"FLUSHED BREAST": a form of Mastitis occurring very early in the Puerperium-

An Enquiry into its
Etiology, Bacteriology, Pathology, Symptoms and Physical Signs-
Diagnosis, Prognosis and Treatment,
as illustrated by the Study of 50 Cases in the wards of the
Queen Charlotte Lying-In Hospital, London.

By
F. Norton Menzies.

S E C T I O N I.

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The condition which I am about to describe and discuss was in many of its aspects quite unfamiliar to me until I became resident in Queen Charlotte's Lying-In Hospital, during the months of January, February, March, and a part of April 1903. My attention was first drawn to its clinical interest and pathological importance by Dr. W.S.A.Griffth, Senior Physician to the Hospital. He pointed out to me that the affection was constantly observed at Queen Charlotte's Hospital during the first 14 days of the Puerperium, and that while its causation was in some instances quite obscure, its relation to certain other factors such as "Sore Nipples", was on the other hand quite definite. He further indicated that future investigation would probably show that all cases of so-called "Flushed Breast" were due to uterine sapraemia or some other uterine factor.

During the month of January, 1903, it so happened that we had an unusual number of such cases, and as I had not heard or read of the condition previously either at the Maternity Hospital in Edinburgh or the Rotunda Hospital, Dublin, during my student days, my interest in the affection became quite intense and I determined to do everything in my power to investigate this curiously transient condition which seemed to fascinate everyone at Queen Charlotte's, and yet which no one had ever attempted to investigate care-

fully or describe clinically. Accordingly, I made a point of taking special notes of my own in each case from the beginning of January, 1903, and these are to be found carefully recorded in my Note Book; in addition, the Hospital Records for 1900, 1901, 1902, furnished me with a number of similar cases for comparison.

Table I. shows a classification of my own cases-

Table II. those of Dr. Vincent-

Table III. those extracted from the Hospital Records for 1900-01-02.

It is a most remarkable fact that in spite of the enormous amount of interest which is taken by the present staff at Queen Charlotte's Hospital in this puerperal affection of the Breast, that not one of them has ever contributed a single paper in regard to its clinical phenomena, pathology, etc., and that when Dr. Vincent, who was at one time Resident Medical Officer to the Hospital read a short paper on the condition which he entitled "Lymphangitis Mammæ",[18] "an affection of the Breast arising about the 10th day of the Puerperium with well marked features (illustrated by six cases)", before the Obstet. Soc. of London, (Transac. Vol. xliv page 158), not a single member of the Hospital Staff said a word in comment upon it. This appears to me a most regrettable fact seeing that such a splendid opportunity was then afforded them of giving their valuable opinions and experience on a condition in which they take so much interest. However, whatever the reasons for this may be, it occurred to me that the affection - whatever its nature might turn out to be - was well worth observing during the few months that I had such an excellent opportunity for doing so, and I trust that the results of my observations may be of some interest, if not of much practical value.

Having decided to investigate the condition as far as I could myself, my first step was to collect such information as was possible from the works of other authors, but with the exception of Dr. Vincent's paper afore-mentioned, I could not find any contribution to obstetrical literature in English, French or German, which referred specially to the condition called at Queen Charlotte's Hospital, "Flushed Breast". Numerous authors refer to inflammatory conditions of the Breast during the early puerperium which include more or less the same pathological conditions as I shall attempt to describe, but even Dr. Vincent's contribution which is meant to convey to the outside world, so to speak, what is understood by the condition "Flushed Breast" at Queen Charlotte's Hospital, is very far from an exhaustive account of the subject; but it is important to notice that his principal assertion is that at all events his six cases are sufficient to demonstrate the existence of a disease which is "a special affection of the Breast, Sui generis". (p. 161).

My next step was to ascertain from various obstetricians their experience as to the existence of such a disease "Sui generis" and for this purpose I wrote to several well recognised authorities, describing a typical case: for instance, Professor Simpson, Dr. Berry Hart, Dr. Milne Murray and Dr. W. R. Dakin, asking their opinion thereon.
The results of my enquiry were as follows:-

Professor Simpson:-

"I ought sooner to have thanked you for your letter regarding Mammary Lymphangitis. I do not remember ever to have seen any notice taken of such cases as you describe, and I fancy that any cases which I may have seen I had set down as a "Threatened Mastitis" which had passed off- ..... Your account of it is in any case interesting and you should follow up your observations-"

Dr. Berry Hart:-

"I have not seen any cases like the ones you mention, so it must be an English product! It is difficult to explain unless there is some micro-organism in the superficial skin. It would be worth while cultivating scrapings from the flushed skin. I am glad to get your letter on this interesting condition but as you see I am quite ignorant on the subject-"

Dr. Milne Murray:-

"I am not familiar with the condition you describe. It does not form a feature of our Maternity Hospital practice. We have had very few Breast troubles of late years owing I think to special care of the Nipples and Breast during the first three days. It looks like some Vasomotor change- Is there any neurotic element in the cases observed? Have you heard of it in any of the other Maternity Hospitals in London?"

Dr. W. R. Dakin of the General Lying-In Hospital wrote to say that he was familiar with the condition

in his practice and that he considered it was due to infection by the milk ducts etc. (see page 56 - for his letter).

From these replies it will be seen that the affection whether it be "Sui generis" or not is at all events not a well defined malady, recognised, described and acknowledged by all authorities, in and out of London, and therefore it seemed to me more than ever desirable to make very careful clinical and Bacteriological observations of the cases which came under my notice and then later to determine as far as possible whether this was in reality " a special affection of the Breast arising during the early puerperium" or a clinical condition assuming different forms under different circumstances all of which were well known to observers but possibly described under different names.

Typical Case.

At this stage it would be desirable to describe what is generally regarded at Queen Charlotte's Hospital, as a typical case of this interesting condition. The patient we will suppose, has been delivered in a perfectly normal manner of a healthy child at full term; then almost on any day afterwards from the 3rd. to the 15th. of the puerperium (in my experience), a sudden rise of Temperature to 103°-4 and Pulse to 116 may take place. Let us suppose that for 10 days before this the puerperium has been everything that the most exacting obstetrician could desire, (see Case I. Note Book), this sudden rise of Temperature and Pulse would naturally be somewhat disquieting. On investigation we will probably find that for some hours before this rise of Temperature, the patient, who has been perfectly well before, has complained of headache and some pain in one segment

of one Breast. Together with this there may have been occasionally a "Shiver" and even a feeling of sickness. On examination of the patient our attention is drawn to the localized pain in the Breast, and probably in this situation one would find a distinctly tender area in one segment of the Breast, which is also harder than the rest of the Breast Tissue- indurated- and giving the impression also of irregularly swollen milk ducts. In a few hours the skin over this area of the Breast becomes red, hot and tender; it is generally of wedge shape with the apex at the nipple, and the Base extending out to the junction of the Breast with the chest wall. Notice that the affected area of Skin practically corresponds to the affected subjacent tissue, while the rest of the Breast Tissue and Skin is perfectly normal. On palpation of the Breast with the finger it is quite easy to differentiate the affected from the unaffected portion, because so soon as you come to the affected segment the patient winces with pain, and likewise when you leave the affected area palpation can be carried out over the remainder of the Breast with impunity. Very rarely a gland in the corresponding pectoral border of the axilla may be swollen and painful at this stage, (see Cases IV and VIII, Table I.) The milk secretion goes on quite normally as before, and the mother is able to suckle the infant in some instances without any pain or discomfort even at the height of the disease. Exceptions to this course will be referred to later, meantime it is worthy of note that occasionally the nipple may show a definite visible fissure or sore, which fact will also be referred to later; but to pursue the clinical course of the disease, let me say that the affection being

generally a transient one- in a few hours more the "flush" on the skin will probably have faded considerably, it may even be quite unrecognisable, but in any event it always begins to go away first, and is followed still later by signs of less tenderness and less induration in the affected segment of the Breast. This is accompanied by a fall in Temperature and Pulse. The duration of the whole affection varies very considerably. Some cases last only a few hours and at the end of that time vanish completely leaving no trace behind them so that unless one were resident in such a Lying-In Hospital, it is possible for such cases to occur and to disappear in the interval between two daily visits, and one is puzzled to account for the Temperature, etc., which is recorded, unless of course one is familiar with the condition or there is a trustworthy nurse in attendance who observes and reports its occurrence. Other cases last for several days, and are very severe in their signs and symptoms, giving rise to much discomfort and suffering to the mother, anxiety and worry to the medical attendant who is naturally much concerned as to the possible development of an acute mammary abscess; but generally speaking the disease, such as it is, runs its course in a few days at the outside, and the more one sees of it, the less one becomes anxious as to the prognosis, provided always that certain points are attended to which will be referred to later. In connection with the examination of the patient who has developed the above signs and symptoms it is worthy of note that very often other clinical phenomena are associated with it or are present at the same time, for instance, one may find that there is definite evidence of uterine sapræmia in the mother or that the infant has green stools, or purulent conjunctivitis, or aphthous stomatitis. All these points will be referred to again.

1. This then being a very general outline of a case of so-called "Flushed" Breast, it would be interesting at this stage to draw attention to the many varied manifestations of the Disease as shown by Tables drawn up of some 50 cases. Furthermore, by such Tables we shall probably gain important information as to the Etiology of the Disease. The Tables I. II. and III. as drawn up will show this detailed information in each case at a glance, but I am desirous here of deducing such information as I can from the Tables as a whole.

The most definite of the Tables in every way is the list of my own cases which I had the opportunity of observing personally, and as there are 10 of them I will use these as a Basis of calculation, and then see how Table II which includes Dr. Vincent's cases, and Table III, which consists of cases extracted from the Hospital Records for 1900-1901-1902, compare with my own results.

Etiology.

(a) First then, as to the usual date of onset of the affection. On this point Dr. Vincent, in his communication referred to before, lays so much stress on the date of onset in its relation to the etiology and pathology of the affection that he has actually introduced it into the Title of his paper- thus: "arising about the Tenth Day of the Puerperium", and further in the account of the condition, he says, p. 163. Consideration (4)- "The time of onset is of great importance in considering the Etiology of the condition. The possible sources of infection are many," etc., etc., and he concludes that the "Lochia Serosa" being frequently present at this time must

have much to do with its incidence. It is important therefore to find out what bearing our Tables I. and III. have upon this fact, apart from the wisdom of the conclusion drawn.

Table I. shows that in 10 cases the average date of onset is about the 9th., whether we include a double infection of the same patient or not, which occurred in Cases VI. VII. and X. This conclusion is arrived at by simply adding the dates of onset together and dividing by the number of cases, but I think a much more important fact is that the Records show that the condition may arise on any day from the 5th. to the 13th. of the puerperium, although it is true that the majority of cases do arise somewhere about the 10th day, still such a conclusion in its relation to the "Lochia Serosa" as drawn by Dr Vincent is by no means warranted by the clinical facts based merely upon the usual date of onset- (Vide Pathology)

Table III. again, which in the aggregate shows an average date of onset about the 8th. day, whether we include Case 31 or not, affords abundant evidence of the facts which are shown in my own cases viz.- that the affection may arise on any day from the 3rd. to the 13th. of the puerperium, and therefore more than ever confirms my statement that the date of onset in its relation to the Lochia Serosa has no reference whatever to the Etiology of the disease.

Table II. Dr. Vincent's cases average the 11th. day, the earliest being on the 9th. and the latest the 13th.

(b) The duration of the "Flush" and its accompanying physical signs in the affected segment of the Breast are not of any etiological importance, but depend

entirely on the severity or virulence of the infection and the measures taken both before and after to deal with the case, but still it is of interest to note that the affection may last from a few hours to a few days.

(c) The shape of the "Flush" and its accompanying physical signs in the Breast are of great importance in considering the Etiology. Dr. Vincent for instance, holds that "the definitely wedge shaped area, with its apex at the nipple, points strongly to infection of the Lymphatics arising at the nipple." While it is true that in the vast majority of cases the "flush" on the skin of the Breast is distinctly inclined to the wedge shape with its apex at the nipple, and furthermore that the induration of the subjacent tissues, with their hard, knotty and irregularly swollen milk ducts, are restricted to one segment of the Breast; still cases do occur where the whole of one side of the Breast is affected, or where both Breasts are affected at one and the same time, the flush in one Breast being wedge shaped and in the other diffuse or indefinite in outline, so that although I agree that in the majority of cases the "affected area of the Breast" is of the wedge shape, it is by no means always so: but in any event it seems to me clearly true that the shape of the "flush" and the limitation of the physical signs to one segment of the the Breast are of vast importance in relation to the causation and mode of infection in this disease, though I would not from this fact necessarily conclude that the condition was always due to an "infection of the lymphatics arising at the nipple".

(d) The question as to which Breast is more frequently affected does not appear to be of any clinical or pathological importance, but it might be as well to state the relative frequency in each of the three Tables, thus:-

Table I. 10 Cases. Double infection in 4 cases.

	Cases	
Right Breast.	3.	Case VII. Twice infected in different situations.
Left Breast.	5.	Case X. do. do.
Both Breasts.	2.	Cases VI and IX.

Note further that in case VI the Left Breast was infected a second time two days later; so that these figures in 10 cases show a much larger percentage of infection in the Left Breast as compared with the Right.

Table II. Dr. Vincent's Cases. 6 cases.

	Cases.	
Right.	3.	equally divided and no double infection.
Left.	3.	

Table III. Hospital Records. 34 Cases.

	Cases	
Right	11	again a larger proportion in Left Breast.
Left.	18.	
Both.	5.	

(e) The condition of the Nipples forms an interesting object of study in regard to Etiology for the reason that they form the most obvious means of conveying infection to the Breast tissue and so setting up the clinical phenomena which we observe in "Flushed" Breasts. On this point Dr. Vincent again says p. 162 Consideration III. that "the infection is easily conveyed to the nipple by a nurse whose hands are contaminated by the Lochial discharge and in various other ways." And again notice that Shield and other authorities on the "Diseases of the Breast" are satisfied that the most common cause of mammary abscess is "soreness of the nipples". It should be instructive, therefore, to search our Tables for information on this point.

Table I. 10 Cases-

Visible soreness, or fissure, of the Nipple- forming thereby an obvious means of possible infection was found in two of the 10 cases- Cases V and VII. 20% approximately- or 2 out of 10-

In the remaining 8 cases after a very careful examination by means of a hand-glass, the nipples were reported free from any visible sign of injury-

Table II. 6 Cases-

In Dr. Vincent's cases the condition of the Nipples is referred to definitely in 4 out of the 6 cases- and in only one (case II) of them is the Nipple of the affected Breast described as retracted and sore-
25% approximately- or 1 in 4-

Table III. 34 Cases:

4 cases are definitely referred to here as having sore nipples- 12% approximately, or 4 out of 34-

These Tables then would scarcely seem to bear out the contention raised by some authorities that practically speaking all cases of "Flushed" Breast are like all cases of mammary abscess due to infection through sore nipples; but it must be borne in mind that the observations are only based upon the presence or absence of a fissure which would be visible either to the naked eye or to slight magnification, and does not by any means exclude the possibility of a fissure or breach of nipple surface being present which would easily admit innumerable organisms and yet be invisible to the naked or slightly aided eye.

(f) The condition of the uterus and lochia is also an interesting point of study in connection with the Etiology of "Flushed" Breast as it is in many other physiological and pathological conditions of the Breast, and as some authorities hold that it is of great importance in the study of the Causation of "Flushed" Breasts, let us see what our Tables teach us in regard to both the uterus and lochia. It would be convenient to separate them into two groups, taking the uterus first:-

Table I. 10 Cases- shows that in all my own cases the uterus had involuted well, and that both before and after the onset of the "Flush" on the Breast there was nothing in the condition of the uterus so far as could be ascertained by abdominal palpation, to cause any anxiety or perplexity. The Red Line on the Temperature chart in each case shows the daily decrease in the size of the uterus and it will be seen that in all 10 cases it is gradual and in every way normal; furthermore, the notes of each case will show that the uterus was in all cases well contracted and not tender and that therefore from this point of view at all events all was well.

Table II. In Dr. Vincent's 6 cases, the uterus in Case II is referred to as being tender at one cornu- the left- and the uterus was not well contracted.

Table III. Hospital Records- 34 cases-

Uterus not well contracted but not tender.			Case V.
Uterus anteverted- large and bulky-	do.	do.	Case VI.
Uterus not well contracted-	do.	do.	Case VII.
Uterus " " "	do.	do.	Case XIV.
Uterus " " "	do.	do.	Case XV.
Uterus involuting very slowly-	do.	do.	Case XIX.
Uterus anteflexed- not bulky-	do.	do.	Case XXI.
Uterus not well contracted- but tender-			Case XXX.
Uterus " " " and slightly tender- left cornu.			Case XXXIII

Here therefore are nine cases where the uterine condition was not quite satisfactory, a fact which could be made out per abdomen —apart altogether from the question of Lochia.

The Lochia are also of very great importance in considering the Etiology for they form a possible source of infection as will be seen later.

Table I. shows that in 10 cases, the Lochia were abnormal in Case IV. where on the 6th. day they were scanty and Brown in colour, on the 7th. absent, and that a little later- on the 9th. day- they became offensive; but apart from this case there is no definite evidence in any of the other 9 cases of offensive Lochia and other signs pointing to uterine saprœmia, and in this particular case a vaginal douche was sufficient to remove all traces of offensiveness.

Table II. of Dr. Vincent's cases- also shows again that in Case II. the Lochia were offensive on the 5th. day and there was other evidence of uterine saproemia- but apart from this case, not one of the other five has any suggestion of an abnormal condition in the uterus.

Table III. Hospital Records- out of 34 cases we find:-

Case	I.	Lochia scanty and slightly offensive- on 4th. day-
"	V.	Lochia Brown and offensive- free- on 12th. day-
"	VI.	Lochia reddish Brown- a little offensive- on 9th. day-
"	IX.	Lochia slightly offensive and Brown- on 9th. day-

(Table III. cont.)

Case XIV. Lochia Red and offensive on 4th day-
" XV. Lochia Brown- scanty and offensive- on 4th. day-
" XIX. Lochia scanty- but not offensive- on the 6th. day-
" XXX. Lochia scanty- Brown and offensive- on the 12th. day-
" XXXIII. Lochia Brown and offensive on the 9th. day-

In all 9 cases, there are signs of the Lochia being abnormal in either appearance, quantity or odour, at or about the time when the condition of "Flushed" Breast was present, and the significance, if any, of this relationship will be referred to later.
(Vide Pathology)

(g) The condition of the child is of importance from several points of view in considering the Etiology- for instance, we must recognise the mouth of the child as a possible source of infection to the mother's Breasts, and in all cases this should be carefully investigated; furthermore as indirect evidence of either a primary source of infection or as a result of an infection common to mother and child, we must take note of such conditions as green stools in the infant and conjunctivitis occurring at or about the same time as the "Flushed" Breast. Other points will be referred to later concerning the welfare of both mother and child.

Table I. shows that in my 10 cases, the child lost weight in Case IV. and had green and watery motions in Case VI., but in the other cases the condition of the child was all that could be desired. In Case IV. (for details, see Note Book), there does not seem to be any special reason why the child

should have lost weight during the last few days of the residence in Hospital, save that it was fed for part of that time on milk drawn from the Breast by exhaustion with a pump, but still as far as we could see it appeared quite satisfied. Notice also that the Bowels were a little free during this time- which may be a more satisfactory explanation.

In Case VI. The question is whether the green, watery motions have any relation to the condition of the mother's Breast- this will be referred to later; but meantime, notice it occurred subsequent to development of the Breast condition.

Table II. In Dr. Vincent's cases no reference is made to the condition of the child.

Table III. Hospital Records- out of 34 cases notice that in

Case XIV. the child had green stools frequently-
Case XV. ditto
Case XVII. ditto
Case XXII. had some purulent discharge from both eyes-
Case XXX. infant died, a few hours after delivery-

It is important to notice that in these 5 cases, the three infants who developed frequent green stools did so after the "flushed" Breast had made its appearance, but that Case XXII. had a purulent discharge from both eyes on the 7th. day- that is, two days before the development of any Breast symptoms on the part of the mother.
Case XXX, where the infant died will be referred to later— (Vide Pathology)

Lastly, let me say that in no case have I been able to find any record of the child's mouth being diseased in such a way as to give rise to the suggestion that it might form a possible source of infection to the mother's Breast. These points will also be discussed later.

(h) The Nature of the Labour might be regarded as a factor of some predisposing importance in determining the onset of this affection, because naturally a severe prolonged labour, especially in a primipara, would result in some possible injury to the passages rendering them more liable to septic infection, etc. For this reason, therefore, I have thought it desirable to classify each case and to state definitely whether the Labour was "normal" or not in the ordinary obstetric sense in which that word is used.

Table I. then shows in 10 cases:-

Normal.	9 cases.
Forceps.	1 case- prolonged 2nd. stage with increasing caput in a primipara- note also perineum torn- the position was L.O.A.

In the 9 cases above referred to which were normal:-

L.O.A.	6 cases.
R.O.A.	One.
R.O.P. - R.O.A.	Two.

Table II. Dr. Vincent's cases- Only one case is referred to; in this instance the Labour was by Pelvic presentation, with the result that, especially in a primipara, it was tedious and difficult.

Table III. Out of 34 cases extracted from the Hospital Records- we find that they work out thus:-

All were Vertex presentations, and the positions were

L.O.A.		14 cases.	All Normal
R.O.A.		12 "	
R.O.P.	R.O.A.	2 "	
L.O.P.	L.O.A.	4 "	
R.O.P.		1 "	
R.O.P.	R.O.A.	one case.	Forceps used- Primipara-

Thus there were 33 out of the 34 cases in every respect quite normal- only one a Forceps case in a Primipara- so that it does not look at first sight as if we were going to gain much assistance in the explanation of our cases by means of the study of the Labour. Later this will be referred to again from two other points of view- viz. the condition of the Perinœum after Labour and the number of the pregnancy- whether primi-gravidæ or not-

(i) The Number of the Pregnancy. This appears to be of some importance as a possible predisposing cause in consequence of the fact that the nipples in primi-gravidæ are naturally in many instances, small, more tender and more liable to injury, so that some

information on the comparative frequency of the occurrence of the condition from this point of view ought to be instructive.

Table I. in 10 cases shows that the condition arose:-

In First Pregnancy-	6 cases
" Second "	1 case
" Third "	2 cases
" Fourth "	1 case

Table II. in Dr. Vincent's 6 cases:-

All were pregnant for the first time.

Table III. in 34 Hospital cases.

First	25 cases
Second	4 cases
Third	2 cases
Fourth	3 cases

So that these Tables all agree in showing an immense proportion of the cases arise in Primi-gravidæ but that after that the number is so small that no general conclusion can be drawn, though probably one would be quite justified in saying that the Second pregnancies come next in order of frequency. This after all is only what we should naturally expect having regard to the facts above mentioned, but it is none the less important to be able to demonstrate its truth so conclusively.

(j) Of other factors of interest in connection with the Etiology one might mention that the proportion of married to single is regarded by some authorities as of some importance, as tending to explain "certain ephemeral cases of "Breast flushing", which they ascribe to emotional causes and which one would naturally expect to be more common in the single than the married women who come under observation.

Table I. shows that in 10 cases the proportions were equal.

Single	5.
Married.	5.

Table II.

Single.	5.
Married.	1.

Table III.

Single.	19.
Married.	15.

Although the number of cases would appear therefore to be more frequent in single than married, two other factors are worthy of mention- one is that in Queen Charlotte's Hospital the proportion of primigravidae admitted to the wards is about 60% of the whole number, and furthermore we must take into account the fact before mentioned, that we would be led to expect a larger proportion of cases in primigravidae as compared with multi-gravidae in consequence of their greater liability to small, tender,

retracted nipples, etc., and secondly, that a large proportion of the of the primigravidae admitted to Queen Charlotte's are single women - whereas, all the multi-gravidae are certainly married, so that I believe if we take into account all these factors we may fairly conclude that although the "flushing" of the Breasts is more common in single than married women, this is not due to any emotional factor, but can be explained by clinical and anatomical facts and the proportions of admissions to Hospital of the two classes.

(k) The age of the patient is of very slight etiological importance, as probably we should expect that granted similar conditions an elderly primipara would be more liable to develop the condition than a young one, owing to greater liability to injuries to the passages, to retracted and small nipples and other anatomical reasons- The cases recorded in our Tables run from 17 to 44 years of age.

(l) In connection with the consideration of the Etiology we must not overlook the condition of the perinœum as a factor in the list of possible causes of "Flushed" Breast. I refer particularly to those cases where the perinœum has been torn, partially or wholly, during Labour. In such cases we may find a laceration of a slight or extensive nature involving either the perinœum itself or the parts in the neighbourhood as well or in them alone; for instance, the vagina, uretha, or rectum, and it is obvious that such a lesion might well be a source of septic infection, the results of which might be very far-reaching in their effects.

Table I. including 10 cases, shows that in 3 cases the perinœum was lacerated during Labour-

(a) Case II. a slight perineal tear which healed well and completely, but notice that apart from the lacerated perinœum there was no other special cause to which a definite source of infection could be assigned.

Case VI. also a slight perineal laceration, in which there is no other definite source of infection apparent

Case X. where the perinœum and labium are lacerated, and in which no other factor is present to account for the subsequent affection.

Table II. Dr. Vincent's cases, show at least 2 instances- Cases II. and III. where the perinœum was lacerated; and in Case III. no other source of infection is indicated. No reference is made to the condition of the perinœum in the other cases so presumably they were not lacerated.

Table III. Hospital Cases. It has been possible to ascertain the condition of the perinœum in all of these cases; lacerations were found to have occurred in either the perinœum or its immediate neighbourhood in 13 of these – thus

In	Case	III.	no other cause found.
"	"	IV.	ditto.
"	"	XVII.	ditto.
"	"	XXX.	ditto.
"	"	XXIII.	ditto.
"	"	XXIV.	ditto.
"	"	XXV.	ditto.
"	"	XXVIII.	ditto.

(m) Temperature and Pulse can scarcely be said to be points of etiological importance but have been included in the Tables in order to show that the condition of "flushing" of the Breasts may be present in some instances without any rise of Temperature at all, or that it may go up even to 105°, and again the Pulse always increases in frequency and sometimes shows an increased rate so for some time previous to the onset of the affection.

Similar instances of the condition of the Pulse rate will be seen in the Tables— thus Cases VI and VII show a remarkably rapid rate— and Cases I..XII. XXV. and XXXIV a low rate—

In my own cases as well as in Dr. Vincent's— the Temperatures are all over 100°, and the pulse tends to be high—

Hospital Records— Cases XVI. XXVI. and XXIX. XXXI. XXXIII. are the illustrations of low temperature when the inflammatory signs in the Breast were at their height, while Cases VI. VII. IX. X. and XXX. are all good instances of a high temperature under similar circumstances.

(n) Frequency of the Condition:-

This affection seems to vary considerably in its frequency— On looking over the Hospital Records for several years one is struck by the fact that sometimes no case occurs for months at a time—and then they appear in rapid succession for several weeks- Thus my own 10 cases represent about a 3% proportion— but on going to the Books for a space of 10 years I find that the average per annum is more like 2% — and the cases recorded in Table III. which are taken

from the years 1900—1901—1902- show an even smaller proportion — viz. 1.· 6% —
Roughly speaking one would expect to meet with from 20 to 30 cases per annum in Queen Charlotte's Hospital—

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For References to Literature see last page of all —

Section II

Bacteriology:-

The investigation of this form of Mastitis from the Bacteriological point of view presented many difficulties, and in addition required the knowledge and experience of an Expert on many points. Therefore I speak with some diffidence on the results obtained from my own researches - but at least the methods followed were those adopted or recommended by Eminent authorities so as to make the work as satisfactory as possible:-

Six different points seemed open to investigation judging from the results of clinical observations viz:-

(a) The Uterine lochia.

(b) The milk from the "affected" Breast.

(c) The Skin over the affected Segment.

(d) The hypodermic puncture of the affected tissues.

(e) The child's mouth.

(f) The blood of the patient.

The examination of the lochia proved itself much the most formidable of the undertakings, but in view of the strong opinions held by some of the Staff at Queen Charlotte's Hospital as to the strong probability of some connection between the sapraemia of the uterus and the occurrence of Mastitis it seemed desirable to see what could be made of the

material - In order to obtain a culture of the uterine lochia the method used was that first introduced by Döderlein[10]: a glass tube 25 c.m. long and 3 to 4 m.m. in diameter, and curved at one end like a uterine sound is taken and placed in a long, thick glass test tube, whose open end is plugged with cotton and is then sterilized by dry heat at 150 C. for one hour. The large tube is then used simply to carry the smaller tube about in a sterile condition. The next step in the process is to wash the external genitals carefully with soap and hot water, (the patient in all cases had to be put under chloroform by order of the Staff of Hospital), and afterwards with 1 in 1,000 Perchloride of Mercury. The hands of the operator were carefully scrubbed in soap and water, three changes of water, then soaked for one minute and scrubbed with a nail brush in Perchloride 1-1,000. The patient is placed in the lithotomy position, then a speculum such as Sims' introduced into the vagina. The Cervix is pulled down with a forceps and brought as near to the vaginal orifice as possible. It is then carefully cleaned with sterlised absorbent wool and the external os likewise. The sterilised glass tube is now taken from larger tube, and introduced skilfully into the uterine cavity up to the fundus of the uterus, of course the tube must not touch anything before getting to the external os. By means of a syringe attached to the free end of the tube, suction is made, and a

10. See References & literature at end of all.

quantity of uterine lochia aspirated into the tube. The syringe is then removed, the tube taken out of the uterus and both ends sealed either with wax or by heat, replaced in the larger tube and taken to the laboratory where it can be examined at leisure as it is hermetically sealed.

The next step consists in breaking the tube at a particular point by a file, and by means of a platinum wire or loop previously heated in a Bunsen flame. Spreading some of the lochia over an ordinary agar tube and placing in an oven× until such time as a growth appears on its surface. It will be seen that such a process of investigation involves a considerable outlay of time and as it was necessary to anaesthetise the patient by order, and the trouble which the ward nurses were put was by no means trivial, one could scarcely undertake such a piece of work often, and so my researches in this direction were confined to three patients who showed all the typical phenomena of the affection . these cases were also carefully chosen with a particular object in view, for instance.

×Temp 37°C

Case I. in the Note Book, was a patient in whom there was absolutely no special cause found clinically to account for the onset of the Breast symptoms and signs - and yet presented the typical clinical physical signs and symptoms which are associated with this condition arising early in the puerperium. The result of the Bacteriological examination of the

uterine lochia obtained in the manner described was a "pure growth of the staphylococcus pyogenesaureus", but although there was no doubt at all of its nature and identity, and my observation was confirmed by skilled Bacteriologists who saw the slide stained and prepared, it seems to me very difficult even with all these precautions to exclude the possibility of such a common micro-organisim creeping in accidentally somewhere - still the Bacteriological fact remaning a certainty that a pure culture was obtained and its clinical and pathological signifiance will be discussed elsewhere.

Case 10. again was another object of Bacteriological researches in the same way- and here it is interesting to observe that two organisms resulted from the examinations - that is, to say, a mixed infection seems to have been present- these two organisims were the "Colon Bacillus", and the "Staphylococcus" pyogenes albus" - it is interesting to note here that in this case the perinaeum and labia were lacerated during labour - and that as it is customary at Queen Charlottes' to leave long strands of the silk worm gut sutures hanging out of the vaginal orifice after suturing, it is quite within the bounds of possibility that the colon Bacillus may have got into the vagina from the recturn or anus by contact and spread along these strands - which are not removed until the stitches are taken out as the 8th

day or thereabouts - so that this may be taken as an instance of mixed infection in the uterus.

Case V was another patient in whom this research was carried out with the same precautions. This case was selected because as will be seen further on, the examination of the Breast bacteriologically had revealed the presence of staphylococci on the 12th. day after a careful examination of the milk, etc., and although the perinaeum, uterus and lochia all seemed quite normal clinically, and the condition of the Breast could be accounted for quite satisfactorily by the soreness of the nipple, still it was considered advisable to look at the uterine contents to exclude the possibility of anything being present which would account for the symptoms in some other fashion. After a most complete and careful examination, it was found that all the cultures taken were sterile, so that presumably there was no ground for assuming that the Breast condition arose from anything but local causes.

These three cases were most unfortunately for me, the only ones in which it was possible to undertake this most interesting means of research in relation to Pathology and Bacteriology of the affection, and in themselves are admittedly much too scanty a ground upon which to draw anything like definite conclusions; but taken in conjunction with the clinical facts of

of the cases and the other directions of research which were undertaken, and added to the results of the work of certain authorities such as Whitridge Williams, Döderlein, etc., they will, I think, permit of certain conclusions which will be referred to in the section on Pathology. It will be interesting here to draw attention to a contribution by Whitridge 20 Williams read before the Baltimore Gynecological and Obstetrical Society on March 8th. 1898 entitled "Forty cases of Fever in the Puerperium", with Bacteriological examinations of the Uterine Contents" In this paper he states that the method of obtaining the uterine lochia was substantially the same as described above. He only took cases where the patient's Temp. went up to at least 101° F. as Inpatients, or 102° F. when they were Outpatients or in private practice. The results of his most elaborate work showed that in 40 cases, the micro-organisms present were as follows;-

Streptococci	in 8 cases
Staphylococci	in 2 "
Colon Bacilli	in 6 "
Strictly anaerobic Bacteria	in 4 "
Unidentified aerobic Bacteria	in 5 "

Bacteria in cover glass preparations, but

Cultures sterile	in 4 cases
Diphtheria Bacilli	in 1 "
Bacillus aerogenes capsulatus	in 1 "
Typhoid Bacilli	in 1 "

Malarial Plasmodia in Blood –
cultures sterile in 1 case

All cultures, cover glass preparations and Blood exam. negative in 11 cases

This gives 44, and the difference is represented by the fact that in 3 instances there were mixed infections present, thus –

(1) Streptococci and Colon Bacillus

(2) Staphylococci and Colon Bacillus

(3) Typhoid Bacillus, Strepto. and Staphylococci, etc.

From this it will be seen that a multitude of difficult micro-organisms may be found in the lochia obtained from the uterus during the Early Puerperium and the question is whether granted the presence of these organisms, are they, or toxins developed from them, capable of producing infection elsewhere, for instance, in the Breast, by General Blood infection or by external contamination of the nipple? Both these possibilities will be referred to later. Meantime it is sufficient to note that the Uterine Lochia may contain many different forms of micro-organisms. Dr Victor Bonney, of the Chelsea Hospital for Women, tells me that he has been working upon the same lines as Whitridge Williams for the last two years, and although he has not yet published the results of his researches into 100 cases, he was good enough to inform me that he had found many different organisms and that his results were likely to confirm those of Whitridge Williams. At the same time it must be borne

in mind that micro-organisms are by no means normal inhabitants of the maternal passages in the Puerperium

19 Döderlein, in 1892, published his results, which showed that in 50% of the cases examined, the lochia proved sterile, and further that what he called the normal vaginal Flora were antagonistic to the growth of Pathogenic microbes, and that these Pathogenic microbes behave as saprophytes, being harmless to the healthy tissues, but becoming virulent when brought into contact with dead tissues, such as result from placental remnants, etc., or again in those whose vitality is reduced by prolonged and instrumental labours, for instance.— So that all these facts seem to point to this, that granted we have micro-organisms present in the maternal passages, under certain circumstances, such as the presence of dead products, or reduced vitality of tissues, together with a means of absorption into the blood stream, such as is allowed by lacerations in cervix, etc. or placental site, we may have remote effects produced like mastitis, by the organisms themselves, or their toxins. This point will be referred to again under Pathology.

In view of the above facts, the presence of the staphylococci, etc. in two of the three cases examined is at least of interest and it may be of great practical importance.

The next point of Bacteriological interest in connection with my cases which attracted my attention was the examination of the Breast itself. This was approached from three different points of view -

(1) The examination of the milk

(2) Hypodermic puncture of affected segment.

(3) The skin of the affected segment of the Breast.

Before going on to mention the results of my research here, let me state again the methods adopted for securing our material. In the case of the milk, the nipple and surrounding areola were very carefully washed with soap and hot water first of all, then after drying thoroughly with sterilised absorbent cotton wool, absolute alcohol was applied on a pad for two minutes, when the operator was ready with sterlised platinum loop, the pad was removed, milk squeezed out by an assistant, caught on the loop and smeared over agar in a tube, and then proceeded with as before.

In order to obtain Blood by hypodermic puncture in the affected segment, the skin over this area was carefully washed with soap and hot water, then with ether and lastly with absolute alcohol - the hypodermic needle was made of glass, piston rod and barrel, and an ordinary needle with a large diameter and orifice - these were boiled beforehand in a Test Tube, and the puncture made by an operator with hands specially cleansed - the needle was driven into the

affected area deeply and carefully and gradually withdrawn - generally several drops of Blood were drawn into the needle and this was then forcibly driven on to an ordinary agar medium in a Test Tube, and the procedure afterwards was again as above.

Skin scrapings over the affected "flushed" segment of skin were taken with an ordinary sterilised scalpel, and the scrapings put into Broth culture - this was only done in three cases to confirm the presence of the normal organism of skin described by Welch of Baltimore - thestaphylococcus albus.

It should further be mentioned that the milk of the unaffected Breast was taken in some cases with exactly the same precautions as a "control" and in other cases the milk was taken from the affected Breast, both when the Breast was full and again some hours later when it was nearly empty after just suckling the infant. The results of the cases examined are shown in Tabulated form thus -

No.of cases	Milk. affected - unaffected Breast.		Hypodermic Puncture.	Skin over affected segment
Case I	Staph. albus.	St. albus	negative	Staph. albus
Case II	Staphy. albus.	not examined.	do.	do.
Case V	Staphy. aureus	Staph. aureus	do.	not examined
Case VII	Staphyl. albus	Staph. albus	do.	not examined
Case X(a)	9th.day. negative@	Staph. albus	do.	St. albus.
(b)	11th.day negative@	Staph. albus	do.	St. albus

@ Note in both these instances the Breast was empty, child having been recently fed.

(c) 2nd. exam
on 11th.day. Staph. albus. not examined. do. not examined
Affected Breast
full of milk

This series of examinations brings out several interesting points in regard to the Bacteriology of the affection. Thus it shows (a) that in all the cases examined, the milk from the affected Breast contained staphylococci. Case X is not regarded as an exception seeing that the cocci were found in the milk secreted from the Breast when full.

(b) In no case were we able to find micro-organisms from the hypodermic puncture in the affected area - this would seem to exclude to a great extent the presence of micro-organisms in the Blood in that situation at all events

(c) The presence of Staphylococci in the skin which has been frequently asserted before by others, is here easily confirmed.

(d) The unaffected Breast was also found to contain Staphylococci, just as in the case of the affected Breast - and furthermore

(e) the Staphyl. albus was much the most frequently present.

The most striking feature to me about these results is the fact that the staphylococci were found in the milk of the affected Breast when full, and were

absent, or present in such small numbers that they could not be cultivated, at the end of suckling. It occurred to me that this might explain one of the phenomena of the disease, and that is its curiously temporary character, often lasting only a few hours. This seems to be susceptible of two explanations - one is that the organisms are in these cases in a very weak and enfeebled state and therefore incapable of much virulence (vide pathology) and this is further supported by the fact that the cultures required in some instances several days to grow well - and the other explanation is, that as we know that the epithelium lining the milk ducts and acini is disintegrated every few hours and these organisms always appear with the first flow of milk, and may be absent at the end - possibly they lie to a great extent in the superficial epithelialcovering of the duct, and never get into the tissues in any quantity sufficient to set up purulent inflammation there. If such were the case, it does not exclude the toxins arising from these organisms from circulating in and about the neighbouring tissues and setting up all the phenomena with which we are familiar, but as the great majority of organisms which result from multiplication between each feed would be swept out at each act of suckling and its accompanying disintregration of epithelium - it would not be possible for any violent symptoms and results to follow and hence the transitory nature of the affection in many cases.

It would be interesting at this point to compare the work of certain authorities on the Human milk. Escherick found that the examinations of the milk in 25 healthy women, revealed no micro-organisms of any sort. His experience however seems to have been quite singular, for Cohn and Neumann found organisms in the milk of 43 out of 48 healthy women, and Honigman in 76 examinations of the milk of 64 recently confined women, found it sterile on only 4 occasions. Ringel again in 25 cases found it sterile in 3 instances only. All these observers agreed that the most common organisms found, are the Staphylococcus pyogens albus and aureus and the Streptococcus pyogens.

Human milk except in the case of local disease, is generally believed to be like the lochia, sterile, but it would be more correct to say that like the latter it often contains pathogenic microbes without betraying any pathological effects. There is no doubt that they are found most commonly at the beginning of the secretion, but whether this is due to their presence in the superficial lining of the duct or to their presence just inside the orifices of the ducts, it is difficult to say, Their pathological effects are determined by other causes, for instance, the Puerperal Breast is frequently engorged with Blood and contains in the milk itself a fluid which is a specially good nidus for the proliferation of organisms, further the dependent position of the organ favours congestion and injury. It is abundantly proved from these and

other considerations that mere stasis is not sufficient to produce Mastitis, but that granted its presence, this together with the presence of such micro-organisms as are shown here in typical cases, are sufficient to bring about the condition.

Therefore stasis is a precursor not a cause, and note further that these micro-organisms being commonly present in the skin of the Breast, the axillary folds and the fossae of the nipple, it is obvious that great care must be exercised toprevent their activity being set up. Breaches of the surface of the nipple or its areola, in many cases far too small to be seen after a careful examination are sufficient for the entrance of the micro-organisms. Such infection may also result from a little carelessness on the part of the physician , nurse or other attendant, who while examining the nipple, or handling it for the purpose of feeding the child, may easily convey by tainted hands infection from elsewhere. Furthermore, the child's mouth, soiled clothing and many other means could be easily pointed out outwhereby such an infection may begin, and then in addition often through neglect and want of cleanliness the nipple itself with its dried up milk and shed epithelium often forms a breeding ground for the further proliferation of these same organisms.

The child's mouth. In several instances this was examined Bacteriologically by means of a swab, but to no purpose, the multitude of organisms resulting therefrom, aerobic and anerobic rendered the task futile.

In no case were there any definite clinical signs of disease, such as Stomatitis, etc.

Blood. Escherick believes that micro-organisms have the special power of coagulating caseinogen on gaining access to the milk, and he believes that in Puerperal septic conditions, microbes may enter the Blood from lesions in any part of the genital canal and eventually in some instances set up a Mastitis. This view will be referred to again later, but in the meantime let me here state that while not wishing to dispute and disbelieve the view expressed by Escherick, it is certainly a significant fact against his theory, that in all cases where a hypodermic puncture was made in the area of Breast affected, and Blood removed therefrom, the cultures all turned out to be sterile, and surely if the Blood in any part of the Body should reveal organisms in order to support this view, the Blood taken directly from the affected area should.

Had Escherick said that the Toxins absorbed into the system from the organisms in a sapraemic uterus, his view would have been more tenable - see Pathology.

For References to Literature - see last page of all -

Section 111.

Pathology:-

The study of the various clinical phenomena which are found to be present in the condition called "Flushed Breast", and which I have taken to mean a form of Mastitis occurring only in the puerperium, seems to lead me to the conclusion that we are dealing with an inflammatory condition, which depends for its incidence in many cases upon certain facts which are only present at this particular period in maternal life, and which owing to a large extent to its transitory or temporary character, is not so generally recognised as it should be.

It is almost impossible to divide up our cases into various groups illustrating certain forms of the disease because its morbid anatomy is unknown, and in all cases it is extremely difficult to say accurately which tissues are affected and how much of each. Thus we may get cases where the milk ducts are obviously swollen, irregular, hard and knotty, the skin erythematous over them and wedge shaped, in others there are enlarged glands, diffuse erythema and the interstitial tissues of the breast seems to be affected, so that no good purpose is likely to be effected by trying in the present knowledge at our disposal, which is nearly all clinical, to group or classify our cases. We proceed at once to the causation.

Predisposing Causes:-

The condition of the nipples themselves, which may become sore from neglect or uncleanliness during pregnancy or immediately after labour. The pressure of tight corsets for instance may prevent the natural development of the nipples, then again the nipples may be naturally small and retracted with in some cases an undue thickness of the epithelium covering it and prominent papillae may result in the formation of large sulci or crypts between the folds of the nipple, these tend to imprison shed epithelium and dried up secretions and form a most convenient harbour for micro-organisms upon a fertile nidus. It is well known that such organisms as the Staphylococcus pyogenes albus and aureus, and the streptococcus pyogenes are commonly present in the neighbourhood of the nipple and its aroela, as well as in the axillae and the skin of the breast, and therefore under suitable conditions such as the above they will easily multiply and granted the presence of certain other conditions which will be described later it is easy to see how such an affection may arise.

Direct Causes:-

The most common of these are injuries to the nipple set up by the gums and tongue of the infant, especially when the mother is a primipara, and the nipple is short and retracted, add to this any or all of the predisposing causes mentioned above

and you have sufficient to account for the commonest forms of mastitis viz:- a cracked or fissured nipple in which micro-organisms gain an easy entrance and are very apt to set up the inflammatory signs and symptoms associated with mastitis.

Numerous other causes can be mentioned here, for instance, we may find that the suckling is delayed for some reason until engorgment of the breast ensues, now mere engorgment is not sufficient to produce mastitis, as was well proved by Kehrer who sealed up the nipple with collodion and obtained all the signs of engorgment and yet no mastitis ensued, or again there was the case mentioned by Mc Clintock[3] of a patient who had a cicatrix completely involving and rendering useless the nipple of the right breast, and who also after labour developed engorgment of this same breast, but no mastitis, so that granted engorgment is present we have here again a powerful predisposing factor to mastitis and especially where there is any fissure of the nipple and its aroela. When the nipple is not properly or wholly taken into the child's mouth this also is apt to cause injury.

3. See References to Literature.

(b) Most important is it to bear in mind that infection may be conveyed to the nipple of the mother by the soiled fingers of the mother or the nurse, attendant or physician himself. There can be no doubt whatever that this is a constant source of trouble, but it is interesting to observe here that Shield[1] and Sherrington performed an experiment which consisted in rubbing pus from a tubercular abscess

into the lactating teats of a rabbit and from a pyaemic abscess into that of a cat without any injurious effect in either case and came to the conclusion from this that in order to convey infective material into the lactating breast and thereby set up mastitis, some breach of the nipple surface was necessary, while accepting this conclusion as partially true, one cannot help pointing out the extreme difficulty there is in excluding the possibility of a slight breach of the nipple surface being present which cannot be demonstrated to the naked eye even when aided by a hand lens, and yet which would be quite sufficient to permit of the entrance of innumerable micro-organisms, more than sufficient to produce the determining effect necessary. Therefore while I am not satisfied, even admitting the above experiment that micro-organisms cannot enter the breast except by a the breach of surface , it seems to me that their activity and noxious effects depend as much upon the predisposing causes present as upon this factor alone. In any case the possibility of conveying infection by the soiled fingers of physician, patient, nurse or other attendant, also soiled clothing must all be well borne in mind.

(c) The child's mouth must again claim our attention as an important factor in the conveyance of infection, either from the child to the mother or in the event of the breast being diseased from the mother to the child. In none of my cases have I come across

a case where there was the least suspicion of any disease, however slight in the child's mouth, but some authorities particularly Cautley,[8] refers to an interesting case where a child died from extreme prostration resulting from diarrhoea etc.which was afterwards found to be due to the ingestion of pus in small quantities in the milk obtained from an ass, which had an abscess in the udder, the child for some reason being fed on asses' milk. Such a condition might of course quite well occur in the human breast, and therefore it is always advisable to remove the child from the affected breast if there is any suspicion of pus being formed even when it cannot be found by clinical signs.

Case XXII from the Hospital Records, which is to be found in Table 111 suggests the possibility of a purulent discharge from the child's eyes conveying infection to the mother's breast. This does not seem to be at all an unreasonable theory when one considers the proximity of the eyes to the nipple rendered necessary by the act of suckling, and impresses upon one the necessity for extreme care and cleanliness in such a case. Going further back into the history of such a condition it would also suggest the probability of such infection having arisen from the maternal passages originally and would therefore impress upon us the necessity of carefully attending to their condition also.

All these will be taken as common causes of mastitis.

Are there any other conditions which may set up a Mastitis? This question is after all the most interesting one though by no means the most practical. There can be no sort of doubt that the vast majority of of cases of Mastitis are due to sore nipples. Shield goes so far as to say that he is coming rapidly to the conclusion that all cases are due to this source, and that where we cannot demonstrate such a visible breach of the nipple surface, we should probably do so, if we had some magnifying power at hand, ~~to do~~ so.

With this view I do not agree. My own experience is of course very small, but careful observation of 10 cases with the special object in view of determining the question as to whether such a condition may arise from any other cause besides nipple infection, has satisfied me beyond all doubt that there are cases of Mastitis occurring in the early puerperium which are not due to sore nipples. Take for instance case X. in my Note Book, or again case 1. Here we have two remarkable instances of what I mean. The condition of the patients in both instances was everything that could be possibly be wished for by the most exacting obstetrician up to within a few hours of the onset of the Breast symptoms. The Temperature charts illustrates beautifully what one means. The condition of the uterus, lochia, Breasts, etc. were all almost perfect so far as clinical observations could determine, and after a thorough search by means of the

hand magnifying glass no signs of injury could be made out in the nipple; furthermore, the child's mouth, eyes, nose and general condition were all perfectly healthy, but that was not all, for in both instances Bacteriological examination of the affected and unaffected Breasts were made. This resulted in the demonstration of Staphylococci in the milk of both breasts, but curiously enough, they were absent in the affected breast, when the milk had been practically all removed by suckling. Hypodemic puncture of the affected segment was also negative, which would seem to suggest that they were also absent from the Blood in the affected segment. The lochia again in Case I showed a culture of staphylococci and in Case X a mixed infection of Colon Bacilli and staphylococci. What then is the explanation of the condition here? Both cases seemed to be more typical of the form of mastitis which affects the milk ducts particularly. The interstitial tissues were not markedly affected, and and the glands in the neighbourhood were not swollen.

It seems to me that the condition admits of two possible explanations -

Viz. (1) Certain Breast factors.

(2) Certain uterine factors.

Take first of all a possible Breast condition which may explain the onset. We know as a fact that the milk ducts frequently contain pathogenie microbes, such as staphylococci, and yet remains in an apparently healthy condition. My own Bacteriological observa-

tions have demonstrated their presence over and over again in affected and unaffected Breasts. What is it then which determines their activity and pathological effects? It appears to me that this must depend upon some catarrhal or congestive condition in the epithelial lining of the ducts or acini. Such a predisposing factor being present would permit of their growth and multiplication, and further allow them to pass into the Blood or lymphatic stream in the neighbourhood and so set up their pathological effects. Case XXXII in Table III is an illustration of my meaning. One having died a few hours after birth, distended Breasts resulted in spite of efforts to arrest the milk supply. The congested, painful Breasts afforded the organisms present an opportunity of producing the inflammatory effects. Had they not been present, probably nothing more would have happened, but as it was, this condition enabled them to spread into the surrounding tissues. This is what I believe becomes in many cases the determining factor in the action of the organisms which are frequently, though not always, present in the milk ducts. It need not always be a distended or congested Breast such as I have here described, but in other instances it may be an injury or possibly an uncleanly breast which has enabled the organisms living in the crypts of the nipple to grow, multiply and become more virulent, possibly under these circumstances, nothing more than their entrance into the milk ducts or lymphatics is necessary to produce the

condition of mastitis. We know as a fact that these micro-organisms lying dormant in any situation become much more virulent when they are brought into contact with any pabulum suited to their developement and multiplication and why in this instance should we not draw a parallel from the vagina and uterus. It is quite clear that many cases of uterine sapraemia are due to the fact that organisms which had previously existed in the maternal passages, harmless and kept in check in fact by the normal vaginal flora, may suddenly become active and virulent and set up all these evidences of sapraemia by coming into contact with dead matter favourable to their developement such as clots, placental and otherwise, which have resulted from one cause or another. We all know how under these circumstances it often happens that a vaginal or an intra uterine douche will remove all unfavourable signs and the Temperature goes down to normal at once, and the lochia become sweet again. So in these cases pathogenic organisms lying in the crypts of the nipples or just inside the orifices of the ducts, may for reasons aforementioned, become suddenly active and virulent and so set up mastitis, the extent and severity of which depends upon the particular circumstances present in each case.

The second possibility - that of uterine causation - is based upon the clinical fact, that in quite a distinct number of cases this condition is associated with definite clinical signs of uterine sapraemia. Some

authorities hold that in such cases the mastitis arises by a General Blood infection from either the micro-organisms present in the maternal passages, or the toxins produced by them, passing into the Blood stream by some laceration in the cervix or perinaeum, etc., or by absorption at the placental site. This at first sight may seem to be a very far fetched theory, but as it is held by authorities who have seen and studied t this disease for many years, it must at least receive our careful consideration.

In such cases it is taken for granted that the nipples have been very carefully examined without revealing the presence of any visible sore, and that the signs of uterine sapraemia are definite. These two facts being granted, the question arises whether such organisms or their toxins are capable of producing a localized mastitis through the Blood stream by general infection.

In favour of this view, it may be stated that Escherich holds that micro-organisms have the power of coagulating the caseinogen of milk, and he believes that in Puerperal septic conditions, microbes may enter the blood from lesions in the genital canal, and eventually in some case set up a mastitis localized to one segment of the Breast, the particular segment affected depending upon local causes as well to some extent.

McClintock[2] in his "Clinical Memoirs" describes a case of localized mastitis, which after eliminating all other possible causes, he came to the conclusion was due to general blood infection from the absorption

of organisms or their toxins from the maternal passages.

Spiegelberg[4] in his Text Book of Midwifery, refers to a similar case, and furthermore the late Dr Griggs of Queen Charlotte's Hospital, who had studied this affection of the breast for some years, eventually came to the conclusion, based purely upon clinical facts, that this condition was due in many instances to the absorption of toxins in cases of uterine sapraemia and Dr W.S.A. Griffith, the present Senior Physician, told me that after disputing and disbelieving his late colleague's opinion for several years, he had now come to the conclusion that Dr Griggs was quite right- to this one might add that clinically a gneral constitutional disturbance is sometimes well marked in these cases. Headache, shivering, and even vomiting, being present at times, the blood also often shows a slight leucocytosis, such as is generally associated with toxic conditions. Furthermore, my own cases certainly show that in one case there was clearly a sapraemia of the genital canal present, and in 9 cases out of 34, taken from the Hospital records, there was evidence of the same.

On the other side it may be urged that even granted you have uterine sapraemia present, it is equally conceivable that the infection would take place by external means, that is, the contamination of the nurse or patient's hand, or soiled cloths, and this contamination conveyed to the nipple accident-

ally, thereby producing the condition.

Furthermore, notice that amongst the large number of cases of uterine sapraemia which one sees, a very small majority are associated with mastitis, and this is particularly impressive when one comes across a severe case lasting for some time with no abnormal Breast condition arising.

Escherich's views seem to be negatived to a great extent by the fact that in none of my cases were the organisms found in the Blood obtained from a hypodermic puncture of the affected segment, though this does not exclude the possibility of the effects being caused by the Toxins arising from the organisms, a view which is not stated by Escherich at all.

Cases of double infection and those where the flush tends to be diffuse rather than wedge-shaped, are certainly in favour of more general infection, but the vast majority of cases are of course localized and unilateral; even more striking is the fact that the constitutional disturbance is generally very slight, so much so that in many cases it is scarcely observed. Headache is generally slight, vomiting does occur rarely, and shivering, not exactly amounting to a rigor is seen at times, but in a case of general infection sufficient to produce a localized mastitis. I should expect to see much more marked constitutional disturbance. The Lencocytosis is too small especially at such a time, to be of any value, and lastly in regard to the views of authorities who have specially observed this condition, Drs Gow and Dakin are both agreed

that in their opinion the theory of uterine sapraemia causing a localized mastitis by General Blood infection is untenable.

Personally while my inclination is distinctly towards the condition of the uterus being a matter of distinct importance in connection with the affection here called "Flushed" Breast, I am quite satisfied that granted uterine sapraemia is present the mastitis is more likely to arise by external infection than by general blood infection, though I cannot bring myself to believe that the latter is an impossible condition, but I would certainly say that if the conditions are severe enough for the fulfilment of such an effect, I would expect more severe constitutional symptoms than one is accustomed to see, and I would also expect not a simple inflammatory mastitis, but one severe enough to make abscess formation inevitable.

The experience of Queen Charlotte's Hospital upon this point is quite remarkable and is in my opinion a very important factor in considering the pathology of the condition. Since the year 1894, there have been roughly speaking some 10,000 cases treated in the labour wards; of these about 250 to 300 have suffered from the condition called "Flushed" Breast, or in other words have had mastitis in some form or another while in the Hospital, and after a most careful examination of the case Book Records, I cannot find one case which went on to abscess formation. Dr Dakin however, has seen, but very rarely, an abscess following upon this condition in the affected area, and the matron

of the Hospital who takes a very keen and intelligent interest in this condition, tells me that in her 12 year's experience she has seen 3 cases return to Hospital some days after their discharge with an abscess in the affected situation. It is worthy of note here that patients are usually kept in Queen Charlotte's Hospital for 14 days, and if quite well, are discharged and told to return at once if anything goes wrong. It is possible therefore, that a certain number of cases may develop abscesses and find their way to the nearest general Hospital for treatment (See Prognosis).

Shield[1] is of opinion that all cases of mastitis are due to some erosion or fissure of the nipple or its areola, but it must be remembered that that his experience is practically limited as a Hospital Surgeon to cases of Breast trouble which arise some time after they have passed out of the hands of the obstetrician when most, if not all, of the special features peculiar to the early puerperium have ceased to exist, e.g. distended and congested Breasts, Uterine sapraemia etc., and therefore it is more than likely that his experience would lead to such a conclusion, but this does not necessarily mean that we as obstetricians should accept his dictum wholesale and without reservation.

Dr Vincent[18] in the paper referred to read before the Onstetrical Society of London, does not take to my mind a sufficiently broad view of the affection,

and his description is very meagre, clinically and pathologically. Furthermore there is no refernece to the Bacteriology of the condition.

In his summing up he makes some definite statements, based on his experience of six cases, which I am not able to confirm; for instance, he says, "that the lochial discharge in its normal condition at the second week is capable of producing the infection, and further that this condition which he calls lymphangitis mammae is due to an infection of the lymphatics at the nipple" and that the lochia serosa which is the only constant factor present at this time, is the source of this infection, and then again as a side issue he holds that "the conjunctivitis occurring in infants about the second week, when the eyes have been previously free, is due to the same cause".

With all these conclusions as general statements I am entirely at variance. It does not seem to me conceivable for a moment that the "lochia serosa" has any particular power of producing all the clinical phenomena associated with this condition, surely such a supposition is contrary to all rational thought and clinical experience. The mere fact that this condition may arise at any time from the 3rd. to the 15th. day of the puerperium, under all and every sort of lochial condition, whether red, pink, brown, free, scanty, sweet or offensive, is sufficient to condemn this view but of course I admit that if the lochia are offensive and contain micro-organisms, that this may be an actual cause of the condition, especially if the nurse or

mother should happen to soil their hands and the discharge by this means be conveyed to the nipple. Under these circumstances a mastitis may ensue, but that the "lochia serosa" has any power in itself to give rise to this affection, I cannot bring myself to believe, and moreover no one who has had any experience of this disease confirms the view held by Dr Vincent.

Again the lymphatics are not by any means the onlyportion of the Breast tissue whereby the infection may be conveyed from the nipple. My own experience would certainly lead me to think that the milk ducts were much more commonly the seat of infection and the mode of its spread, and this view is supported by the clinical observations of practically all authorities. Dr W.R. Dakin for instance, in a letter to me, states that"in his opinion "Flushed" Breast is a sign of septic infection running down a milk duct into one or more lobules of the Breast", he goes on to say "that the ephemeral cases are a vaso-motor disturbance of a lobule or lobules and the skin over it or them due to reflex irritation either at the orifices of the duct or just inside them". He thinks "further that such lobules do occasionally suppurate, but very rarely" (See Boissard's view later). Page 57.

Dr Jellet* is of opinion that the condition is an inflammation of the milk ducts due to the entrance of organisms. He thinks the organisms may be derived from the dried up secretion at the nipple or from infection by septic fingers, and that as the inflammation is limited to the ducts and only one set of these

* in his manual of midwifery

as a rule, the inflamed area naturally corresponds to that from which the ducts come, being therefore triangular in shape with the apex at the nipple, and a sharp line of demarcation exists as a rule between the healthy and inflamed areas of tissue.

Boissard[5] believes that occasionally the inflammation in the milk ducts goes on to suppuration and terms the condition then polygalactophoritis, but this must happen very rarely, the pus is said to come out with the last drops of milk and to be easily seen as a sediment on letting the milk stand for a little.

I do not agree then with Dr Vincent that the affection is at all likely to be a lymphatic one primarily; a further argument against this is that were it so, we would expect to find the glands in the neighbourhood swollen and painful much more often; that this occurs at times is admitted and Cases IV and VIII in Table I, show it, but it is a rare event, and for this reason the name Lymphangitis is inaccurate clinically and pathologically.

In my opinion the condition is definitely a mastitis, and a definition might be drawn up in such terms as these;-

By Flushed Breast is meant an inflammation of the mammary gland which is probably only seen in the Early Puerperium, usually within the first fourteen days, at all events typically so at that time, and in which an erythematous condition of the skin is developed, commonly on one Breast in a wedge-shaped fashion, with its apex at the nipple and base extending out towards

the junction of the Breast with the chest wall. Occasionally this erythema is diffuse and may affect both Breasts at or about the same time. It is usually accompanied by definite signs of induration in the affected segment of the Breast, in which the milk ducts, lymphatics and interstitial tissues are variously involved. There may or may not be evidence at the same time of a possible source of infection by means of sore nipples, uterine sapraemia, etc. and the condition is nearly always accompanied by a rise of Temperature and Pulse, together with some constitutional disturbance, such as Headache , shivering, etc.

For References. See last page of all.

Section IV.

Symptoms and Physical Signs;-

Careful perusal of the notes of the ten cases recorded in my Note Book will convey a more precise idea of the clinical phenomena to be observed in cases of "Flushed" Breast than any amount of description however perfectly compiled from such notes. Still it would be desirable in many ways to put on record here the more important clinical facts which are met with in connection with this affection or associated with it.

Headache, shivering amounting even to a "rigor" a feeling of sickness, vomiting, sleeplessness, pain localized to one segment of the Breast are all occasionally found as premonitory symptoms of this affection, a sudden rise of Temperature amounting sometimes to as much as 103° or 105° F. together with a correspondingly high pulse rate frequently accompany the onset of the disease . Generally the first obvious sign of the affection is a wedge shaped "flushed" segment of the skin of the Breast - the flush being pink in colour - clearly defined from the rest of the skin on the affected Breast - with its apex at the nipple. It easily disappears on pressure - is hot - tender to the touch and sometimes appears to be raised above the level of the surrounding skin surface - below this "flushed" segment, the tissue of the Breast is often hard - indurated - and painful

to pressure - the milk ducts appear to be irregularly swollen and knotty to the feel - and yet the remainder of the affected Breast is quite normal in appearance and to the touch - the subsequent clinical source has been described elsewhere but it is well to observe that other signs and symptoms are occasionally present which are worthy of mention - for instance, we may find very rarely a swollen gland in the corresponding portion of the pectoral border of the axilla, and again the inflammatory signs may be confined to the skin only and not involve the subjacent tissue of the Breast. In some cases also the nipples may be sore, fissured, retracted and tender, thus necessitating special care in their use, or we may find the uterus not well contracted, tender in one corner, large, bulky or displaced to the anteflexed or some other mal-position, the lochia again may present variable signs, being abnormal in quantity, odour or appearance, that is to say, too free or too scanty, offensive in odour or red, for instance when they should be brown, in other cases we may find the perinaeum torn or some of the structuresin its immediate neighbourhood,such as the labiae urethra or the vagina itself. The condition of the child is also of clinical importance, for it may be of some guidance to us in regard to causation, etc. therefore it is of interest to notice whether the child is healthy in every respect, or whether it shows evidence of purulent conjunctivitis green stools. loss of weight or any septic condition in the Buccal cavity.

all these varied conditions are found at times in different cases of "Flushed" Breast: and it only remains to point out with great emphasis that cases continually occur where there are apparently no other abnormal clinical conditions present except the localized signs in the Breast and where the affection likewise passes off without any future development.

Diagnosis. this is based upon a careful study of the physical signs and symptoms above described. Note especially the localization of the affections so frequently to one Segment of the Breast, look for the presenceof some definite source of infection, such as a sore nipple, uterine sapraemia or a stomatitis in the infant's mouth: but observe at the same time that the entire absence of any apparent source of infection is often of no less importance diagnostically. The sudden onset , and frequently the very slight constitutional disturbance accompanying it is also a striking feature, so is its occurence very early in the puerperium.

The Differential Diagnosis:-

is to be made from an acute mammary abscess in this case the only absolutely certain differential sign is the presence of fluctuation in the latter, Sometimes oedema and a certain amount of purple or

bluish tint in the skin over the abscess is helpful, and of course a puncture with the hypodermic needle is often necessary before the Diagnosis can be finally settled in some cases. Notice however that the signs of constitutional disturbance, such as, headache, shivering, high temperature and pulse, etc. are usually much more marked in the case of the abscess, and that the erythema of the skin is more diffuse, as well as the indurationof the subcutaneous tissues, modern research has also shown that a leucocytosis in the blood would be more marked when pus is present, but this is scarcely ever likely to be a determining factor in the differential diagnosis.

Granting that the affection known as "Flushed" Breast is due to several different causes, a refinement of Diagnosis would be to describe the condition in each case according to its cause, thus:

(a) a uterine form, if it exists.

(b) a form due to obvious injury to the nipples.

(c) a form due to infection by child's mouth.

(d) an idiopathic form, that is, where no cause could be found.

The Prognosis:- is generally speaking eminently good: after carefully going over the recorde or cases in Queen Charlott's Hospital for 10 years, 1893 - 1902, I have not been able to lay hands upon a single case which developed into abscess formation,

and Drs Griffith$ and Gow have both informed me that they have never known of a case which terminated unfavourably, The matron of the Hospital on the other hand is satisfied that she can remember three cases returning to Queen Charlott's a few days after discharge who had developed an abscess in the situation where they had had a "Flushed" Breast while in Hospital. But even granting that a certain number of patients do develop an abscess afterwards, there can be no doubt that the vast majority of cases do thoroughly well, if properly treated there and then. My own opinion is very definite upon this point that many of these cases would develop into the common formof mammary abscess were it not for the great care which is taken nowadays in a well managed Lying in Hospital to render the labour as well as the early puerperium as thoroughly aseptic ones, the care of the vaginal canal, the nipples, the child's mouth, and the hands of the Physician, nurse and other attendants are all factors in the results, and the result of my experience certainly teaches me that by these means the organisms if present are rendered so feeble by the constant attacks upon them by all sorts of antagonistic agents, in the shape of lotions (See treatment.) etc. that even when they do assert themselves as they must at times, they are so reduced in virulence by these antagonistic factors

that they can do nothing more than create an inflammatory process which soon aborts, and which when it arises also is at once attacked again by even more vigorous measures, (See Treatmant) which further renders any serious effect very unlikely.. When these antagonistic measure are not forth-coming in either their prophylactic or remedial stages, (Such as might occur in out patient practice in poor districts as compared with a well conducted ward in a Lying In Hospital) then the result might easily be the formation of an abscess and it is significant that in the present day these abscesses do generally occure later in the Lactation period when the patient has passed out of the hands of the obstetrician and accordingly not improbably falls into the hands of the Surgeon in the General Hospital. Upon this point Shield in his Text Book on"Diseases of the Breast" gives some interesting information from the point of view of a General Surgeon. He says that out of 186 cases of mammary abscess which he has treated, at least 114 were definitely due to causes arising in connection with lactation, and apparently he is quite satisfied that practically every case is due to some breach of the nipple surface or its areola, where-by septic infection may enter.

He classifies his cases in regard to their time of outset thus:-

In 1st. month	-)	33 cases
2nd.	..	42 cases
3rd.	"	12
4th.	"	2
5th.	"	20
6th.	"	3
7th.	"	2
		114 cases.

Of these 114 cases, the earliest occurred on the 11th. day after parturition. The latest case she has ever seen occurred in the 14th. month while the mother was still suckling her child. This last is certainly instructive from the point of view of the Queen Charlottes' Hospital because there it is customary to discharge the patient on the 14th. day if all is well, and they come up once a week, or oftener if necessary, for some 4 to 6 weeks afterwards if they choose. It seems more than likely that any patient who has suffered from this form of Mastitis while in Hospital, would be specially watched by the Staff, and would in any case be more than likely at this time to come back to Hospital if anything further developed. Taking then this experience of Mr Shield's and comparing it with the fact, already mentioned, that only three cases of abscess in the mamma following this condition, have been known definitely to have occurred at Queen Charlottes' Hospital in the space of over 10 years, (during which time at least 300 cases of "Flushed" Breast must have arisen) shows beyond all doubt the immense influence which is played

in their subsequent prognosis, by the care bestowed on the patient both before and at the time of its onset, so that one may conclude that the prognosis is generally good, especially at the time of its occurence, though the future history of the patient in this respect is certainly doubtful, because of our inability to find out the after history in all cases.

Treatment:- This is both Prophylactic and Remedial:-

In regard to the former the careful study of the condition must carry to anyone's mind the conviction that the careful preparation of the patient for the duties of lactation is a matter of vast importance not for one moment either should one lose sight of the immense care which should be bestowed upon the most scrupulous cleanliness in the case of Physicians. Nurse and all others who attend upon the patient either before or during labour, as well as during the whole period of lactation. The child must also receive our constant care and and watchfulness.

Treatment.

Prophylactic measures (~~continued~~) Prophylactic treatment as applied firstly to the Breast should begin where necessary during the last two months of pregnancy, when special attention should be paid to the avoidance of pressure on the Breasts by Tight Corsets. The nipples, especially in a Primigravida should be bathed night and morning with soap and cold water, sometimes it is advantageous to add a little alum to the water, or according to some authorities Tincture of Quinine, Brandy, Whisky or Eau de Cologne may be used mixed with the water. When the nipples are small and retracted it is advisable to pull them out gently between finger and thumb, though this must be done by a skilled nurse or other attendant and with very great care. If properly performed this tends to stimulate the muscular fibres and thus overcome the

retracted state. Inunction with some simple ointment like Lanoline is helpful and tends to diminish the risks of injury in this process. It is said that care must be taken not to overstimulate the uterus late in pregnancy by this means, as it tends to set up contractions of the uterus. In very markedly retracted nipples it may be necessary to pull out the nipples by means of a Breast-pump or by oral sucking performed by a healthy person. If these measures are successful the first step towards the prevention of Breast troubles in the early puerperium will have been made.

The next point in connection withthe Breast is that in the first few days after parturition you may find the Breasts tend to become engorged, hard, distended and very tender. In such cases the condition at first sight looks almost like acute inflammation, a pathological condition, but in any event therecan be no doubt that such a condition always predisposes to actual disease, and where staphylococci or other organisms are present they are given here an opportunity ofasserting themselves, and producing the phenomena frequently associated with "Flushed" Breast. In such cases it is wise to give the patient a strong purgative of a saline nature , this is often sufficient to relieve the congestion. Sometimes it is necessary to draw off by means of a Breast-pump the surplus of milk, and to direct the nurse to massage the Breast towards the nipple, using with advantage an ointment to assist her manipulations.

In addition cloths soaked in leadwater and laudanum are of use for soothing the pain which is generally present in such cases.

When the act of suckling the breast is about to commence it should be an invariable and a strict rule imposed upon the nurse by the Physicians to carefully wash the nipple before suckling with a solution of Boracic acid and distilled water ($\frac{1}{2}$ of each) and then after suckling the same process of washing with the same lotion should be repeated, taking great care to leave the nipple perfectly dry and covered with a little pad of absorbent sterilized cotton wool between the feeds. The child's mouth should also be swabbed out before each feed with a saturated solution of Boracic acid, afterwards it should be left undisturbed otherwise one is apt to produce vomiting of the contents of the stomach. When one is at all dissatisfied or uncertain as to the cleanliness of the nipples then 1 – 2,000 corrosive sublimate should be substituted for the Boracic lotion, if the nipples are carefully dried afterwards, the amount of mercury absorbed by the child is too infinitesimal to be regarded. When the nipples are inclined to be sore my own experience is that corrosive sublimate 1 - 1000 applied on a piece of sterilized gauze is the most satisfactory preventive of further mischief and if I was doubtful as to the presence of a fissure, a nipple shield would be used to protect the nipple from further injury by the child's mouth and gums.

Some think that the application of the compound tincture of Benzoin or Hazeline sufficient to prevent further trouble, others apply Tannin and still others used Silver nitrate or ichthyol ointment. If the mother cannot go on feeding the child from the affected breast, or the physicians prefers she should not, it is customary to rest the affected breast for one, two or more days, the milk in the meantime being withdrawn by a pump and by massage, the child being fed on cow's milk diluted in the proportions of one in three of Barley water, or possibly the mother's milk withdrawn by means of the pump may be used.

Pendulous, heavy breasts are often a source of danger and should be supported by a binder, which may be worn between the feeds only or continuously if an orifice is cut out for the nipples.

In cases where the child shows any unhealthy conditions in the mouth, they should receive prompt and vigorous treatment; thus in a case of stomatitis, the mouth should be swabbed out before each feed with Salol grs V to $\frac{3}{3}$r (grains five to one $\frac{3}{3}$ of distiled water) and a grain of Hyd $\bar{c}$ creta given internally as a powder twice or thrice daily. The nipple shield should also be used and between feeds kept in strong Boracic lotion. The child's eyes in some instances develop a purulent conjunctivitis which should be treated by instillation twice daily with silver nitrate grains five to the ounce, and sometimes in addition douched once daily with Boracic lotion. The nipple shield should again be used for the protection of the

mother, and in view of the condition of the child's eyes, the maternal passages carefully examined and treated if advisable.

The more one sees of Breast cases the more convinced one becomes of the importance of attending also to the condition of the maternal passages as a possible factor in the production of mastitis, and one cannot disregard the experience and views of authorities like Dr W.S.A. Griffith, the Senior Physician at Queen Charlotte's, who is satisfied that in all cases of mastitis arising in the early puerperium, it is wise to look to the condition of the Uterus, Vagina, perinaeum, etc. The treatment in some cases is obvious, for instance, if the lochia are foul and offensive, it is surely desirable to wash out the vagina at least, with some antiseptic solution, such as Tinct. Iodine one drachm to a pint of water at a temperature of 115 - 120 , once or twice daily using about a quart of lotion. Dr Griffith would prefer to go even further however and to wash out the uterine cavity. This practice is not carried out by his colleague, Dr Gow, who finds that in his experience no better results follow its adoption than in his own cases where he resolutely refuses to interfere in any way with the interior of the uterus. It is difficult with a small experience to favour either view, but my inclination at present is distinctly with Dr Gow's view, purely because of the fact that his cases certainly seem to do just as well, and

x. in spite of this - I always watch the condition of the maternal passages with great care - and if advisable - do not hesitate to give intra-uterine douches - where I am in doubt -

because of the obvious danger of introducing ~~dried~~ septic material into the maternal passages by means of the fingers and instruments used in the manipulations necessary. The perinaeum and labiae etc. must be carefully watched where there may be any lacerations during labour. The swollen oedematous condition of the parts just after labour renders their stitching up difficult, and complete union may be difficult to attain, while any discharge may if purulent affect distant parts by contact or may spread into the vagina and upwards into the uterus, and set up michief there, so these lacerated parts must be watched and kept scrupulously clean.

Lastly, in prophylaxis, a vast amount of attention should be paid to personal cleanliness; this applies to the physician, but even more so to the nurse who is in constant attendance and to the patient herself. These two persons are much more apt to convey contamination from one part of the body to another if there be any, so that hands must be kept scrupulously clean, soiled clothing must be removed at once, pads carefully handled. All instruments used must likewise receive every attention. When all this is done it should not be forgotten that the condition may date in its origin much further back, in fact to the conduct of the labour itself even, and therefore the whole field must be surveyed and the highest principles of surgical cleanliness kept up all through, together with attention to all the other points referred to above in the first paragraph.

Remedial Treatment;-

When a "flushed" Breast has in spite of all these precautions appeared, as it will do occasionally however careful we may be, the treatment will depend in a great measure upon the circumstances presenting themselves in each particular case, but whatever those special circumstances may be in any particular case, there are certain general principles which apply to all. I am satisfied that a Saline Purgative given at once is always an advantage and that the application of hot Fomentations (consisting simply of a pad of gauze soaked in boiling water and then rung out) to the affected part does much to reduce the inflammation and diminish pain. It is comforting to the patient. In quite a large proportion of cases this is all that isnecessary and provided no special indications exist, it is all that I am in the habit of doing in the way of active treatment, but in all cases a most careful examination is made of the Breast and nipple, as well as the uterus, vagina and perinaeum the child's mouth and eyes etc. If nothing is found to account, or to apparently explain the condition in any way, all that requires to be done is to watch the case carefully for any further developments and treat them as they arise. Those cases which do reveal on examination, a sore or fissured nipple for instance in such a case the application of corrosive sublimate 1 - 1,000 on gauze, ~~on~~ and the protection of the nipple by means of a shield or resting the Breast for 24 hours

and getting rid of the milk by massage or pump, these measures generally prove sufficient. In certain cases the fissures are very deep and it may be advisable then to apply caustic treatment by means of a fine stick of Silver nitrate, this should be preceded by the application of 5% cocaine solution in order to carry out the treatment vigorously. It may be necessary owing to the difficulty in healing, the extent of the injury to the nipple or nipples, and the acutely intense pain which suckling gives to the mother, to desist from Breast feeding altogether, in such cases the antiseptic lotions must still be applied to the nipple unlessone prefers to cauterize, and then the patient should be given a free purgative, a mixture thrice daily containing Belladonna or atropine with some Potassium Iodide and the Breasts should be firmly compressed by means of a Binder of Flannel. The child should be fed by a bottle containing cows' milk and Barleywater (1 in 3) to which a little sugar (3ī to 5ī of milk) and cream 3ī daily should be added, and its weight carefully recorded every 3 days to see how it is progressing.

Sculptors' clay spread on a bandage and applied to the Breast, changed night and morning, or the application of a large Belladonna plaster to each Breast and kept on for several days, have also been recommended as a means of arresting the milk in such cases, the nipples being left free by openings in the bandages.

Cases occur also in which there is reason to

suspect that an associated sapraemia of the uterus is a factor in the causation. Escherich as above stated (vide Pathology) holds that the micro-organisms have the power of coagulating caseinogen ℞ getting access to the milk , and that when there are lesions in the genital canals or its neighbourhood, these organisms may find their way into the blood and set up mastitis. This view coupled with the opinions formed by the late Dr Griggs, Dr Griffiths and others, seems to me to be well worthy of attention, whether it is accurate or not, and therefore in any case of mine where there was reason to suspect sapraemia conditions prevailed, it seems to me unreasonable and even dangerous to our patient not to tackle the condition of the genital canal by means of antiseptic lotions, say in ℞ 4,000 corrosive sublimate, washing out the uterine cavity once if necessary, and the vaginal canal twice daily, until all symptoms and signs of the sapraemia have disappeared; the douche should be given at a Temp. of 115° F. at least, and this procedure should be carried out whether there is any Breast condition present or not, for in the one case it would be prophylactic and in the other one means of remedy. Other lotions can of course be used according to the tastes of the practitioner, for instance Tinct. Iodi (℥ss to ℥ij) etc.

The perinaeum and labiae must also receive treatment if necessary, for instance, if the healing is incomplete, it may be considered advisable to re-stitch, or if

there is much purulent discharge, a local application of corrosive sublimate on gauze 1 - 1,000 may be necessary; the point to be kept in mind being to prevent spread of the condition upwards into the genital canal. (in such cases the Colon Bacillus is often present) to prevent its conveyance elsewhere, to the Breast for instance, by contact with hands of patient or nurse.

The possibility of abscess formation must always be kept in mind in cases of mastitis, and this is important for many reasons. One is that such a purulent collection may exist in the Breast for some time before it is found or localized, and the milk secreted from the Breast may contain innumerable micro-organisms, which being ingested by the child may developsin it violent symptoms of Diarrhoea, and other intestinal conditions, which leading to prostration may end fatally. Such cases have been described by Cautley and others, and therefore this possibility must be borne in mind and the child removed from the affected Breast if considered desirable. The point could easily be settled nowadays by the Bacteriological examination of the milk, but as this is perhaps not always possible for the practitioner, he must then be guided by the clinical signs present in each case.

When abscess formation is definitely made out, the treatment is divided up into local and general measures. It is usual to wean the child at once, and the opposite Breast if engorged must be pumped and massaged twice or thrice daily. All fluids must be restricted and the bowels freely opened, a mixture of Iodide of Potash,

Belladonna and Gentian may be given for a week.

It is always best to give the patient a little Nitrous Oxide gas or Ether to perform the incision necessary. The incision should be made as far from the front of gland as possible and always in a direction radial to the nipple. By making the incision as far from the front as you can it renders any resulting scar less conspicuous, an important point in certain patients. The abscess cavity should be allowed to evacuate slowly through a fine tube or a strip of Iodoform gauze. When changing the dressings wash with Boracic (warm), cover the gauze or tube with dry dressings or Boric wool, these being changed as frequently as may be necessary, depending of course on the amount of discharge. The tube should be shortened daily, but do not attempt to hurry the process of healing. A firm Bandage should be applied to the Breast and the corresponding arm put into a sling. Usually the cases heal with rapidity after the pus is let out, but sometimes they give trouble from the formation of a Sinus. and occasionally a general purulent eczema is found to arise from sodden dressings.

Beale in the Lancet for March 7th. 1896, advocates the treatment of mammary abscesses by opening with a Trochar andCanula,&exhausting Bottle applied to the aperture. This seems to be good treatment in small superficial abscesses, but the incision by means of a knife and evacuation by the finger in the cavity is preferable in deeply seated abscesses in the substance

of the gland.

In those curious cases of purulent collections confined to the milk ducts and acimi described by Boissard in Les Semaine Medicale 1893, it is recommended that the pus should be removed by firm pressure from the periphery of the Breast to the nipple, and the application of dilute perchloride by means of a dressing to the nipple afterwards.

Prescriptions :-

(a). For intra-uterine douches.

℞.
Tinct. Iodi - ʒi.
Aquam Bullient. ℥i.
—
Sig. mix with another pint of Boiled water.
until you get a Temp. of 115°-120° F.
and then use as directed —

(b). For arresting milk supply -

℞.
Pot. Iod. grs 80.
Tinct. Belladon. mx 40.
Inf. Gent. Co. ad ʒiv.
—
M. ft. mist.
Sig. ʒss. every 4 hours - in a wineglass of water.
Use as directed after 1st 24 hours -

(c). For swabbing out child's mouth & cleaning ulcerated nipples etc.

Various Lotions - Eg.
℞. Lotio. Boracis. (B.P.). ʒiv.
Sig. mix one tablespoon of Lotion with an equal quantity of water and soak a piece of cotton wool therein - Use as directed.

(d). Corrosive Sublimate. (1-1000 or more)
useful for Breast & uterine cavities.

(e) Unguentum Hamamelidis (B.P.) ʒi.
To apply to sore nipples.
when very painful other drugs may be added - thus.
Acc. Carbolici. mxx to ʒi of the Unguent.
or.
Cocaine Hydrochlor. grs ¼ to ʒi.

Table I.

Table I - Cases of "Flushed" Breast observed personally -

No.	Date of onset	Duration of condition	Shape of affected segment	Which Breast & what part affected	Condition of Nipples	Condition of Uterus	Condition of Lochia	Condition of child	Nature of Labour	age of Patient	No of Pregnancy	Max: Temp	Max: Pulse.	Condition of Perineum etc.	General Remarks.
I.	11th day	48 hours	Wedge.	Upper & outer Quadrant of Left.	No visible sore offensive	Well contracted not Tender	Pale - Scanty but not offensive	Good	Normal ROA	Married 32	Third	102°.4	116	Normal	No special cause found.
II.	10th day	72 hours	inclined to Wedge	outer ⅓ of Right	↑ ditto	↑ ditto	Brown - Scanty not offensive	ditto	Normal LOA	Single 22.	First	102°.6	126	Slight tear in perineum - healed well	Note persistent high pulse rate - & perineal tear -
III	5th day	72 hours	Wedge	upper & outer Quadrant of Left.	ditto	ditto	ditto	ditto	Normal ROP. ROA	Single 18	First	103°.	100	Normal.	Note Lochia scanty & Brown on 5th day - a little early.
IV.	7th day	48 hours	inclined to wedge.	upper & outer quadrant of Left.	ditto	ditto	Scanty on 6th absent on 7th offensive on 9th day.	Lost weight.	Normal ROP. ROA	Mar: 22	First	100°.	112	Normal.	Lochia suggest some uterine sapraemia - Note also glands in axilla enlarged -
V.	12th day	48 hours	inclined to wedge	outer half of Right.	Rt. Nipple sore -	ditto	Normal.	Good	Normal LOA	Single 23	First	100°.6	104	Normal	Note Rt. Nipple sore - and that the physical signs of infection are confined to skin of Breast -
VI (a)	7th day	a few hours.	apparently diffuse	Both	normal	ditto	Brown. not offensive	Good on 7th day (See later)	Forceps. LOA	Single 17	First	103°.	114	Perineum lacerated. healed well	Note condition of perineum in Notes.
(b)	9th day	48 hours	inclined to wedge.	outer half of Left.	ditto	ditto	ditto	Motions watery on 10th day - appears & Offensive on 12th.	ditto	..	..	102°	95	..	A case of Double infection -

Table I. (contd).

Table I (contd) - Cases of "Flushed" Breast, observed personally -

No:	Date of Onset	Duration of Condition	Shape of affected Segment	Which Breast affected + what part.	Condition of Nipples	Condition of Uterus	Condition of Lochia	Condition of Child	Nature of Labour	age of Patient	No of Pregnancy	max. Temp	max. Pulse.	Condition of Perineum etc	General Remarks.
(a) VII.	8th day	~~after~~ 48 hours	diffuse	outer side of Right	no visible Sore made out.	well contracted not tender.	Brown. not offensive	Good	Normal LOA	married 24	Third	103°.	130	Normal.	another case of double infection i.e. two distinct ~~segments of the same~~ Breast in this case - but note Nipple found to be sore here on 10th day
(b) VII.	10th day	48 hours	Wedge.	inner & lower quadrant of Right.	a Sore in Rt Nipple made out.	ditto	ditto	ditto	ditto	ditto	ditto	103°.2	120.	ditto	
VIII.	9th day	4 days	inclined to wedge	Outer half of Left.	no visible Sore made out.	ditto	Scanty & Brown	ditto	ditto	mar. 40.	Fourth	102°.	98	ditto	Very markedly swollen Haemorrhoids - note also an enlarged gland in axilla
IX.	11th day	~~not~~ impossible to say	Wedge.	inner half of Right and lower half of Left Breast	ditto	ditto	Brown. not offensive	ditto	ditto	mar: 21.	Second	100.4	107	ditto	Another case of double infection - No Special Cause made out
X. (a)	9th day	24 hours	Wedge.	outer & upper quadrant of Left.	ditto	ditto	ditto	ditto	ditto	Single 24.	First	100.6	88	Remains of Labia lacerated.	Stitches taken out on 9th day - healed ~~perfectly~~ only
XI. (b)	11th day	48 hours	Wedge	Lower & outer Quadrant of Left Breast.	no Sign of fissure etc made out	ditto	ditto	ditto	ditto	ditto	ditto	103°	92	"	practically - See notes in Book.

Table II.

Dr. Vinicent's cases reported in

The Transactions of the Obstetrical Society of London. Vol XLIV.

No:	Date of Onset	Duration of Condition	Shape of affected portion	Which Breast affected & what part.	Condition of nipples	Condition of Uterus	Condition of Lochia	Condition of Child	Nature of Labour	age of Patient	No: of Pregnancy	Highest Temp	Highest Pulse	Condition of Pernicaem etc	General Remarks
I.	11th day	24 hours	Wedge.	Inner & lower Quadrant of Right	no reference.	Well contracted not tender.	Pale & scanty not offensive	Good	no reference	Single 18	First	102°.6	no reference	no reference	
II	9th day	24 hours	Inclined to wedge.	outer side of Right Breast	Both retracted & Sore	Tender at depression not well contracted	Offensive 5th a small piece of membrane passed on 6th.	Good.	no reference	married 28	ditto	101°.6	ditto	slight laceration healed - aseptically.	
III.	12th day	48 hrs	Wedge.	outer & lower Quadrant of left.	normal.	Well involuted	normal.	ditto	ditto	Single 22	ditto	102°.2	ditto	Laceration healed well.	
IV.	15th day	24 hrs	no fluctuation only induration & tenderness of wedge shape.	upper & outer Quadrant of left.	normal	ditto	ditto	ditto	Pelvic presentation Tedious & difficult labour.	Single 31.	ditto	103°.	ditto	no reference.	
V.	6th	72 hours	Wedge.	Inner half of left	normal	well involuted	Scanty not offensive	ditto	no reference	Single 22	ditto	104°	ditto	ditto	
VI.	9th	24 hours	ditto	Inner & lower Quad of Right.	no reference	no reference.	no reference.	ditto	ditto	Single 22	ditto	102°	ditto	ditto.	

Table III.

Cases extracted from Hospital Records for 1900 – 1901 – 1902 –

No:	Date of Onset	Duration of affection	Shape of affected segment	Which Breast affected & what part.	Condition of Nipples	Condition of Uterus	Condition of Lochia	Condition of Child	Nature of Labour	Age of Patient	No. of Pregnancy	Highest Temp.	Highest Pulse	Condition of Perinaeum etc	General Remarks.
I	4th day	3 days.	Wedge	Outer & lower Quadrant of Right	no visible sore etc.	well contracted & not tender.	Scanty Brown offensive	Good	Normal LOA	married 22	First	99°.6	80	Lacerated. healed well.	Intra uterine douche given since for offensive lochia –
II	5th day	3 days	ditto	upper outer Quad: of Left.	ditto	ditto	Normal	ditto	Normal R.O.P. R.O.A	Single 18.	ditto	103°.	100	normal.	no special cause found.
III	12th day	4 days	ditto	outer & lower Quad of Left.	ditto	ditto	ditto	ditto	Normal R.O.A	Single 22	ditto	102°.2	96	Lacerated healed well.	Note perineal Laceration.
IV.	9th day	2 days	ditto	upper outer Quad of Left.	ditto	ditto	ditto	ditto	Normal LOA	Single 17	ditto	103°.4	132	Lacerated healed well.	ditto
V	12th day	2 days	ditto	lower & inner Quad of Right	ditto	not well contracted – yet not tender	Brown – free Offensive	ditto	Normal LOA	married 27	Second	101°.6	98	normal	For several days prior to onset lochia free & offensive
VI.	9th day	2 days	ditto	inner & lower Quad. of Left.	ditto	Enlarged – large & bulky – not tender	Reddish Brown – Offensive	ditto	Normal LOA	Single 20	First	105°.	140	normal	Signs of uterine Septicaemia here.
VII	11th day	2 days	inclined & wedge.	lower part of Left. Breast	ditto	not well contracted but not tender.	scanty Brown. not offensive	ditto	Normal LOA	Single 25	ditto	104°.2	144	ditto	Uterus not quite Satisfactory –
VIII	10th day	2 days	ditto	outer half of Right	ditto	normal	very scanty Brown & not offensive	ditto	Normal LOA	Single 19.	ditto	103°.2	126.	ditto	no special cause found
IX.	9th day	24 hours	ditto	lower ½ of Left	ditto	normal	Brown – Slightly offensive	ditto	Normal LOA	married 26	Fourth	104°.2	112	ditto	Suggestive of some Uterine cause.
X.	12th day	3 days	ditto	lower ½ of Right	ditto	normal	normal	ditto	ditto	married 24	First	104°.2	92	ditto	no special cause found.

Table III. (continued).

Cases extracted from Hospital Records - 1900 - 1901 - 1902.

No:	Date of onset	Duration of condition	Shape of affected part	Which Breast affected & what part	Condition of Nipples	Condition of Uterus	Condition of Lochia	Condition of Child	Nature of Labour	Age of Patient	No of Pregnancy	Max. Temp:	Max. Pulse.	Condition of Perineum etc	General Remarks.
XI.	3rd day	24 hrs	Wedge	Upper part of Right	No Visible fissure or Sore	Well contracted not tender	Red. normal in quantity & odour.	Good	Normal LOA.	Mean. 22	Third	101°	104	Normal	No Special Cause found
XII	9th "	48 hrs	ditto	Inner part of Left.	Nipples small & retracted. Not sore.	ditto	normal	ditto	Normal ROA.	Single 26	First	102·8	78	ditto	Nipples small & retracted only.
XIII.	11th "	48 hrs	ditto	Lower part of Right	Normal	ditto	normal	ditto	Normal LOP. LOA.	Mean. 28	Fourth	101·6	92	ditto	Suggestive of some uterine Cause.
XIV.	4th "	24 hrs	Indurated & wedge.	Both Breasts	Normal	not well contracted - but not tender	Red & Offensive	Frequent Green motions	Normal ROA	Single 25	First	101·4	90	Lacerated - healed completely.	ditto - but untreated perineum
XV.	4th "	24 hrs	ditto	Lower part of Left.	Normal	Well contracted not Tender	Brown Scanty & Offensive.	ditto	Normal ROA	Single 21	First	100·2	84	Normal	ditto
XVI	4th "	24 hrs	ditto	Upper & inner part of Left.	Normal	ditto	normal	Good	Normal ROA	Single 20	First	98·6	84	ditto	No Special Cause found.
XVII	5th "	72 hrs	Indurated & Diffuse	Both Breasts	Normal	ditto	normal	Green stools.	Normal ROA.	Single 19.	First	100·4	88	Lacerated - healed well	Note condition of puerperium
XVIII	9th "	24 hrs	ditto	Not stated which part of Right.	Normal	ditto	normal	Good.	Normal ROP. ROA.	Mean. 19.	First	102·4	82	Normal.	No Special Cause found.

Table III. (continued).

Cases Extracted from Hospital Records - 1900 - 1901 - 1902.

No:	Date of Onset	Duration of condition	Shape of affected part	Which Breast affected & what part.	Condition of Nipples	Condition of Uterus	Condition of Lochia	Condition of Child	Nature of Labour	No of Pregnancy	Age of Patient	Max Temp	Max Pulse	Condition of Perineum etc	General Remarks.
XXIV.	6th day	3 days	inclined to wedge.	Left Breast. no reference to position	Normal	Slow involution. but otherwise normal	Scanty Brown but not offensive	Good	Normal LOA	First	Single 24	103.2°	88	Lacerated - healed well.	Note condition of perineum.
XXV	11th day	24 hrs	ditto	Left & ditto	ditto	Normal	Normal	ditto	Normal ROA	Second	mar. 24	102.4°	98	normal	No special cause found
XXVI	9th ..	2 days	wedge	outer part of Right	ditto	anteflexed but mobile & not tender.	Scanty Brown not offensive	ditto	Normal LOA	Fourth	mar. 22.	102°.6	116.	ditto	Possibly uterine condition not quite satisfactory
XXVII	9th ..	2 days	inclined to wedge.	inner part of Left.	ditto	normal	Brown - not offensive	Discharge from both eyes	normal LOP. LOA	First	Single 20	102°.4	102	lacerated - no further note as to progress.	discharge from eyes of child began on 9th day.
XXVIII	10th ..	2 days	wedge.	upper & outer Quad. of Left.	ditto	well contracted not tender.	Normal.	Good.	Normal LOA LOA	First	Single 24	102°.6	99	normal	no special cause found
XXIX	12th ..	3 days	ditto	inner & lower Quad. of Right	Left Nipple sore.	normal	normal	Good	Normal LOA	Second	mar. 26	103.6°	90	lacerated - healed completely	Note perineum torn & also that Right nipple shows no visible sore.
XXX.	9th ..	24 hours	ditto	inner & lower Quad. of Right	normal	normal	normal	Good	Normal ROA	First	Single 22	102°.	78	normal	no special cause found.
XXXI	5th ..	4 days	inclined to the diffuse	Both Breasts	Both Nipples sore	normal	normal	Good	Normal ROP. ROA	First	Single 34	99°.	90°	Vagina lacerated. healed after slight discharge.	Note condition of Nipples & Vagina.

Note here a little change in the arrangement of

Table III. (Continued)

Cases extracted from Hospital Records 1900-1901-1902.

No.	Date of Onset	Duration of affection	Shape of affected part	Which Breast affected & what part	Condition of nipples	Condition of Uterus	Condition of Lochia	Condition of Child	Condition of Perineum etc	Nature of Labour	No of Pregnancy	Age of Patient	Max Temp	Max Pulse	General Remarks
XXVII	5th day	24 hours	inclined to wedge.	Both	normal	normal	normal	Good	normal	Normal L.O.A.	Third	married 38	98.4°	90	No special cause found.
XXVIII	13th "	4 days	wedge	portion not stated Left.	ditto	normal	normal	ditto	lacerated healed well	Forceps R.O.A.	First	Single 20	100.6°	88	Note perineum torn - Severe postpartum Haemor.
XXIX.	3rd "	48 hours	inclined to be diffuse	Both	ditto	normal	normal	ditto	lacerated - healed well.	normal L.O P. - L.O.A.	First	married 26	98.4°	80	Note perineum torn. & note double infection.
XXX	12th "	3 days	wedge	portion not stated Left.	ditto	Tender & not well contracted	Scanty. Brown. and offensive	ditto	normal	normal R.O.P.	Second	married 25	103.6°	102	uterine condition unsatisfactory clots removed the 14th day by douching.
XXXI	2nd "	24 hours	ditto	upper outer quadrant of Right.	ditto	normal	Red - free & not offensive	Died - a few hours after Birth	normal	Normal R.O.A.	First - 7th month foetus	Single 23	99.6°	112	Breasts were distended -
XXXII	8th "	2 days	ditto	inner & lower quad. of Left.	Left nipple sore - Right normal	normal	normal	Good	normal	Normal R.O.A	First	Single 17.	101.6°	92	note left nipple was sore.
XXXIII	9th "	24 hrs	inclined to wedge.	lower half of Right	normal	tender in Left cornu	Brown & offensive	Good.	Labium & perineum torn - no reference to healing	Normal R.O.A.	First	mar. 21	102.4°	104	Suggesting of uterine Sapraemia -
XXXIV	6th "	24 hrs	wedge.	lower half of Left.	Right normal Left nipple sore -	normal.	Brown, Scanty & not offensive	Good.	normal.	Normal L.O.A.	First	mar. 23	98.6°	80	note left nipple sore -

↓

note here a change in arrangement of Table -

Addenda :-

April 28th.

(a) Since writing the foregoing - one more case of "Flushed" Breast has come to my notice - but as it does not reveal any new points, and in other ways cause me to alter my views as stated in the portion already written - I have kept it out of account rather than alter all the numerical & other records which have been made -

(b).

It seems worthy of note in connection with the Pathology of this condition to add that mastitis sometimes follows acute specific fevers - like Typhoid - and that these cases of mastitis very rarely suppurate - They always come on suddenly & have many of the characters which are found in the mastitis here described as occurring in the early puerperium - but they differ in not being localized & wedge shaped - they are usually more diffuse & indefinite in shape & are probably definitely due to General Blood infection by the organisms of the particular fever present - or their toxins - Such a condition also follows an attack of mumps occasionally - just as in the male - we may find Orchitis - Is it possible that some of these cases of mastitis in the Early Puerperium may be due to similar causes arising from the Uterus or genital canal somewhere? - These cases seem to lend some support to that view - which I have discussed in the Pathology Section of this paper - and I mention this additional evidence as some further support to the Toxins - rather than the actual organisms themselves - as a cause of mastitis -

(9). 16

Robinson in the Medical Times & Gazette - 1864. p. 261. etc. refers to a case of Diffuse Phlegmon in the Breast - which occurred in a prostitute - Both Breasts sloughed away rapidly, and the patient died in a condition apparently of Extreme Septicaemia - There was no post mortem allowed - but there were definite evidences of Syphilis - and we may assume there were probably advanced vascular changes present - and a Constitution debased, degraded and devitalized - by alcoholism etc -

Velpeau also records a case of Erysipelas of the Breast - beginning at the left Nipple - which spread rapidly over the Breast - on to the chest generally and up the face - The external ½ of the Breast suppurated - and the patient died -

In the museums of the Royal Infirmary - Edinburgh - 17
Specimen 1891.6.- is another illustration of this nature - This was taken from a case of mammary abscess in a woman, aet 35, recently confined -

I mention all these cases in order to point out that they were all instances of Breast disease - Suppurative - which were due to the action of virulent organisms - and further that these organisms were working upon a soil - eminently suited to their activity and multiplication etc - for instance - Case above recorded by Robinson - Here was a woman who was devitalized & whose system was disorganized by alcohol etc - and therefore we may take an eminently suitable ground

for these organisms to become virulent upon - even if they were not so before - All this leads me to my point which is that the cases of mastitis which I have here described as occurring in the early puerperium are probably all of a mild & transient nature - owing to the enormous amount of care which we bestow on Asepsis and antisepsis in our lying-in wards nowadays - and therefore Professor Simpson's letter to me - in which he says that he has been accustomed to look upon these cases as probably instances of "threatened mastitis" is very much to the point - and that is no doubt one way of describing them - The mastitis does not go on to suppuration, except in very rare instances - because we don't give the micro-organisms a chance in our cases - we attack them both before they begin to show us they are present - and with greater vigour - after they have given us the slightest hint of their presence - Is it possible that granted we are thus partially successful as it were in preventing these cases from going on to anything serious - we might by still further care in our aseptic ~~and antiseptic~~ precautions - prevent them arising at all ? That seems to me to be the practical outcome of my research - and I hope that this paper may have served to draw attention - first of all - to the existence of such cases - Secondly - to indicate some of the possible causes of the condition - and thirdly - to emphasize again & again the immense importance of Scrupulous cleanliness in all things obstetrical -

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5. Boissard – La Semaine Medicale. p. 499 – 1893 –

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14 Sinclair – Encycl. Medica. Vol. X. article Puerperal Infection.

15. Haig Ferguson – do. do. article Puerperal Affections of the Nipples & Breasts –

16. Medical Times & Gazette – 1864 – ii p. 261 – article by Robinson –

17. Museum of the Royal Infirmary – Edinburgh – a Specimen – 1891. b.

18.

Vincent – a paper read before the Obstetrical Society of London – Vol. XLIV. [accompanies the Text] entitled – "Lymphangitis mammae"

19. Case Books of Queen Charlotte's Hospital – 1893 – 1902 – inclusive –

20. Whitridge Williams – paper before Baltimore Obst. & Gynec. Soc. entitled – "40 cases of Fever in Puerperium etc

cavities, each surrounded by its own chorion and primitive chorionic villi.

The interest of the specimen lay in the fact that the contained fœtus were in different stages of development, the smaller being barely of three weeks' growth, while the larger was of between six and seven weeks.'

There was nothing either microscopically or macroscopically to indicate that the smaller fœtus had died before the larger one,—indeed, the smaller appeared to be in the better state of preservation of the two. Dr. Bonney referred briefly to the possibility of this being a case of superfœtation, and pointed out that several explanations might be given of the unequal development of the two embryos. Thus it might be explained on the assumption that the patient had a double uterus, or that the smaller represented a blighted embryo whose nutrition had been interfered with by the growth of its stronger companion, or that the smaller embryo had died some weeks before the larger one. Against the first was the fact that the two gestation products were expelled in one mass; and further, that there was no evidence of any sort of a double uterus. As regarded the second the speaker pointed out that the smaller embryo was in no sense "blighted," but was as perfect in all its parts as the larger one, merely differing from it in stage of development; and finally, there was no evidence to support the third suggestion, since the smaller embryo appeared to be in the better state of preservation of the two.

The alternative to these three explanations was that the smaller fœtus represented an ovum which had become fertilised nearly four weeks after the fertilisation of the ovum which had produced the larger one.

The speaker referred briefly to the difficulty of getting exact evidence as to superfœtation, but said that he considered that this specimen was probably an example of that phenomenon. He also showed for comparative purposes a perfect and very early ovum passed by a patient attending the out-patient department of the Chelsea Hos-

Jr. Vincent's Papers.

MAY 7TH, 1902.

PETER HORROCKS, M.D., President, in the Chair.

Present—38 Fellows and 8 visitors.

Books were presented by the New York Hospital Staff, the American Gynecological Society, and Dr. Alfons Rosthorn.

Henry J. F. Simson, M.B., F.R.C.S.Ed.; Florence Nightingale Boyd, L.R.C.P. and S.I., M.D.Brux.; Ada Margaret Browne, L.S.A.; and Frederick J. Willey, M.B., B.S., were admitted Fellows of the Society.

John Tennant, M.A., M.B., C.M.Edin. (Belfast), was declared admitted.

The following gentlemen were elected Fellows of the Society:—Arthur Raymond Stilwell Freeland, M.R.C.S., L.R.C.P.; and Ernest Wool Lewis, M.R.C.S., L.R.C.P.

LYMPHANGITIS MAMMÆ: AN AFFECTION OF THE BREAST ARISING ABOUT THE TENTH DAY OF THE PUERPERIUM WITH WELL-MARKED CLINICAL FEATURES. (ILLUSTRATED BY SIX CASES.)

By Ralph Vincent, M.D., B.S., M.R.C.P.

(Received April 17th, 1902.)

The condition I describe is well known to many; at Queen Charlotte's Hospital it has received various names, such as "flushed breast," "sapræmic breast," etc., and I claim no originality of observation in this respect. But in obstetric literature the condition is scarcely at all referred to, and I am not acquainted with any description corresponding with the typical character of these cases. The following cases all occurred at Queen Charlotte's, and I am indebted to the Medical Committee for permission to report them.

Case 1.—A. S—, aged 18, a single primigravida, was delivered on October 30th. The labour and early puerperium were quite normal. The uterus involuted well; the lochia were brown on the eighth, scanty on the eleventh, and absent on the fourteenth day. On November 8th (tenth day) the patient was well; the uterus was small, in proper position, and there was no uterine tenderness; the lochia were pale. The breasts were acting well, and there was no pain or tenderness. The secretion was normal, and the infant gained regularly from the third day. At 8 a.m. on the eleventh day (November 9th) the temperature was 101·2°, and the right breast was flushed on the inner and lower quadrant. At 2 p.m. the affection was well marked; the area of inflammation was wedge-shaped with the apex at the nipple. The skin was red, indurated, and very tender on palpation; the temperature was 102·6°. Hot fomentations were applied;

(4) The time of onset is of great importance in considering the ætiology of the condition. The possible sources of infection are many; but all of them, with one exception, exist both before and after the second week of the puerperium. We may dismiss, therefore, these various possibilities, since they do not meet the necessities of the case. On the other hand, there is one condition present at this time and absent before and after—the lochia serosa.

I conclude, therefore, that lymphangitis mammæ is due to an infection of the lymphatics at the nipple, and that the infection is due to lochial contamination. Obvious decomposition of this discharge may be a predisposing factor, but I do not think it is; it certainly is not an essential factor. The lochial discharge in its normal condition at the second week is capable of producing the infection. I may add that, after the observation of a considerable number of cases, I think that the conjunctivitis occurring in infants about the second week, when the eyes have been previously free, is due to the same cause.

Dr. Amand Routh asked if the author was sure that some of his cases were not small mammary abscesses, which had opened suddenly into one of the larger milk ducts, thus accounting for the sudden cessation of all the symptoms.

A PROBABLE CASE OF SUPERFŒTATION.

By W. F. Victor Bonney, M.S., M.D.

Dr. Victor Bonney showed a specimen of very early twin gestation passed by a patient of Dr. Bromet's after one month's amenorrhœa.

The specimen consisted of a mass of thickened decidua and organised clot, containing two complete amniotic

presents itself. There is a wedge-shaped area of inflammation, the apex being at the nipple, the base being at some part of the junction of the breast with the chest wall. This wedge-shaped area is red, slightly œdematous, hot to the touch, tender and indurated, the induration being distinctly outlined and definitely corresponding with the redness. The inflamed area is raised above the general breast surface, but the inflammation is confined to the superficial structures, and does not involve the mammary gland. During the development of this condition the temperature rapidly rises, the patient complains of pain in the breast and of headache, whilst constipation is frequently present. The treatment required is simple; the infant is taken from the breast, hot fomentations are applied to the inflamed part, and the patient is freely purged. Within about forty-eight hours the affection has disappeared.

The condition is interesting in several ways; it is especially so in its adherence to type: (*a*) the onset is sudden and characteristic; the time of the onset is remarkable, being nearly always between the eighth and twelfth days of the puerperium; (*b*) the physical signs are definite and well marked; (*c*) the duration of the attack is short, and the prognosis is invariably favourable despite the local and general signs of severe infection, for such would generally be their significance under ordinary circumstances.

With reference to the ætiology of the condition, the following considerations are of importance:

(1) Lymphangitis mammæ occurs in cases where there has been no evidence of any sepsis, and where the lochia have been quite normal throughout.

(2) The definitely wedge-shaped area, with the apex at the nipple, points strongly to an infection of the lymphatics arising at the nipple.

(3) The infection is easily conveyed to the nipple by a nurse whose hands are contaminated by the lochial discharge, and in various other ways.

at 8 p.m. the patient was still suffering from much pain, and the temperature was still as high. During the night the condition rapidly improved, and at 8 next morning there was only slight redness, and the tenderness had almost disappeared; the temperature had fallen to 99·4°. On the following day the breast was quite sound, no trace of redness, tenderness, or induration could be discovered, and the temperature was normal.

Case 2.—E. J—, aged 28, a married primigravida, was delivered May 13th. The chorion was partially retained. There was a slight perinæal laceration, which was repaired, and which healed aseptically. On the third day the breasts were inactive, the nipples were retracted and sore, having been injured by the vigorous infant. The uterus was normal, the lochia were scanty and pink in colour. The intestines were somewhat constipated, and the patient had a prolapsed internal hæmorrhoid. On May 17th (fifth day) the lochia were offensive; no membrane had been passed. At 11 a.m. the uterus was four and a quarter inches above the pubes, and it was tender on the left side. The nipples were improving. Vaginal douches (Tr. Iodi ʒj ad Oj) were given night and morning. On May 18th (sixth day) about one square inch of membrane came away with douche fluid. On May 21st (ninth day) the outer side of the right breast was flushed, and during the day the condition developed. At 8 a.m. the temperature was 100·8°, at 2 p.m. 102°, at 8 p.m. 101·6°, at midnight 99·2°. The physical signs were the same in all respects, except the precise situation, to those in the previous case. The patient complained of headache and was constipated. Hot fomentations were applied and castor oil administered. At 8 a.m. next morning the temperature was 98·2°, and the affection had practically disappeared.

Case 3.—E. A—, aged 22, a single primigravida, was delivered February 21st. The perinæum was lacerated

and was repaired; the labour was otherwise normal. The puerperium was practically normal up to the twelfth day. The perinæum was quite clean, and the sutures were removed on the ninth day. The uterus involuted well, and the lochia were quite normal. The breasts were large and secreted well; the nipples were sound. The patient was somewhat constipated, and the usual daily enemata were supplemented by doses of Pulv. Glycyrrhizæ Co. On the eleventh day the patient was well. At 8 a.m. on the twelfth day (March 4th) the temperature was 97°; pulse 68. During the day the temperature rose slightly; at 2 p.m. it was 98·8°. On the left breast at the lower and outer quadrant was a wedge-shaped area, flushed and slightly tender. The signs all increased in severity during the day, and at 11 p.m. the temperature was 102·2°. The usual treatment was adopted, and at 8 a.m. next morning the temperature was 101°. The breast was still flushed, but the signs were diminishing, and at 8 p.m. the temperature was normal, and the inflammation had disappeared.

Case 4.—A. M—, aged 31, a single primigravida, delivered April 8th. This was a case of pelvic presentation, and labour was tedious and difficult. The puerperium was normal up to the twelfth day (April 19th). The uterus involuted well, the lochia were quite normal, and the breasts gave rise to no trouble. On the 19th, in the afternoon, the patient complained of pain in the left breast. At the upper and outer part of the breast there were tenderness and induration, but no redness. Hot fomentations were applied. On April 20th (thirteenth day), at 8 a.m., the temperature was 98·6°, at 2 p.m. 99°, at 8 p.m. 103°. The typical condition was well marked, and the wedge-shaped area was brightly flushed. During the next day the condition rapidly subsided.

Case 5.—C. J—, aged 22, a single primigravida, was delivered on April 12th; the labour was normal. On the

eighth day (April 19th), after the temperature had been irregular for some days, it rose to 101·2°. The lochia were free and brown in colour; the breasts were very distended, the uterus was small and not tender. The uterus was douched, and this brought away a few shreds. On the ninth day (April 20th) the breasts were still large and tender, distended by the great quantity of milk secreted. The nipples were sound. The uterus was involuting well, the lochia were normal, and scanty in amount. On the eleventh day (the 22nd), in the morning, the patient complained of pain and tenderness in the left breast. During the day the signs developed, and the evening temperature was 103°. On the twelfth day the inner half of the left breast was indurated, red, and acutely tender; the wedge shape was well defined, and the temperature was 104°. The condition gradually subsided. On the thirteenth day the temperature was normal, and on the fourteenth day all signs of inflammation had disappeared.

Case 6.—V. B—, aged 22, a single primigravida, was delivered on June 29th of a premature infant. The labour was easy and the early puerperium was normal. On July 7th (ninth day), at 8 a.m., the temperature was 100°, at 10 it was 102°, and on the inner and lower quadrant of the right breast there was a wedge-shaped area, red, and raised above the surface, slightly œdematous, tender to the touch, and indurated. By the next morning the signs had disappeared.

The temperature charts show a rise occurring, in each case, between the end of the first week and the beginning of the second week.

These cases, I think, demonstrate the existence of this disorder as a special affection of the breast quite *sui generis*.

Lymphangitis arises about the tenth day of the puerperium. About this time a pink flush may be seen on some part of the breast; this gradually develops, and in the course of twelve hours the following clinical picture