albuminuria produced in the same way. Lauder Brunton however failed to produce Albuminuria by swallowing six raw eggs in succession; and D. Maguire swallowed the whites of twelve raw eggs without producing Albuminuria. Sir Thomas Grainger Stewart also tested the effects of some other articles of food as cheese and walnuts, and came to the conclusion

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(1) Food in Health and disease by I Burney Yeo p. 407.

that although "particular articles of diet induce albuminuria in some people, yet the quantity of albumen is usually minute, and it has little tendency to persist after the resumption of ordinary food. With 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 eggs or of highly spiced food. In view of these facts, and this additional one, that Gastric Catarrh 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 tax 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

1st: a large quantity of a principle rich in Nitrogenous termed Caseni, as well as some other nitrogenous or albuminous substances in small quantity.

2nd a form of sugar mainly Lactose or lactine (Milk Sugar)

3rd. a Considerable quantity of oil or fat (Cream or butter.)

4th: Water holding in Solution various mineral Constituents or salts (chiefly Chlorides, phosphates, & Sulphates, of Magnesium, Calcium & Potassium, Sodium and Iron.

The Iron which it Contains is only small in amount still it will help to Counteract the duodenal which is frequently present, and altogether tend to ~~the~~ 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

O' Food in health & disease I. Burney Jo p 6.

Doubtless that deficiency will partly be made up by those which are present in the milk. The large amount of water, which held these in solution will act as an excellent diuretic and by so doing tend to hasten the removal of the toxonic 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 less concentrated, and so less powerful. Tarnier[D1] went further than that, when he affirmed that it supplies the maximum food for forming toxins, and so starves the toxaemia. In this view he is supported by[D2] Bernheim who states that "milk lends itself "least of all foods to the "generation of toxins". Support is Tarnier's belief in its

D1 Tarnier in 1875 - 1880. De l'efficacité de régime lacté dans l'albuminurie des femmes Enceintes

D2. Traitement de l'eclampsie Puerperale Paris 1893 by M Bernheim p 70.

value, that in those cases where the 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 viz:- a noxious albumenoid 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 tear call on the elaborative functions of the skin, than albuminis 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 places on the already overtaxed organ a very minimum of work.

For these reasons, and for other, 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 now it is to be given. According to Pettenkofer's & Voit's Calculations the daily food for an adult should contain 137 grammes of dry Albumen
117 " " Fat
352 " " Carbo Hydrate
Based on this calculation it is reckoned that from 5 to 7 pints of milk daily will fulfil the necessary requirements.

(X) O' Food in Health & Disease p 411

Seven pints of milk are estimated to contain 216 grammes of Albumen & Casein
172 — — Butter
161 — — Lactose.

The method of applying this exclusively milk diet is as follows:-
"If the patients stomach will bear the sudden suppression of all other kinds of food, a most unlikely contingency, the full quantity of milk may be at once taken daily.; But if the stomach shows less tolerance of the change, it should be made more gradually, and half a glass or a glassful of milk should be taken at suitable intervals, and other kinds 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 to give very small quantities at a time & to give it frequently. But when on full milk diet 18 to 24 glasses - six ounces 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 prunes, 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 a passing notice is the following one. The various excretory organs participate in the rest which sleep brings and among these the kidneys. Possibly this 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. Jacoud in view of the diuretic effect of milk, recommends that the patient should take advantage of any chance wakenings during night to drink a few ~~drops~~ doses 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 Carbo Hydrates Constituents. In mild cases this deficiency may be met by including a small quantity of the ordinary Carbo Hydrate foods, such as Tapioca, Ground Rice, Corn flour, Semmolina, Revalenta etc, in the dietary. The most sustaining of these is Semolina, and on 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 Cwm Carn, Wales, who in an experience of over twenty years in which he has had to deal with ~~several~~ 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, develope 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 ~~Acid~~ Chloral Hydrate (Syrupus) with Tinct. Ferri Perchloridi, three times daily. ~~He~~ these cases he states that a diminution of the

Albumen invariably set in within a day or two of the treatment having been commenced, & then the supervention of fits was an experience to him unknown. At the same time it must not be understood that he recommends the next treatment to all his Albuminuric Cases. On the contrary the Albumen must exceed one third before that step is recommended; or there must be prodromata of Eclampsia present, in which case the presence or 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 adversing — BATHS —

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

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 although 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 extent to which it is employed. Sennola however, as has

been already pointed out, attaches a new significance to the Cutaneous functions; and by modifying this newly discovered (or 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 followed by marked benefit, not so much through the Secretion which they promote, as through the secretion of some unknown 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 albuminoids, 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 clinique in 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 have hastened their advent. In these cases the result was possibly due to the increased concentration of urine.

We would therefor 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, Nine or ten pints of milk a day may be given. In this way a two fold safeguard is established (1) An increased diuresis, and so a freer

elimination of Solids by the kidneys (2) The fluidity of the blood is not allowed to diminish and so Concentration of the circulating porsion is
Ø avoided. Winckel believed in the value of baths and re-commended 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.
Ø² A good deal has been claimed for the Tallerman not during bath; and real benefit seems to follow its employment in gouty cases. Those who hold the view, that the porsion present in Albuminuria is uric acid owned may be consistent if they gave this method a
Ø² fair trial. Dr. Knowsley Sibby has recorded a number of

Winckel op cit p 395.
Lancet Jany 10th 1897. p 110.

Cases of Uric acid dermia where its employment has resulted in great good accruing to the patient. The Cost and cumbrous 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. Still we must own that we would like to see them given a fair trial in a selected number of Albuminuria Gravidarum Cases, as we believe they would prove beneficial.

Hydropathists, never backward in coming forward with their remedies, strongly recommended Turkish baths. Not every house which had an Albuminuric patient had facilities for carrying out the treatment. So patients came to take them at public institutions. This practice produced a new

Source of danger viz:- that of contracting a chill on the way home. So it again fell into disuse. But the same charge 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 small petroleum lamp, on
"the floor beneath a wooden chair; a piece of tin-
"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 goodly supply of woolen 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 &
sweated freely the whole time. She is then to be rubbed
down with dry towel

"How Nature cures by Emmett Densmore M.D. p 32.

CUPPING and PUNCTURE

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 toxaemia 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 without 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 ~~loins~~ region of the loins is distinctly useful. Advantage is

taken of the known connection between the superficial capillaries through the subperitoneal plexus of Turner and the renal veins to deplete the organ of its superfluous blood, with a view to lowering the vascular tension inside of the kidney, and on that account lessening the tendancy 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 that 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 a portion of the renal Epithelium, rather than to an excessive excretive capacity. Although we cannot give any actual case in which venipuncture has been followed, yet in a small leaderette in the Lancet on Mr. Reginald Harrison's

[1] Lancet Oct 24th '96. p1172.

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 expectat-
"ion of finding some gross lesion,
"and have been disappointed;
"yet when the wound has healed
"the symptoms of which the pat-
"ient has complained have com-
"pletely disappeared. The explan-
"ation that was usually given
"was that some constrictrily 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 favour of
"the view put forward by Mr
"Harrison that the result in
"some cases at least is due to
"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-
"gestion by 'local blood letting';
"so we have good "a priori" reasons

"for thinking, that it is
"possible to relieve a Con
"gestion of the Kidney, by punc
"tures or incisions, and if
"this were done, it cannot
"be doubted, that at least
"in some cases the albumen
"in the urine would dis
"appear, and the amount of
"urine excreted would increase

Instead of actual cupping some have found in leeches a most useful method of depletion. D' 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 toxic matters 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 D[2] B writes L.R.C.P. of Barnsley records an illustrative case, which occurred in his practice.

D' Bouchard p. 133.
D[2] Lancet March 13th 1897.

It was a case of Twin pregnancy with Albumen in the urine in which the labour passed off uneventfully. But fourteen hours afterwards fits set in. After chloroform and other means had been unsuccessfully applied, great benefit accrued from the application over both loins of one dozen leeches. From that point the patient rapidly made a complete recovery.

Although some attention has been paid to this method of treatment, we do not feel sufficiently satisfied as to its value to strongly recommend it.

In

— VENESECTION —

we have a mode of treatment which occupies a very different place in our store of remedies. It is a method whose value has for long been very much under-rated. But it was not always so. Time was when bleeding was the refuge of the medicine man in all his professional perplexities. If a patient was thought to be dying from cholera, it was considered prudent

to deplete him, in order to lessen the load of the disease on the unfortunate victim. In 1606 the Plague stricken 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 there wanting those, who in the exorcising of demons from those so possessed, believed that they possessed in the lance 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 over use, we passed into the not less flagrant one of complete disuse. 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 hyperaemic, hypertoxic, hydraemic 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 viscerial organs generally.

(3) Lowering of the stimulation of the over excited heart, because there is less poison circulating in its interior and in its nerve structures.

In view of Matthews theory this is a consummation devoutly to be wished for, because it will lower the vascular tension & probably arrest the mischief before the Eclamptic stage has been reached.

But it appears to me that in order to ensure its success, it will be necessary to repeat the operation from time to time, as the blood & toxins removed will be speedily replaced again.

(8)' 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

(8)' Practitioner 1895 January.

to contain 1/4th % Albumen. There were no eclamptic 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 tendancy to Cardiac failure; and that it must always be used with great caution, and especially so in weak women. Dr Winckel it is only right to state does not agree with this and expressly states; that it should never be used at all. Fordyce Barker declares it to be of great value especially as a prophylactic against Convulsions.

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D1 Winckel op cit p 596
D3 Fordyce Barker op cit p. 80

In addition to the powerful arguments of such a case as that cited by Williams 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 hoemorrhage which invariably takes place at that time. If so this is natures method of combating the disease and is worthy of being tried.

Dr Bouchard states that 32 grammes of blood contain 52 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 ought always to receive a thorough trial.

Dr. Bouchard p. 133.

-DRUGS-

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 Grainger Stewart who has expressed himself in the following terms.

O' Sir William Roberts and Professor Rosenstein have come to the same general conclusion as Dr. Saundby 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 Anaemia may cause grave anxiety and this of course must

O' Lancet Jany 4th 1896. Reg. Harrison. p 82

be combated by the employment of iron, either in the form of Blaud's pill or better still in combination with chloral Hydrate. This was the method employed by Dr. Davies of Cwm Carn, in a most extensive practice. It was his custom to give them in fluid form. Thus ℥ss of Tinct. Ferri combined with ℥ss of Syrup & 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 their exhibition.

It is possible that the Constipation so frequently troublesome may be ameliorated by

by the use of Iron. In ordinary cases this tendency can be counteracted by ~~this~~ 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 theoretical objections to Potassium salts and avoid them. Cascara either Liquid Spirit 1849 or fluid form is very suitable. I have found a most agreeable and satisfactory way to exhibit is as follows.

℞. Cascara. gr i
Ext. Belladonnae.
Ext. Nucis Vomicis ana gr $\frac{1}{8}$th.
Dipt capsule
Sig One or two at night as required.

Hunyadi and Vichy waters q wein hot before breakfast is also good.

It is always of the greatest possible value to attend to the procurring of bowel dubisepsis. Benzo naphthol given in powder or Cachets three times daily after food I have found valuable. And I find that in such treatment I have the support of Dr Allbutt who also speaks highly of its value. In the same way Salol is much employed. Charcoal gr X Combined with Bismuth Subnitrate gr V in a large tabloid given 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 fixes others, and in this way readily removes a constant source of readily absorbable toxins.

Hot water enemata periodically employed seems a reasonable way of lessening the amount of poison in the rectum & lower bowel. It is well spoken of by Dr. Allbutt who states that Chaussiers Symptoms of violent pain in the

Lancet 27th 1897. p.p 579 – 582

stomach must always be re-
garded as symptomatic of approach-
ing 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 depletive meas-
ures. These consist of Diuresis,
Diaphoresis, Catharsis, Cupping,
& 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 therefor
more virulent form. But the
answer to that is twofold viz.
(1) a proportion of the urine passes
out with the sweat so that
there is a diminution of the
gross amount of poison left in
the body (2) Experience has a-
bundantly proved that a re establish

ment of the flow of urine is immediately attended by relief of distress. A hot hip bath with a blanket enveloping the patient and bath, is sometimes sufficient. But its action may be supplemented by the exhibition of a gin hot water drink. Many give potassium Acetate and by so doing lay themselves open to the charge of increasing the amount of poison, instead of diminishing it. Potassium Acetate is said to favour the increase of renal irritation, so it is not commended. Rather, do we think that where the expense is not objected to, Dimethin should be given. Although a comparatively new remedy, it appears to have more than justified its existence. Decoction of Scoparium, in doses of half an ounce every three hours, or Spirit of Juniper in dram doses every 2 hours until they have acted are also most serviceable. Veratrum Viride has for long been used in the Southern States of America for this purpose. Dr

D' Barrows recorded a case in 1895 where its action was magical. He read it before the Society of Alumni of Bellevue Hospital. New York. But shortly it is as follows.

case. A primipara of twenty years of age, complained of frequency of micturition, & swelling of the legs. Her urine was almost solid with albumen & contained granular and hyaline casts. Fits came on, so the os was incised and the child delivered by forceps. Two hours afterwards, the fits having recurred two drops of croton oil and five minims of Tincture of Veratrum viride, the latter 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° & there was no recurrence of the fits. In 24 hours 108 ounces of urine were drawn off having a specific gravity of 1015. This showed a trace of Albumen

D' Lancet Dec 14th - 1895. p. 1525

with hyaline and granular casts. Uninterrupted recovery took place.

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

There is a certain class of case in which Digitalis is of value & is indicated. According to Barnes[1] that is where the blood tension is excessive. In giving it one must be on the watch to discontinue it, whenever slowing of the heats action commences.

The employment of Catharsis is the natural treatment in the light of the pathology of the disease. We know from Bouchard's[2] experiments that 'one litre of water per intestine is simply one litre less per kidney, which would have eliminated 50 times more urea as urine ~~that~~ in the healthy state but the diarrhoea does not remove ~~other poisons from it.~~ urea from the blood, but it removes other poisons from it.

But although the line of treatment by hydrogogues is based on

[1] Barnes Op. cit. p 409.
[2] Bouchard p 132

Diaphoretics have been recommend-
-ed for the same reasons as prompt
-ed 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 form
ed, passes into the general
circulation, and there ex-
ercises some beneficent actio
of a nature not yet rightly
understood. In view of the
opinions expressed by Lauder
Brunton, which have been
already referred to (p. 30), is it
not highly probable that it
is to this less known, and prob-
ably infinitely more powerful
action of the skin that Dia-
phoretics owe their value to,
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
Jaborandi and Pilocarpine have
been much used, and produce
sweating very promptly and
very copiously. But it has
grave disadvantages, for Car-
diac 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. C.J. Macalister is of that opin-
ion and has recorded a case
which he had, which he contends
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
1/3rd grain of Pilocarpine Nitrate,
and each time it was follow-
ed by violent convulsions
and vomiting. This he attributed
to the action of the drug. But
we would suggest that this ex-
planation is by no means satis-
factory, and that the untoward
circumstance was much more
likely due to the irritation of
the needle, and is really anal-
ogous to those cases where even

Lancet Jan 7th 1897 p-

the simple procedure of making a digital vaginal examination, has been immediately succeeded by a series of convulsive seizures.

[0]1 Dr. John Phillips gave the subject a good deal of attention and has recorded 39 cases of Convulsions in which he gave Pilocarpine. In 9 of these dangerous symptoms at once appeared and 7 died. The mortality in his experience was so heavy that he discountenances the use of the

[0]2 drug. Dr. Herman shares his dread of it, and founds his objections upon the well known action of the drug to cause sweating into the Bronchial

[0]3 tubes. And Dr. Proben in the New York Medical Journal Sounds the same warning. In view of the bronchial danger which

[0]4 may follow the use of pilocarpine it has been suggested that Atropine should be simultaneously used with it.

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[0]1 Transactions of Obstet. Soc. Vol XXX p 354

[0]2 " " " " " " " " "

[0]3 New York Medical Journal Jany 97.

[0]4 Lancet Decr 25th 97 Leaderette.

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 1/60th to 1/30th of a grain acts in this way.

In summing 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 Guaiacol 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[1] used it in two cases where there were Albuminuria and oedema, with surprisingly happy results. 40 or 50 minims were poured upon the abdomen, and gently

[1] Therapeutic Gazette Jany '97
[2] Boston Med. Surg. Journal March 18th 97.

rubbed in. In a few minutes the pulse became soft, and free diaphoresis set in. The recovery in both cases was good. He says "Guaiacol possesses the "advantages of ease of application, "certainty of action, and speedy "relief of urgent symptoms. Its "pharmacological effect is to pro- "duce rapid and marked lower "ing of arterial tension, and "temperature, along with free "diaphoresis. J. R. Walters M.D. (Lond)[1] quite agrees with Appely as to the value of its action but cannot explain it. "No doubt", he says, "it has an action of some "kind, on albuminuria, but the "action is probably indirect, and "depends on the destruction of "some other virulent". Dr. Seifert[2] and Dr. Stoelscher have studied the action of guaiacol very close and they have given the following account of their views on the subject." After its absorption free Guaiacol is found in the urine in the space of half

[1] Lancet July 10th '97.
[2] Berliner Klinische Wochenschrift 1891 Vol 51.

an hour. Besides Normal al-
bumen, the blood contains other
albumenoids due to the morbid
processes, and particularly pro-
ducts of the nutrition of the bac-
illi. The latter are very apt
to produce chemical phenomena
and to modify them, and so
become toxic. As long as such
toxic albumenoids are found
in the blood all the guaiacol
absorbed is fixed, not upon the
normal albumen, which is little
apt to react, but upon those
toxic albumenoids which form
stable combinations with it.
These combinations of Coag-
ulable albumens & Guaiacol
are no longer of a toxic natu
and they are profoundly mod-
ified by absorbing Oxygen
the Guaiacol & Sulphur of the
Albumen molecule are sep-
arated from the combina-
tion and form by oxidation
a sulphate of guaiacol 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

palatable form of giving the drug is stated in the following prescription

℞ Guaiacol m XII.
Glycerin ℥ss.
Tinct Gent Co. ʒ ii
Sp. Chloroformi ʒ ii
Aquam ad ℥ vi

Sig. ℥ss. every 4 hrs. hours.

In those cases by no means infrequent where owing to the caustic properties of the drug it is badly borne Duotal (Guaiacol Carbonate) is recommended. In an article on that subject written
O[1] in 1895 by Professor Dujardin-Beaumetz, it is expressly stated that that objection does not hold good with regard to Duotal. It has these additional advantages
O[2] according to Dr. H. A. Fairbairn, that it is tasteless, slowly decomposed and exerts a controlling influence on fermentative changes in the intestinal
O[3] al canal. Dr. Heel, in Ziemssen's Annalen der Munchener Kranken hauser 1896 speaks highly of this action in the intestinal canal, and re

O[1] Dictionnaire de Thérapeutique 1895.
O[2] Brooklyn Medical Journal 1896.
O[3] Annalen der Münchener Krankenhäuser 1896.

recommends its being given in powder form in wafers, in doses from 7½ grains 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 our subject.

O¹ ~~Wickel~~ Barpe- 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
O² Bright's disease. Lusk and
O³ Galabin agree with this view.
O⁴ Wickel on the other hand takes up a distinctly antagonistic position to them, and states that it is always undesirable to induce

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O¹ Wickel op. cit p 409.
O² " " " 578
O³ " " " 318
O⁴ " " " 596

premature labour. During the past month a case occurred in our practice where premature labour was induced with most satisfactory results.

case.

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 pains in the eyes. The pulse was 112 and the respirations 36 per minute. In view of a previous experience where a Jewish 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 albumen. 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 tinnitus aureum. The treatment was continued for other 12 hours but with no better result. The nurse stated that one fit had occurred. As at this time coned only

with considerable difficulty admit two fingers. Forcible dilatation with the hand was then had recourse to, with the result that at the end of 3/4 of an hour the application of forceps became possible. The patient having been placed under chloroform a living child was safely delivered with forceps. The subsequent history of the case was unexceptional, and the patient rose on the tenth day. In this management 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 Pelrer, or modified slightly is very valuable and was followed in one of the cases which I have to submit. To a description of the method will then be given, an account of it will be found in Case No. 1

Case I.

Twins, hydramnios, miscarried at 6th month. Treated by rest in bed, milk, Iron, Chloral.

Sarah Lewis 33 years, Cwm Carne Wales, consulted us when in the sixth 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. An examination of her urine shewed 2/3rds albumen, but no tube casts. Of 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 six hours to commence with, and gradually increased until 3 days afterwards she was

taking a pint every four hours. This she tolerated well and except for the inconvenience of constipation, which however was corrected by giving a Tamar Indien lozenge each night, appeared to be improving. At the end of a week the swelling 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 ascitic 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 Tinct Ferri Perchloridi m X, Syrupi Chloral Hydrate 3ß, Glycerin 3i in a wineglassful 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 miscarriage. It proved to be a case of twins (boys) with hydramnios. Both were dead. The after history of the case was uneventful.

CASE II.

has been described on pp. 99–100.
Treatment by Tincture, Chloroform. forceps.

CASE III.

Treatment by. Purgatives, Iron and Whey.

Jane Davis aged 36 came under my notice at her 6th pregnancy. On enquiring into her previous history I found that she had had 2 still born children. She had suffered from puerperal Septicaemia at her third confinement, and her last one had been characterised by Eclamptic seizures, the child being still born. She complained

of swelling of the limbs, obstinate 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 carbo hydrate 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

One pint 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 iron in the form of chocolate covered jelloids (made by Savory & Moore London) were given in increasing doses. To commence with the equivalent of 9 grains of blaud's pills were given and steadily increased until at the end of ten days she was taking 45 grains daily. These tabloids were given between the times of taking milk and were excellently borne.

The first evacuation was induced by giving sixty grains of Compound Jalap 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 introduced 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 line had been pursued for a little over three weeks, labour pains came on and she was after four hours labour, delivered of an Eighth months 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, when 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.

Case IV.

Treatment of Quinine and a modification of Pebrer's method of inducing premature labour by the injection of Glycerin.

I was hurriedly called to attend Mary Elder aged 21 - primipara - 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 pasty. Her previous history was good, with the exception y an attack of Inflammation of the kidneys Contracted 3 years previously. She had no malaise nor 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 3/4 albumen. Whilst a more minute examination made subsequently of a retained sample shewed in addition Caprois tube Casts. Slight pains were present. She was put to bed and Terpine in 10 Grain doses

every 3 hours given. As 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 Lancet by T. Arthur Helme M.D (Ed). The essential point in the process is that the glycerin is not injected into the ~~body~~ cavity of the uterus but only into the Cervical Canal. Accordingly she was put in the knee Elbow position. With a curved nozzle 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 & found the external os had become dilated to the size of a two shilling piece. Contrary to expectation, I found the parts quite soft and the internal os beginning to dilate. With my finger to guide the nozzle I now 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 patulous 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 8 hours she was delivered of a male child still born. The child appeared to have been dead for several weeks. Notwithstanding the unhealthy condition of the foetus, no septic 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

(2) 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.

Pehrer (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.

Finis.