SOME ASPECTS of the ANTE-NATAL MOVEMENT

IN RELATION to PUERPERAL PYREXIA

By

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SECTION 1

INTRODUCTION.

Within the last fifty years excellent work has been done in connection with the subject generally known as Infant Welfare. The results of such work in a comparatively short space of time have far exceeded expectation. Infantile mortality has, according to statistical report, been reduced by almost fifty per cent, and doubtless the child welfare movement has appreciably contributed to this successful end.

And, year by year, there is still some fresh achievement to record for the benefit of mankind - the direct or indirect outcome of the welfare movement. At the present time the even continuity of this progress has been partly maintained by the advent of the welfare centre to the smaller towns and villages. Here, truly, the introduction of the "Centre" has been a boon, although at first much opposition was encountered and only gradually overcome. One learns with real satisfaction how favourably the attendance in rural areas compares with the city or town.

But a time has arrived when, for the further development of this movement, and the earlier realisation of the ideal pursued - namely - "Healthy Parenthood", practical pre-natal care is of vital importance One might venture to suggest that within the next fifty years - the progress of ante-natal work would largely determine the trend of Public Health history.

Without pre-natal supervision much of the good already achieved by the welfare movement, would assuredly be wasted and further advancement retarded.
In the routine of the clinic attention is daily drawn to already existing disease which possibly began during intra-natal life So long as disease exists before supervision begins - Public Health Medicine has not gained its end, and should not be rightly termed "Preventive Medicine". Perhaps the greatest accomplishment of the welfare movement has been to direct the attention of mankind further back to the need for pre-natal care.

In a recent paper delivered to the New York Medical Society, Dr. Phillip Oginz volunteers the following introductory statement -

" Perhaps the greatest advancement made in the science
" of obstetrics since the time when Semmelwiss and
" Holmes impressed upon the profession the importance
" of aseptic technique, is that of thorough practical
" pre-natal care. Just as asepsis has saved
" thousands of mothers from the fire of puerperal
" fevers, so pre-natal care will protect them from the
" no less horrible eclamptic convulsions and toxaemias
" of pregnancy as well as from the useless protracted
" suffering incurred in an effort to push a foetal
" head through an impossible pelvis " Oginz 1.

But in spite of asepsis, puerperal fever still occurs and the persisting high mortality calls for immediate and untiring investigation. The anticipated reduction in maternal mortality which asepsis promised has not been forthcoming. The results of aseptic technique as applied to the science of obstetrics might have been more gratifying had aseptic technique been preceded by scrupulous pre-natal supervision. Pre-natal care will, as Dr. Oginz remarks, safeguard the mother from the toxaemias and eclamptic seizures of pregnancy; it will also, if combined with aseptic technique, during pregnancy by removing all sources of auto-infection, and averting conditions predisposing to sepsis, during labour-by preventing direct infection from the hand of the attendant - do much to ensure a normal puerperium.

This thesis does not attempt to discuss the many uses of the ante-natal movement in promoting the welfare of the general community, nor its immediate value to the expectant mother and her unborn offspring; but rather to point out how far from complete is existing pre-natal care. It tries to show how the ante-natal movement matured would indirectly benefit the mother during the puerperium particularly in reducing the incidence of puerperal sepsis, and incidentally throw much light on diseases of women as the outcome of pregnancy and child-birth.

SECTION 2.

HISTORICAL NOTE.

Before the Christian era, the care and attention to infants and children depended as Dr. Fieldman records on two factors, viz.-

" The type of their religion and the constitution of
" the soil upon which they lived. People who
" worshipped a mother goddess and lived on fertile soil
" treated their children with sympathy and kindness.
" But where the struggle for existence was keen and
" the deity of the patriarchal type - or male god -
" the infant was either murdered at birth, cruelly
" maltreated during its early infancy, or sacrificed
" for ritual reasons. " Fieldman 2.

And this indifference displayed by the ancients has persisted to some extent almost until modern times. Notwithstanding there is reliable evidence that people or individuals,- more thoughtful or kindly disposed - have sought at different periods to impress on the minds of the general public the "National value of Child Life."

Fieldman 3

From earliest times the incidence of warfare called for the preservation of the male child, but only with the advent of Christianity did the life of the female child become of equal national value. And it seems almost incredible that through the ages man had not realised that to produce a healthy offspring there was first need of healthy parents, and above all, a healthy mother.

But the ancients did not really neglect the subject of Pediatrics. Out of what may be termed an ocean of early literature one finds frequent reference to this subject although it was not treated as, in any way, distinct from the 'Remainder of medical lore'. Any knowledge of the early history of pediatrics has been garnered from little isolated references interspersed throughout general medical literature. Rubrah 4

The problem of infantile mortality was long acknowledged and discussed before the beginning of any authorised endeavour to deal with the matter. Breast feeding was regarded as an obligatory duty by the Israelite women to their husbands. Fiehman 5

Great care was bestowed - not only on the infants and children - but also on the nursing mother, who was given a generous though carefully prescribed diet and less work to do. The ancient and mediaeval Hebrews understood the care of the expectant mother. Their methods were directed towards shielding the woman from anything which might cause her to abort. She was especially protected from fright, worry; evil tidings were kept from her knowledge. It was the unborn child and not the mother directly who called for attention, and this has been so even in recent times. Before the woman herself could be educated as to the value of seeking guidance during

pregnancy for herself, she had first to be made to understand that the child would ultimately benefit. And mothers even now seek medical advice rather to ensure the health of their unborn child than for any protection likely to accrue to themselves.

Breast feeding was likewise encouraged towards the end of the nineteenth century in France, by the establishment of milk depots which paved the way for the infant welfare centre. In some cases unfortunately, the provision of cheaper milk in such depots tended to encourage bottle feeding. The scheme has recently been strengthened by the introduction of a system wherein the expectant or nursing mother may procure dried milk at a cheaper rate for herself than her child.

Mention must be made too of the Health Visitor, who has done so much to further the welfare movement, although her way was made more smooth by the earlier establishment of the district nurse. The district nurse had already proved her worth and endeared herself to the rural public. In that way she made more welcome the regular visitation of the new health visitor. To begin with these visits were misinterpreted and no doubt the friendly feeling which the district nurse had already created made for earlier understanding.

In remote history, constant reference is made to the midwife, who was represented in the time when medicine was so confounded with mythology and folk lore, by the

wise woman. From this wise or herb woman has gradually evolved the midwife, the handy woman, the trained nurse, the sanitary inspector and lastly the health visitor.

In country districts the health visitor is also district nurse and midwife and as such holds a very responsible position and merits appreciation.

And so, not suddenly, but very gradually the principle of child welfare - post natal - has evolved . The principle of child welfare - ante-natal in the preventive sense, has only just begun. In many ways these two principles can not be dissociated.
To some extent, had pre-natal care its rightful place in history, it should have preceded the welfare movement. Indeed a quick survey of the history of ante-natal progress brings to mind the picture of a Chinese child at school, because to the English child she appears to read her lesson upside down and backwards.

Within recent years - particularly since the foundation of the first prematernity bed by Dr. J. Ballantyne of Edinburgh in 1901, attention has been more strongly directed to this branch of medicine. The reason for this widespread interest is aptly summarised by Dr. Ballantyne himself as follows.-

"Economic,scientific,sentimental,practical,political".

J. Ballantyne. 7.

No doubt, however, Dr. Ballantyne himself laid the foundation stone of this movement which is like to play a great part in the history of medicine. This much has been made plain, that preventive medicine cannot reach its zenith until the problem of ante-natal prevention is solved. The problem of preventive medicine has culminated in the problem of ante-natal prevention and its relation to maternal mortality.

Each day brings more and more to view the very urgent need for co-operation to further this endeavour. Since the foundation of the first prematernity bed in Edinburgh, and shortly afterwards the establishment there of the first prematernity centre - a sudden impetus has been given to the matter and aroused the interest of both the profession and lay public. Withal the work must be uphill. There is still lack of sympathy and understanding between the medical practitioner and public health authorities; the midwife finds it difficult the believe that the centre must prove to her a very great boon; and the expectant mother herself has yet to overcome an inherent shyness and natural reluctance to seek medical advice in the early months of her pregnancy.

The midwife, if she but chose, could do much to further the progress of this movement whose object is not only to diminish maternal mortality but also to preserve the life ofthe foetus and so further diminish infantile mortality. She comes into intimate contact

with the mother and can perhaps more than anyone influence her for good. Claypon 7

" A midwife should not be authorised to undertake
" the care of any pregnant woman without provision
" being made for the patient to be examined carefully
" by a medical practitioner before labour ensued."

Hendry 8.

This practice if made routine would greatly alleviate the midwife's responsibility and indirectly benefit the doctor who is often called in as a last resource to apply forceps.

One can scarce refrain from wondering whether the future will provide a State Maternity Service, both medical and nursing. Under the present public health system the health visitor, who has experienced an excellent general, fever, sanitary, and maternity training, rarely puts her midwifery into practice, and the benefit of this highly specialised preparation is not fully realised. This too may be said of the medical officer in charge of the centre. In a way, the mother loses the full value of her prematernity supervision because the medical officer is not present at her confinement. He has followed her ante-natal record carefully, notified the midwife of abnormality, but should unforseen complications arise during labour or the puerperium, the midwife has no choice but to

call in a doctor strange to the case.
Herein it would appear is a very grave fallacy which will sonn demand reform. The ante-natal system is no doubt the first step in the right direction but is incomplete for all concerned.

Dr. Garrison remarks in his " History of Medicine" that during the European War, the number of actual casualties from the battlefield exceeded those from disease for the first time in history. This was a very real triumph for preventive medicine.

There must always be with childbirth what might be termed - legitimate casualties. Meantime, casualties from infectious conditions of the puerperium and other diseases which pre-natal supervision among other measures might have obviated or lessened,- in short, preventive casualties - equal, if not outnumber the legitimate. And one can only hope that, with the advent of universal peace which directs attention to the home, the national value of motherhood will be fully appreciated and a speedy solution found to the problem of maternal mortality.

SECTION 3.

SOME IMPRESSIONS OF PUERPERAL PYREXIA.

During the past year much literature has been contributed on the subject of prematernity supervision, each writer striving to show how such a movement would better conditions for women.
Theoretically indeed the ultimate benefits likely to accrue are not disputed, but from a practical standpoint there are more dissenters than supporters.

" The problem to be solved is not to obtain
" theoretical assent to the value of ante-natal
" supervision, we have that already,- but to persuade
" the professional attendants to offer it and the
" patients to expect and welcome it ". Campbell 9.

Dissenters are to be found among medical attendants, midwives, the mothers themselves, and in social and political circles. Although the first prematernity bed was endowed in Edinburgh in 1901 and almost simultaneously the first ante-natal clinic founded,- the mo-vement is only now beginning.

Rarely does a new scheme receive unanimous support, and no doubt dissenters in everything are necessary to ensure balance. There is with schemes such as this an impetuous enthusiasm which without a gentle check on its course might prove dangerous. As I write, I recall the deep impression which Lady Ashwith made on me when she refused to sign the manifesto issued by the New Womens Health Society. —

" Believing though I do in the value of ante-natal
" treatment, I cannot agree that it is the duty of the
" State to assist in rearing the children of diseased
" parents. On the contrary it appears to me to be
" the distinct duty of the State to prevent in so far
" as it possibly can, people who are diseased, whether
" in mind or body, from propagating children at all."
Lady Ashwith is just one of the necessary and desirable dissenters.

Among the various literary contributions on this subject which is comparatively new, there is to be found an occasional reference to the ante-natal movement and its possible relation to the puerperium. For a period of eighteen months it was my privilege to have charge of puerperal fever wards in a large isolation hospital, and within that short space of time some four hundred cases came to my notice.

My experience however limited has indeed been privileged in so far as such opportunity is extended to few, and at the present time a knowledge of this subject is invaluable. My work since then has curiously enough been associated with the ante-natal movement, and the possible relationship of this movement to the puerperium has naturally been suggested to me.

When first I assumed charge of puerperal fever wards my early impressions were not pleasant. To speak personally, I was deeply conscious how illebefitted

I was to have charge of some forty mothers acutely ill of a fever or disease of which I had little knowledge and no experience. A few weeks sufficed to convince me that the medical officer should have an intimate knowledge of surgery, midwifery, gynaecology, and a particular knowledge of clinical medicine. Even then he might find his charge was new and opened up a wonderful field for research. No disease surely presents such diversity of symptoms; each case is a perfect clinical study and rarely in the ward do two cases run a parallel course.

My second impression was that the incidence of puerperal pyrexia was much more frequent than the average practitioner realised or admitted. In the medical curriculum the subject is introduced towards the end of a course of midwifery lectures, and one forms the idea that the disease is a rare condition, no doubt to be dreaded, and that its incidence is something to be ashamed of. A quick survey of any record of cases at least does not disprove the view that the disease is to be feared, but I doubt whether the attendant ought to feel ashamed. There is now some evidence to support a possible theory of autogenous infection in some cases, and when one reviews the conditions under which midwifery today is practised one wonders why septic conditions are not more frequent.

How comes it that the 'handy woman' so often acquires a good reputation, rarely meets with septic conditions, when she more often lets asepsis take care of itself while she decides how best to deliver and present to the mother a live baby. Even if a doctor has been engaged to attend, nothing pleases her better than to deliver the woman in her own way before the doctor arrives. This is a little problem that merits reflection, but a thought comes to my mind prompted by the theme of Dr. Gedde's thesis on"Puerperal Septicaemia" - that the busy general practitioner constantly in contact with industrial wounds, sore throats, - all possible streptococcal infections,- is perhaps more likely to convey infection. The 'handy woman' apart from neglect to 'scrub-up' properly, as one is wont to say, - is more apt to carry a harmless staphycoccal infection. There is an old saying that "Dirt is clean", and it is perhaps clean in as much as it rarely contains within its meshes the streptococcus which may so consistently be isolated from puerperal fever cases. Asepsis during labour will not prevent autogenous infection, nor does it obviate completely the risk of infection, from an attendant in daily contact with sepsis. The nurse is forbidden to attend any septic case while practising midwifery, but the doctor has always been privileged.

No doubt the busy daily routine, the fact that there is no one to relieve, and that were such relief forthcoming it would be unwelcome to the patient - accounts in part for the disregard which he and the public have until now paid to the doctor as a source of infection. To some extent I agree with Dr. Geddes that the prevention of puerperal fever rests with the general practitioner. Geddes 10.
I certainly maintain that the general practitioner could do much to prevent infection.

Not the least bitter lesson was the realisation that puerperal fever is nearly always notified late, and in a great many cases, probably fifty per cent or higher, is not notified at all. By late I mean notification after the first day of fever which must be so acdounted, because a virulent infection may prove fatal within forty-eight hours. Many cases too were admitted to hospital in the early hours of the morning and the removal of women acutely ill unnecessarily delayed for many hours. There was about the notification something pertaining to secrecy. It was also not unusual to receive women ten weeks after their confinement, who had developed a pelvic abscess - the notification being made under compulsion when admission to a general hospital was refused. From these cases a history of some fever, gnawing pain in lower abdomen

dating from the early days of the puerperium could invariably be elicited. Post-natal supervision should not cease on the tenth day of the puerperium.

Further there must be hundreds of cases in private where the infection is of a mild type. Even a mild type of infection has a deleterious effect on a woman's health. It is not only the immediate but future prognosis which is of value. It is not sufficient to record the case likely to prove fatal. Every case of pyrexia during the puerperium should be recorded. Moreover it was early apparent to me, although my observation is not original - how much better the early notifications and admissions responded to hospital treatment. This does not imply that all cases of pyrexia should be admitted to an isolation hospital, but every case of pyrexia should be accounted a potential case of puerperal fever and notified as such, to safeguard mothers whom the same attendant might visit and infect. It is not quite clear even whether a case of pyrexia might not progress just as well at home, given equal equal facilities. In the isolation hospital where as conditions exist now, there is overcrowding and intimate association with other septic cases, there might be liability to further infection. However, the usual hospital admission is the needy case from a financial point of view and where the doctor has no facilities for home treatment, and here surely

early removal is advocated.

Only gradually came the conviction that many cases of infection could have been prevented and not a few by supervision, which is lacking during pregnancy. The incidence of infection is acknowledged freely to be higher in instrumental deliveries, in women who miscarry, and in primiparae. Prenuptial examination, accurate pelvimetry, the estimation of the size of the foetal head relative to the pelvis, would minimise the necessity for forceps interference; scrupulous ante-natal care to include a thorough medical examination, and if need be anti-specific treatment, would in many cases enable the mother to give birth to a full time child; and lastly the examination of the primipara should precede pregnancy.

Childbirth is a normal process, but in modern times is not conducted under normal conditions.

The old superstition that maternal impressions during pregnancy affect and sometimes afflict the offspring is not without foundation. At no time is a woman more sensitive, more emotional, more credulous, and the medical profession today admit that an expectant mother must have mental quietude and that a mind free from care does much to ensure a safe pregnancy. There is with this sudden intervention of maternity education - just a tendency to present childbirth to the mother as an ordeal.

"There is also a tendency to assume that pre-natal care implies primarily the discovery and treatment of venereal disease" . Claypon 11.

This must not be so. The point appealed strongly to me in a case of venereal disease where I overheard a young mother being told that if she did not attend for treatment she might lose her baby. This mother was until that moment unaware of the existence of venereal disease and it seemed to me that the mental distress which followed such knowledge might more than balance the good of her treatment.

The very mention of venereal disease has aprofound disturbing effect on any person in health. I do not dispute that in many casses it is unfortunately necessary to inform a mother of the existence of such a condition, nor in any way to belittle the value of anti-specific treatment to an expectant mother, - but if the disease were given a different name and made notifiable, the public would soon realise that the disease is often inherited and innocently acquired. The unfortunate or fortunate few who have discovered in themselves its existence, and have suffered in the belief that they are of the very few who have contracted the disease,- would be greatly relieved. There are many sides to this question and my view is necessarily prejudiced in so far as it relates only to the expectant mother, but under existing conditions, the task of trying to cope

with the spread of venereal disease is infinite. Ante-natal supervision can never be accounted complete until the question of venereal disease prevention is solved. Not infrequently a mother discovers she has venereal disease while attending the ante-natal clinic. In the routine examination,- one discovers vaginal discharge and incidentally takes a smear. The result is often positive for gonorrhoea. The strange point to me is that such smears are only examined for the presence of the gonococcus. They should as lief be examined to negative the presence of the streptococcus which is just as likely to cause mischief to the mother as the gonococcus is to the child. On questioning the mother whose smear has been returned positive, it is not unusual for her to attribute the origin of the discharge to the time of her last confinement. It may be of course that a mild gonococcal infection was aggravated by the conditions of child birth. The thought as to how far venereal disease might be conveyed by the midwife who herself is often unwittingly exposed, bears conjecture. It is advisable that every midwife should have a knowledge of venereal disease so that she may recognise it and take due precautions to safeguard both herself and subsequent mothers. In addition to preventing venereal disease and many septic complications of child birth, routine medical

examination during the early months of pregnancy would discover minor ailments which the incidence of pregnancy might aggravate. All septic foco could be removed , therein preventing autogenous infection. Minor ailments could be righted and the woman's physical condition perfected in so far as nature and science combined could accomplish.

It has often been remarked that puerperal fever has no respect for health and that its incidence is common in apparently healthy women. One uses the quslification - apparently - because no record to the contrary owing to lack of pre-natal examination is available. Still this does not disprove the fact that a healthy woman is more likely to withstand the disease should she become infected. Conditions during the puerperium make all women liable to infection. It may be too that the healthy woman has not during life been exposed to infection of a streptococcal nature and has less natural immunity.

Towards the end of my term of office I had charge of a small very virulent outbreak of puerperal fever which occurred in a maternity hospital where supervision could not be adversely criticised. The outbreak may not be classed as typical, but presents some unique features which perhaps justify its record.

Ten women became febrile, - four died in hospital,- and probably a fifth did not long survive dismissal

at her own request. This gives a mortality of fifty per cent. It would be interesting to compare the percentage mortality from hospital epidemics with the mortality in private midwifery. Of course, hospital cases are more often abnormal and labour complicated, but everything taken into account, the incidence and mortality from puerperal sepsis is probably no less in the maternity home. Here the diagnosis of puerperal fever is no more welcome than in private, and notifications are often considerably delayed.

Dr. Geddes remarks that

" The prevention of puerperal fever rests with the
" general practitioner, and that it is hopeless under
" existing conditions and will continue to be so
" unless means are devised by the practitioners
" themselves, or by the State by which labour can be
" conducted in institutions under antiseptic conditions."

Geddes 10.

I quite agree that puerperal fever prevention largely rests with the general practitioner, but do not agree that routine confinement in maternity homes will better conditions for women. The schooling of mothers together during the puerperium under existing conditions will not decrease but increase the incidence of puerperal sepsis.

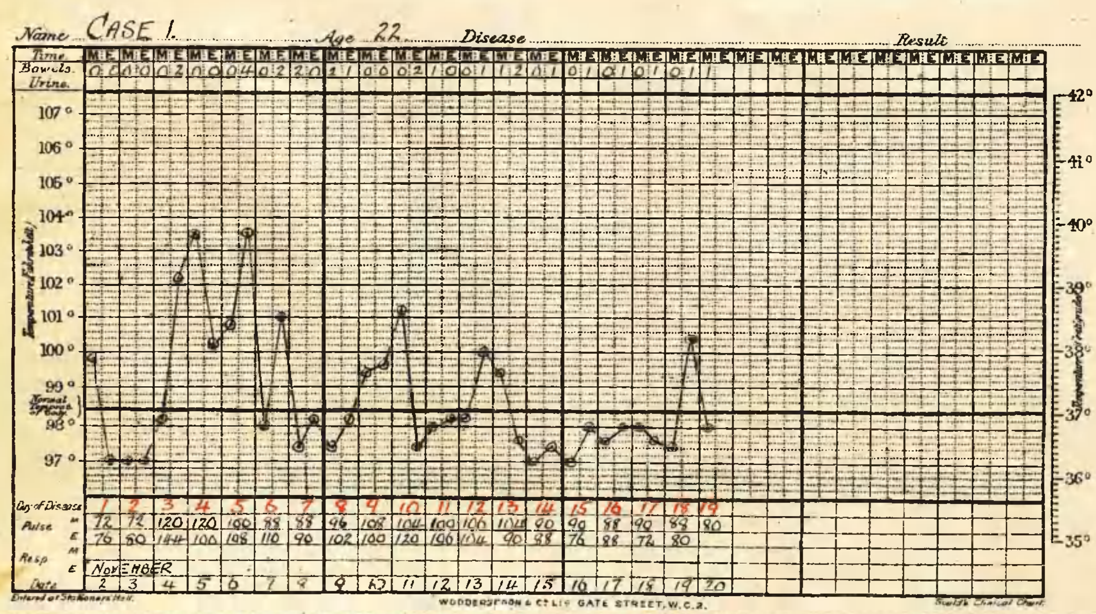
Ideal antisepsis in the maternity home would include careful and compulsory examination of every mother during pregnancy by a medical practitioner, the exclusion of all women with septic foci as decayed teeth, nasal, aural, or vaginal discharge, and any recent inflammatory condition; and a certificate that each woman was free from venereal disease, which could only be complied with, were this disease made notifiable.

The epidemiology of this particular series was associated and coincided with an outbreak of tonsillitis in the staff, the possibility of a scarlet fever contact as a source of infection had to be excluded, and towards the end of the outbreak there occurred two cases of erysipelas.

Particulars of Cases 1, 4, 8 and 9, and some factors pertaining to the epidemiology,- the results from bacteriological examination of throat swabs from nursing and medical staff, and particulars of the scarlet fever contact, are recorded with kind permission of Dr. McGregor, Medical Officer of Health, Glasgow.

SECTION 4.

ELEVEN CASES OF PUERPERAL PYREXIA.


Name CASE I.
Age 22
Disease
Result
Time
Bowels.
Urine.
Day of Disease
Pulse
Resp.
Date
NOVEMBER
107°
106°
105°
104°
103°
102°
101°
100°
99°
98°
97°
42°
41°
40°
39°
38°
37°
36°
35°

CASE 1. Primipara. aged 22 years.

Admitted to Maternity Home. 1.11.26.

Confined ... ... 1.11.26.

Delivered by Nurse 'A' and attended by Nurse 'B'.

1.11.26. Delivery was normal. Labour lasted eight and a half hours. On the evening of the third day patient became febrile. She developed a troublesome cough with excessive frothy sputum. The condition was diagnosed as acute bronchitis. On the advice of a consultant the sputum was examined for the presence of the tubercle bacillus and found on two occasions to be negative.

Patient gave a history of cough during the last six months of her pregnancy but had not been losing weight.

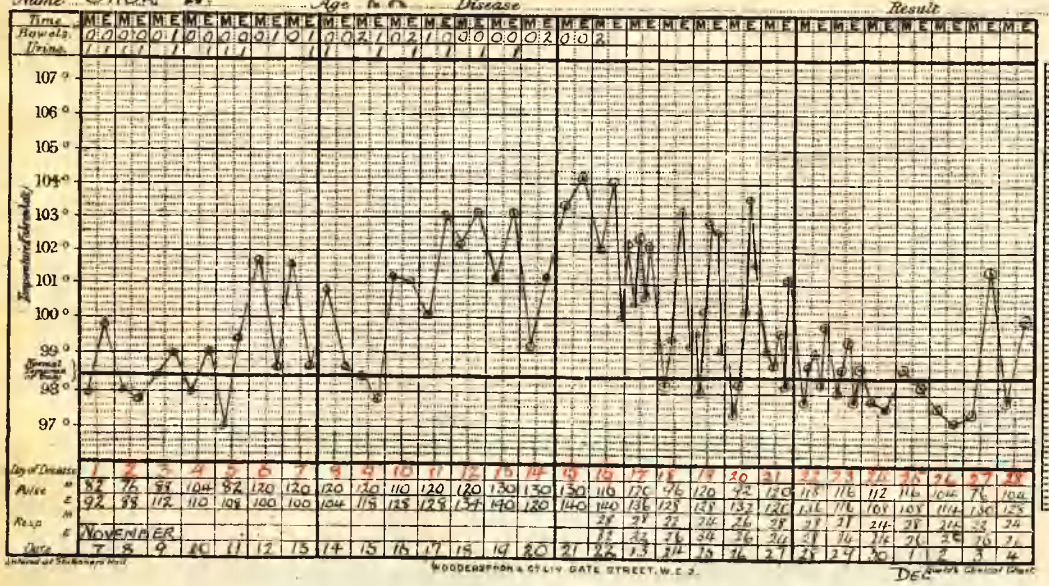
7.11.26. Patient was restless and wandering in her speech. She was given a sleeping draught and had a tepid sponge.

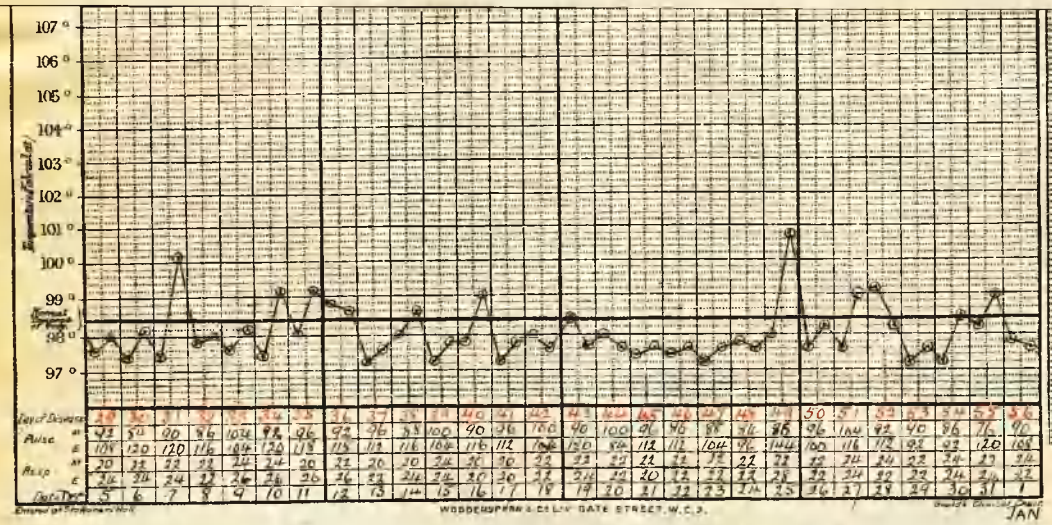
9.11.26. The temperature continued elevated but patient was quieter - conversation more rational.

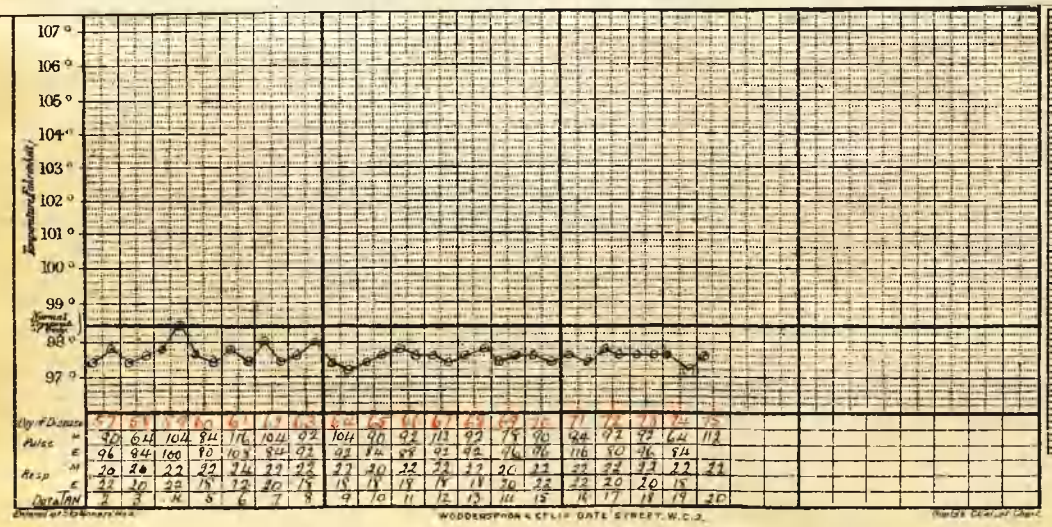
10.11.26. Progress continued to be satisfactory.

20.11.26. Patient was dismissed from hospital apparently well. Reference to the temperature chart showed an elevation of temperature on the evening before dismissal.

Name CASE 2. Age 22 Disease Result







WOODERSPOON & CO LIV GATE STREET, W.C.2.

(Case 1.Cont). Further medical advice was sought regarding this case during the pyrexial period, and a diagnosis of puerperal fever suggested.

CASE 2. Primipara. aged 22 years.

Admitted to isolation hospital 21.11.26.

Previous infectious disease - nil.

Disease certified - Puerperal Fever.

History relating to present illness.

Case 2 was admitted to the Maternity Home on 6th November and gave birth to a full time male child on 7th November. She was delivered by Nurse 'C', attended by Nurse 'D'. Delivery was normal - labour lasting 11½ hours.

The course was satisfactory until November 12th when the temperature was elevated and pulse rate increased. With the onset of fever patient exhibited mental symptoms and on 14th instant was hallucinated.

There was a little congestion at the base of the left lung. On 21st instant a consultant was called who suggested a diagnosis of Puerperal Fever and the case was transferred immediately to the isolation hospital.

Record since admission to isolation hospital.

21.11.26. General condition is fairly good. There is slight thyroid enlargement. Patient is febrile and looks toxic. The cheeks are flushed, eyes very bright, and pupils dilated.

Temperature 101.4
Pulse Rate 132 per minute.
Respirations 28 per minute.

The tongue is coated but moist. Conversation is disjointed, at times not quite rational and she appears to be highly excited.

Heart borders are within normal limits,-sounds pure. Pulse is soft, regular and frequent.

Lungs. Over the left base posteriorly - vocal resonance is increased and the respiratory murmur harsh but not accompanied by adventitious breath sounds.

The abdomen is quite lax and the uterus well contracted.

The buttocks are reddened and show occasional bullous sores almost pemphigoid in character.

Vaginal examination.- The os uteri is closed, there is practically no discharge and the perineum is intact.

Bowels - Stools are loose, not offensive.

Urine - Haze of albumen.

1.12.26. There is a rounded swelling definitely fluctuant on the outer aspect of the left upper arm.

This swelling was incised today and a considerable quantity of thin pus evacuated. Patient's mental condition is much improved. Temperature continues to swing.

13.12.26. A fluctuant swelling had developed over the sacrum. An incision was made, pus evacuated and the wound packed.

11.1.27. Wound in left upper arm is healed. Thereis still a small sacral sinus. Temperature and pulse are normal.

20.1.27. Both wounds are healed. Mental condition is normal.

Patient was dismissed well this morning.

Disease certified - Puerperal Mania.

Puerperal Pyaemia.

Bacteriological Findings.

1.12.26. Blood Culture - Gram +ve diplococcus (contamin-ation)

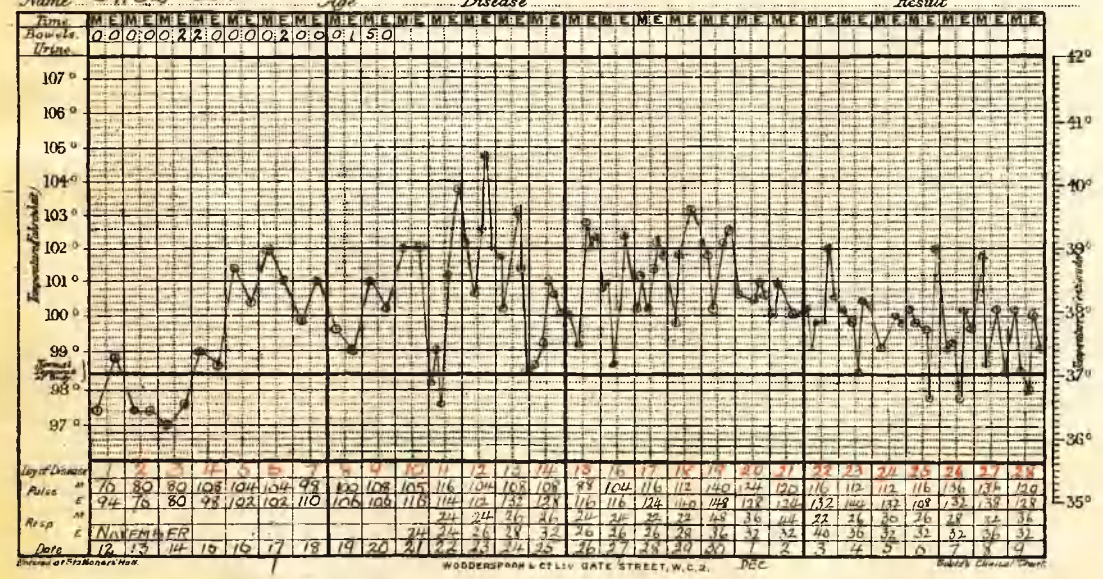
5.12.26. Blood Culture - No growth.

1.12.26. Intra-uterine smear - short chain streptococcus and gram +ve diplococcus.

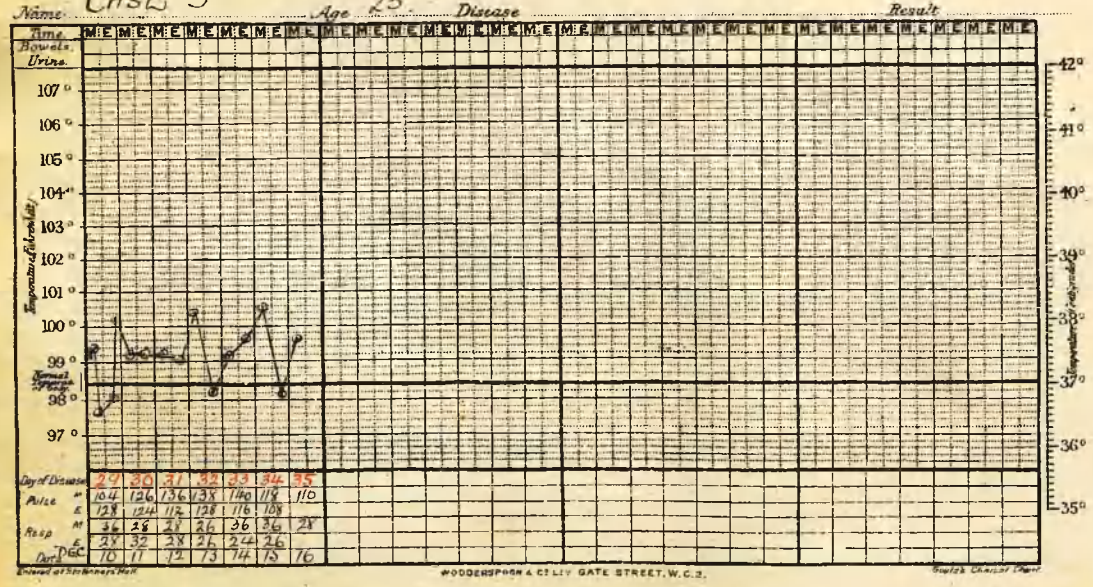
1.12.26. Pus from abscess of upper arm - short chain streptococcus.

13.12.26. Pus from sacral abscess - short chain streptococcus

Name CASE 3. Age Disease Result



Name CASE 3 Age 23. Disease Result



CASE 3. Primipara. aged 22 years.

Admitted to isolation hospital - 21.11.26. Previous infectious disease - Whooping Cough.

Disease certified - Puerperal Fever.

History relating to present illness.

Case 3 was admitted to the home on 11th November, and was confined on 12th instant. She was delivered by Nurse 'E', attended by Nurse 'D'. Delivery was normal, labour lasting eighteen and a half hours. There was a slight perineal tear which was sutured under anaesthesia.

16.11.26. Patient became febrile and the onset of fever was accompanied by abdominal pain, diarrhoea and sickness. The Nurse reported douche returns as dirty, containing pus.

A hot intra-uterine douche was given on the 21st November. The case was diagnosed as Puerperal Fever and transferred to hospital.

Record since admission to Isolation Hospital.

21.11.26. The general condition is satisfactory. Patient is febrile and appears sharply ill.

Temperature 102°F
Pulse rate 116 per minute.
Respirations 24 per minute.

The tongue is dry and furred. There is some fullness of the lower abdomen - with increased resistance to palpation and marked abdominal tenderness - not localised. The uterus is well contracted.

Heart borders are within normal limits, but the first mitral sound is replaced by a blowing systolic murmur - not well conducted towards the axilla.

Urine - haze albumen.

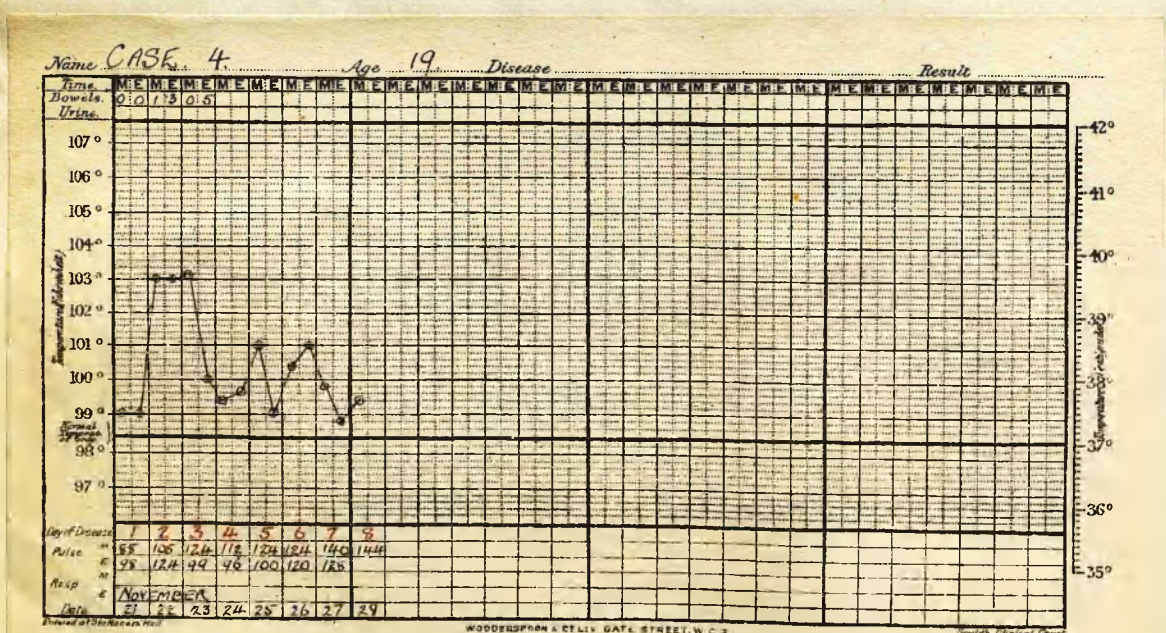
Vaginal examination.- There is an extensive sloughing perineal tear and profuse offensive purulent discharge. The os uteri is patent- to admit the tip of the little finger. There is no abnormality of the broad ligaments. The buttocks are reddened inflamed and the skin surface broken.

1.12.26. There is an extensive cellulitis of the buttocks of an erysipelatous nature. Patient has developed a short loose cough. There is on examination - definite dullness at the base of the left lung posteriorly. Over this area the respiratory murmur is tubular and accompanied by moist crepitations - definite signs of lobar pneumonia. The sputum is muco- purulent, foetid and rusty.

10.12.26. Temperature continues elevated - continued type of fever. The breath sound over the left base is diminished. The left side of the chest was explored but no fluid aspirated.

Buttocks are now healed.

15.12.26. Physical signs over left base are unaltered.


Name CASE 4. Age 19 Disease Result
Time.
Bowels. 0:0 1:3 0:6
Urine.
107° 106° 105° 104° 103° 102° 101° 100° 99° 98° 97°
Temperature (Fahrenheit)
Normal Temperature
42° 41° 40° 39° 38° 37° 36° 35°
Temperature (Centigrade)
Day of Disease 1 2 3 4 5 6 7 8
Pulse M 88 106 124 112 124 124 140 144
E 98 124 99 96 100 120 126
Resp M
E
Date NOVEMBER 21 22 23 24 25 26 27 29
WODDERSPOON & CT LD GATE STREET, W.C. 2.

The chest was again explored with negative result.

16.12.26. Condition remains unchanged - temperature still swinging. Patient was dismissed at own request - acutely ill.

Disease certified. Puerperal Septicaemia.
Unresolved septic pneumonia.

Bacteriological Findings.

22.11.26. Blood Culture - nil.

1.12.26. Blood Culture - Gram+ve diplococcus.

1.12.26. Intra-uterine smear - short chain streptococcus.

1.12.26. Sputum - Short chain streptococcus and gram+ve diplococcus.

CASE 4. Primipara. aged 19 years.

Admitted to isolation hospital 21.11.26.

Disease certified - Puerperal Fever.

History relating to present illness.

Case was admitted to the maternity home on 20th November and confined on November 21st. She was delivered by Nurse 'F' attended by Nurse 'D'. Delivery was normal, labour lasting sixteen and a half hours. The next morning she was very restless, temperature was 103°F and pulse 108 per minute.

The rise of temperature was ushered in with vomiting and diarrhoea and she complained of abdominal pain.

Case 4 was transferred to the isolation hospital on November 24th.

Ante-natal record. During the last few weeks of her pregnancy patient developed a so called "flu" and had been in attendance on her own doctor. There was also a history of headaches and on admission patient had septic spots on the anterior thoracic wall.

Record since admission to Hospital.

25.11.26. Patient is very distressed and appears acutely ill. Her colour is poor, and there is persistent retching and vomiting of green fluid. The tongue is dry and furred.

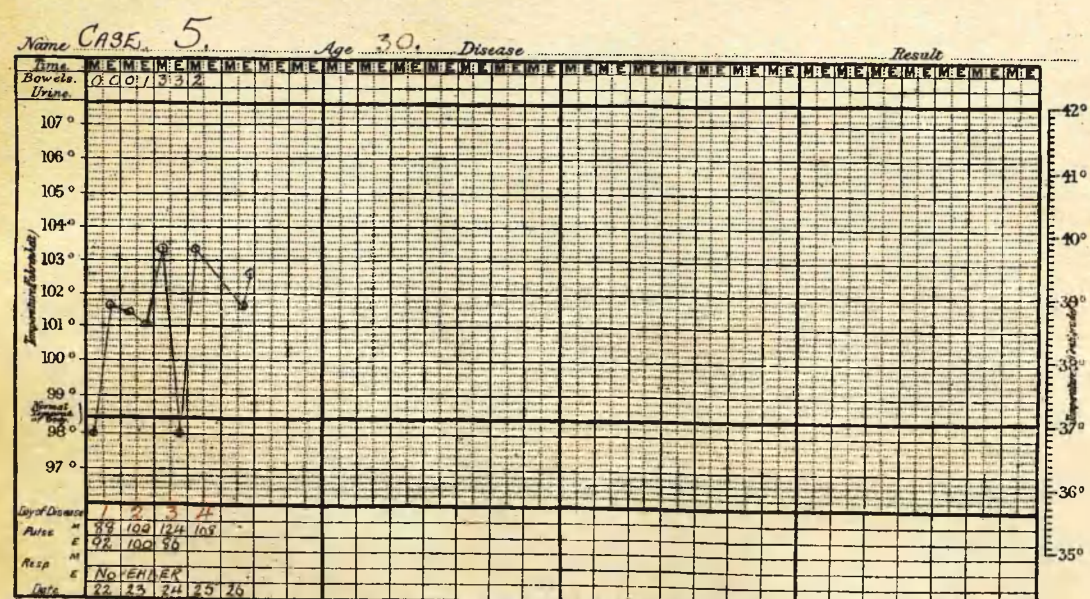
Heart and lungs appear normal. The pulse is soft and frequent. The abdomen appears to be slightly distended and moves little with respiration.

There is marked tenderness on pressure, especially in the lower abdomen. The size of the uterus cannot be made out from abdominal palpitation. Thereis no sign of pelvic effusion.

The stools are loose and green.

Vaginal examination.- The os uteri is open and vaginal examination causes pain . The uterus appears to be slightly enlarged. The rectum is ballooned.

Urine shows a haze of albumen.


Name CASE 5.
Age 30.
Disease
Result
Time.
Bowels.
Urine.
107°
106°
105°
104°
103°
102°
101°
100°
99°
98°
97°
42°
41°
40°
39°
38°
37°
36°
35°
Day of Disease
1 2 3 4
Pulse
M 89 100 124 108
E 92 100 96
Resp
Date
NOVEMBER
22 23 24 25 26
WODDERSPOON & Co Ltd GATE STREET, W.C.2.

Urine shows a haze of albumen.

Result from enema.- A small quantity of greenish fluid was returned.

A surgeon was called in consultation, and diagnosed a pelvic peritonitis. The abdomen was opened under general anaesthesia and a drainage tube inserted into the pelvis. There was no free fluid in the abdomen.

28.11.26. Condition has not improved since the operation; sickness was less frequent. There is no sign of suppuration extending upwards. Patient died later this evening.

CASE 5. Primipara, aged 31 years.

Admitted to isolation hospital 26.11.26.

Disease certified - Puerperal Fever.

History relating to present illness.

Case 5 was admitted to the maternity home on the 2nd November and confined the same day. Labour lasted nineteen and a half hours. She was delivered by Nurse 'J' attended by Nurse 'I'. The placenta was adherent and was manually removed one and a third hours after confinement with the aid of a general anaesthetic by Doctor 'R'. A hot intra-uterine douche was administered afterwards. After confinement the temperature was 99°F and the pulse rate 104 per minute.

Later the same evening the temperature was 101.6° F and pulse rate 92 per minute. On November 23rd, patient vomited frequently and temperature was still elevated. The discharge was offensive.

On November 24th patient complained of pain in the chest and her breathing was laboured. The breath sound on both sides of her chest was tubular. Stools were loose. Patient was not transferred until November 25th.

Ante-natal record. On admission to the home there was oedema of face, trunk, and limbs. The urine was apparently clear or at least there is no record to the contrary.

26.11.26. Record since admission to isolation hospital.

Patient is a well developed woman . There is a purpuric eruption on the abdominal wall and lower limbs.

Patient is very verl ill, breathing shallow and impeded. The skin is clammy, cold, and bathed in perspiration.

The tongue is dry, lightly coated with a thin layer of brownish fur. There is no abdominal distension.

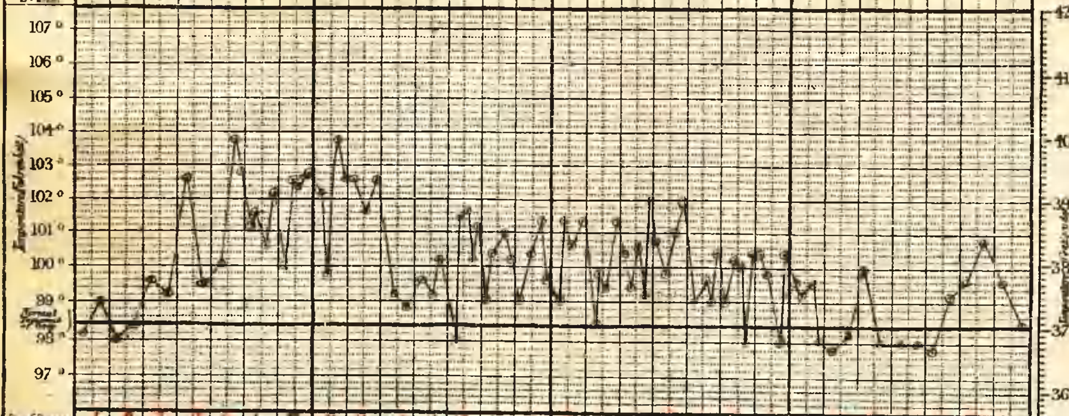
Vaginal discharge is reported to be scanty but very offensive.

Lungs :-there are definite signs of a double pneumonia.

Heart - the sounds are soft; pulse is collapsed

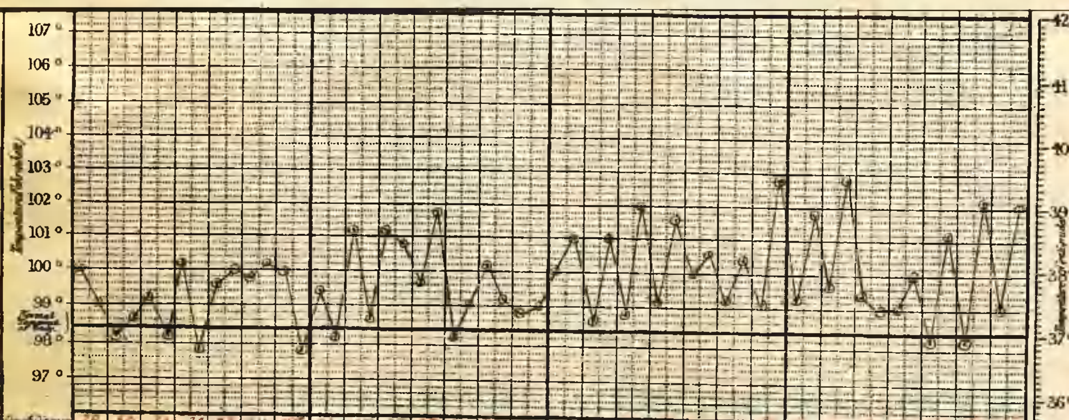
Name CASE 6 *Age* 26 *Disease* *Result*

Time	M	E	M	E	M	E	M	E
Bowels	0	0	0	0	0	3	0	1
Urine								



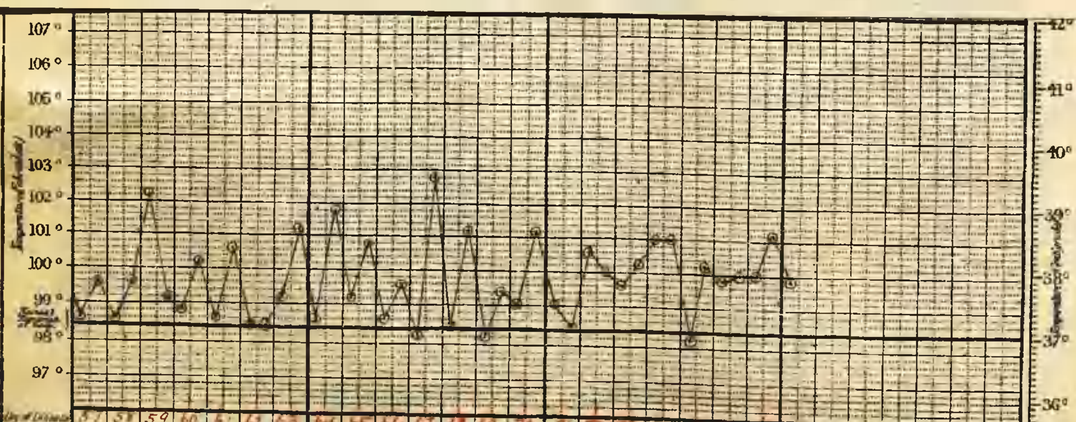
Day of Disease	Pulse M	Pulse E	Resp M	Resp E	Date
1	56	50		NOVEMBER	22
2	56	56			23
3	72	78			24
4	110	100			25
5	90	112		28	26
6	118	124	24	28	27
7	124	120	26	28	28
8	116	132	26	36	29
9	128	128	25	28	30
10	112	116	26	32	1
11	100	120	28	36	2
12	108	116	24	26	3
13	112	128	26	28	4
14	108	104	26	24	5
15	116	120	26	26	6
16	100	116	24	26	7
17	100	112	20	24	8
18	72	120	24	28	9
19	96	116	22	24	10
20	116	88	25	22	11
21	109	98	22	24	12
22	88	104	20	24	13
23	92	108	20	22	14
24	108	100	20	22	15
25	90	108	22	24	16
26	92	104	22	22	17
27	100	124	20	24	18
28	107	108	26	22	19

DEC WOODERSPOON & Co. LTD. GATE STREET, W.C.2. Swift's Clinical Chart



Day of Disease	Pulse M	Pulse E	Resp M	Resp E	Date DEC
29	108	118	26	22	20
30	100	116	20	24	21
31	106	112	24	22	22
32	110	104	22	22	23
33	108	116	24	24	24
34	108	120	24	26	25
35	100	112	22	22	26
36	108	130	24	22	27
37	108	115	24	22	28
38	108	120	24	26	29
39	112	116	22	24	30
40	110	124	24	26	31
41	104	116	26	22	1
42	108	112	22	24	2
43	116	112	18	24	3
44	112	112	24	24	4
45	116	116	22	24	5
46	120	112	26	24	6
47	120	120	20	24	7
48	120	115	26	24	8
49	112	124	22	26	9
50	104	112	24	24	10
51	120	124	24	26	11
52	124	112	24	22	12
53	112	120	22	24	13
54	120	124	24	24	14
55	120	96	22	22	15
56	112	120	22	24	16

WOODERSPOON & Co. LTD. GATE STREET, W.C.2. JAN Swift's Clinical Chart



Day of Disease	Pulse M	Pulse E	Resp M	Resp E	Date JAN
57	120	132	29	24	17
58	112	120	26	24	18
59	120	128	26	24	19
60	128	124	24	24	20
61	112	112	22	24	21
62	116	108	22	24	22
63	120	128	22	20	23
64	108	128	20	24	24
65	108	104	20	20	25
66	112	100	22	20	26
67	112	106	22	24	27
68	92	112	20	24	28
69	112	113	22	24	29
70	112	116	22	22	30
71	124	116	24	22	31
72	108	132	22	28	1
73	108	116	22	24	2
74	112	128	24	28	3
75	96	130	22	24	4
76	104	112	22	24	5
77	104	128	24	28	6
78	100		22		7

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and running.

Patient is obviously not going to recover.

On admission she was freely stimulated, whisky was administered and a hypodermic injection of strychnine combined with digitalin given.

There was little or no response to treatment and the patient died at 1.20 a.m. a few hours after admission.

Death certified - Puerperal Septicaemia.

Pneumonia.

Bacteriological Findings.- nil submitted.

CASE 6. Multipara .- second pregnancy. aged 26 years.

Admitted to isolation hospital 26.11.26.

Disease certified - Puerperal Fever.

History relating to present illness.

Case 6 was admitted to the maternity home on 22nd November and gave birth to a full time female child the same day. Labour was normal - lasting four hours and Nurses 'H' and 'D' were in attendance. The birth was natural and placenta expelled whole twenty minutes later. There was a slight perineal tear which required two sutures. These were inserted by Dr. 'R'. After confinement temperature was 99° F and pulse rate 56 per minute.

Progress was satisfactory until November 24th ,

when patient complained of pain in the left side of the abdomen and vomited much greenish fluid. Temperature was elevated and pulse rate increased. Case 6 was transferred on November 26th.

Ante-natal record. During pregnancy Case 6 had what she described as a 'nervous breakdown', and was confined to bed for three weeks. She had not been taking her food well and her physical condition was poor.

26.11.26. Record after admission to isolation hospital.

The general condition is fairly satisfactory and apart from fever, patient appears to be comfortable. She is a nervous little woman - at times hysterical and very childish.

The tongue is fairly clean and moist.

The abdomen is just a little full while the uterine fundus is palpable midway between the symphysis pubis and umbilicus.

On palpation there is increased resistence over the left iliac fossa. There is no tenderness on pressure. Patient complains of pain in the left thigh, but meantime there is no evidence of thrombosis.

Heart and lungs appear to be satisfactory.

Vaginal examination.- There is an extensive perineal tear and two sloughing stitches are still intact. The os is sufficiently patent to admit one finger.

Vaginal discharge is profuse, purulent and offensive.

2.12.26. Temperature continues elevated with irregular remissions. There is some fullness and local temperature on the outer aspect of the left thigh,- signs suggesting a pending abscess.

10.12.26. Swelling on left thigh was today incised and a quantity of thin pus evacuated. A drainage tube was inserted.

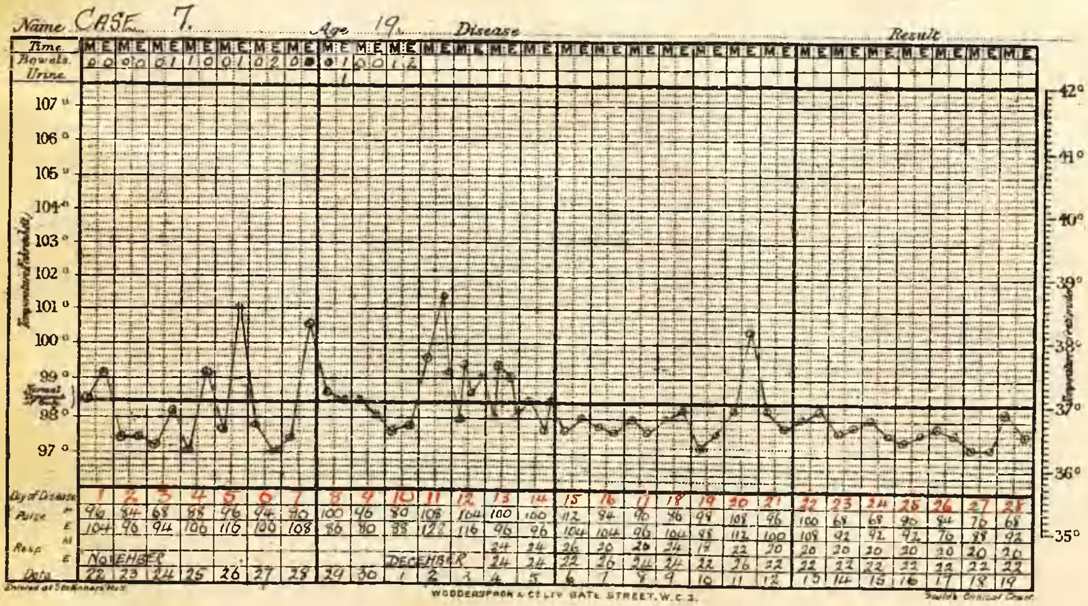
28.12.26. There is a swelling both visible and palpable in the left iliac fossa - very tender to touch. Vaginal examination confirms the diagnosis of a left pelvic cellulitis and pyo-salpinx.

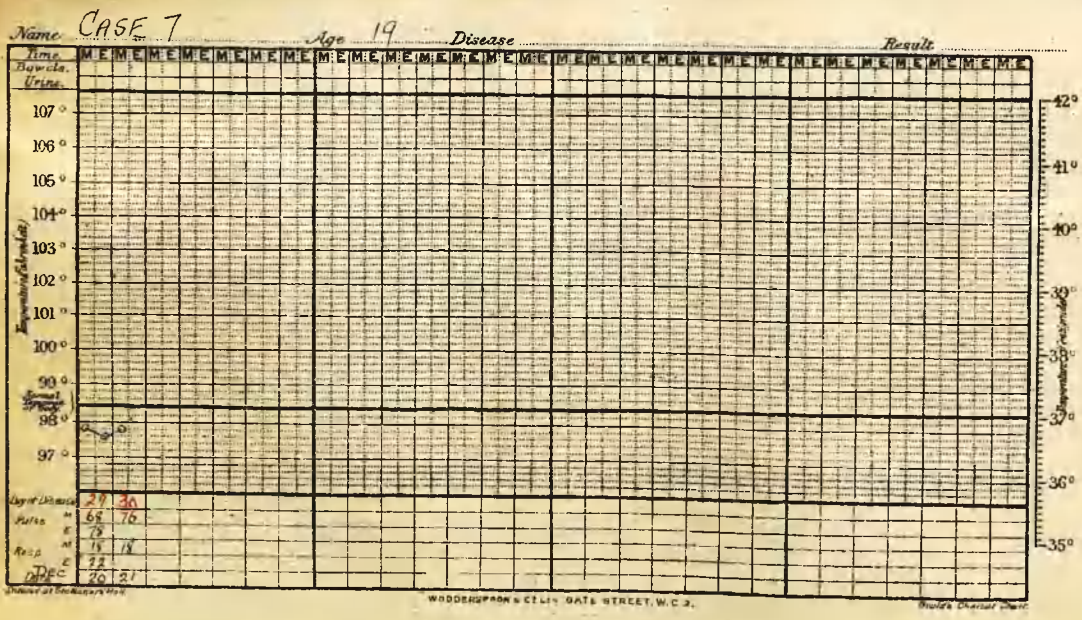
7.1.27. Abscess wound of left thigh is quite healed. Patient's general condition is much improved. Vaginal examination.- The fullness and tenderness on the left lateral fornix is now extending anteriorly. General condition is somewhat improved but patient is very emotional and at times has bouts of depression.

18.1.27. Consultation with surgeon and diagnosis of pelvic cellulitis and pyo-salpinx left, confirmed.

7.2.27. The mass in the left lateral fornix is appreciably smaller but there is thickening and fullness in the right lateral fornix and pouch of Douglas. The temperature continues to swing.

Case 6 was dismissed from hospital at her own request.


Name CASE 7.
Age 19
Disease
Result
Time
Bowels
Urine
Temperature (Fahrenheit)
Temperature (Centigrade)
Normal
Day of Disease
Pulse
Resp.
Date
NOVEMBER
DECEMBER
WOODERSPOON & CO LIV GATE STREET, W.C. 2.


Name CASE 7
Age 19
Disease
Result
Time
Bowels
Urine
Temperature (Fahrenheit)
Temperature (Centigrade)
Normal
Day of Disease
Pulse
Resp.
DEC
WOODERSPOON & CO LIV GATE STREET, W.C. 2.

Bacteriological findings.

		Result.
27.11.26. Blood culture.	-	nil.
2.12. 26. Blood culture.	-	nil.
10.12.26. Pus from abscess of thigh.	-	Streptococcus - rather long chain.
2. 12.26. Intra-uterine smear	-	Streptococcus - short chain.

CASE 7. Primipara. aged 19 years.

Admitted to isolation hospital 2.12.26.

Disease certified - Puerperal Fever.

History relating to present illness.

Case 7 was admitted to the home on 21st November and was delivered the following day by Nurse 'K' attended by Nurse 'J'. Labour lasted nineteen hours. The placenta was adherent and was manually removed under chloroform. A hot intra-uterine douche was given immediately afterwards. On the fourth day after confinement patient complained of pain in her breasts. On examination the breasts were much engorged. Temperature was slightly elevated. The temperature rose again November 26th although the patient did not complain. Douche returns were reported as being dirty and containing pus. Patient was certified as suffering from Puerperal Fever and transferred.

Ante-natal history.

Patient was anaemic during her pregnancy and a tonic

mixture prescribed. She is said to have had fainting attacks.

2.12.26. Record since transfer to fever hospital.

General condition is satisfactory. There is a small patch of herpes on the lip.

Temperature 100.4°F (
Pulse rate 130 per minute.(On admission.
Respirations 26 per minute.(

Patient has a short cough but otherwise is very comfortable. Her tongue is lightly coated but moist. The abdomen is quite lax; the uterine fundus is not palpable. Heart and lungs appear normal. The pulse is frequent, regular, and well sustained.

Stools are reported to be normal.

Urine contains no abnormality.

Vaginal examination. The perineum is intact and there is no vaginal laceration. Vaginal discharge is scanty and purulent. The os uteri admits the tip of the little finger with difficulty.

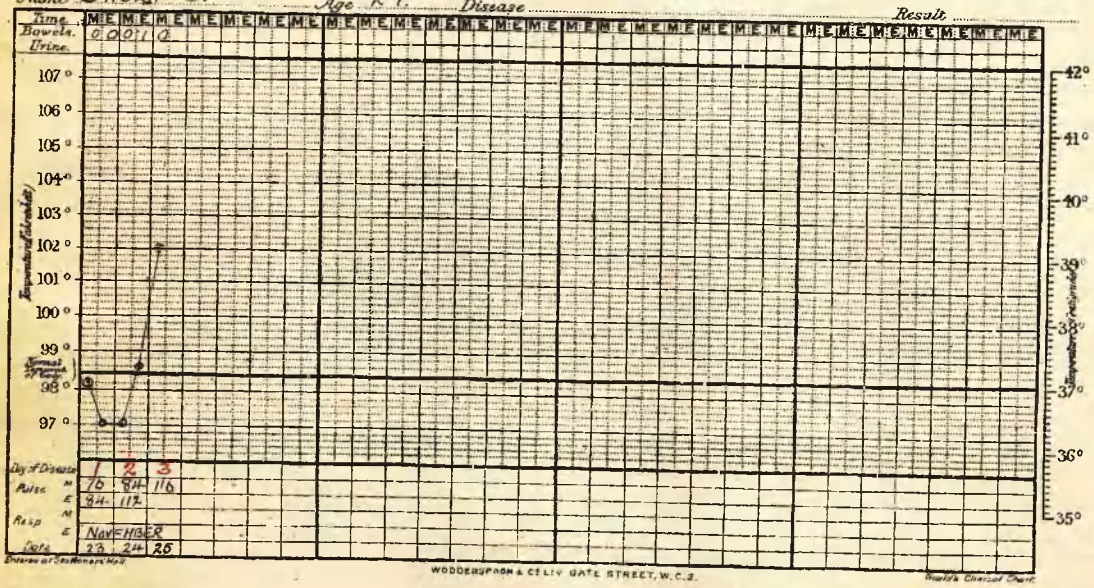
5.12.26. Patient is afebrile and appears settle.

11.12.26. The right breast is engorged. Patient also complains of abnormal pain. Temperature is again elevated.

14.12.26. The fullness and swelling of the breast have subsided.

21.12.26. Dismissed well.

Name CASE. 8. Age 24. Disease Result



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Wood's Clinical Chart

Bacteriological findings.

2.12.26. Blood culture - Streptococcus - short chain.

5.12.26. Blood culture - No growth.

5.12.26. Intra-uterine smear - Streptococcus - short chain.

CASE 8. Multipara. 3rd Pregnancy. aged 24 years.

Case 8 was admitted to the maternity home on 23rd November and the same day gave birth to a full time child. The confinement was normal, perineum intact. She was delivered by Nurse 'G', attended by Nurse 'D'. Labour lasted three hours.

Patient was comfortable and progress satisfactory until November 25th when she vomited and complained of pain in the abdomen. On examination the abdomen was found to be ridgid and tender. Temperature was 102°F, Pulse rate 116 per minute.

Case 8 was isolated and further medical advice procured.

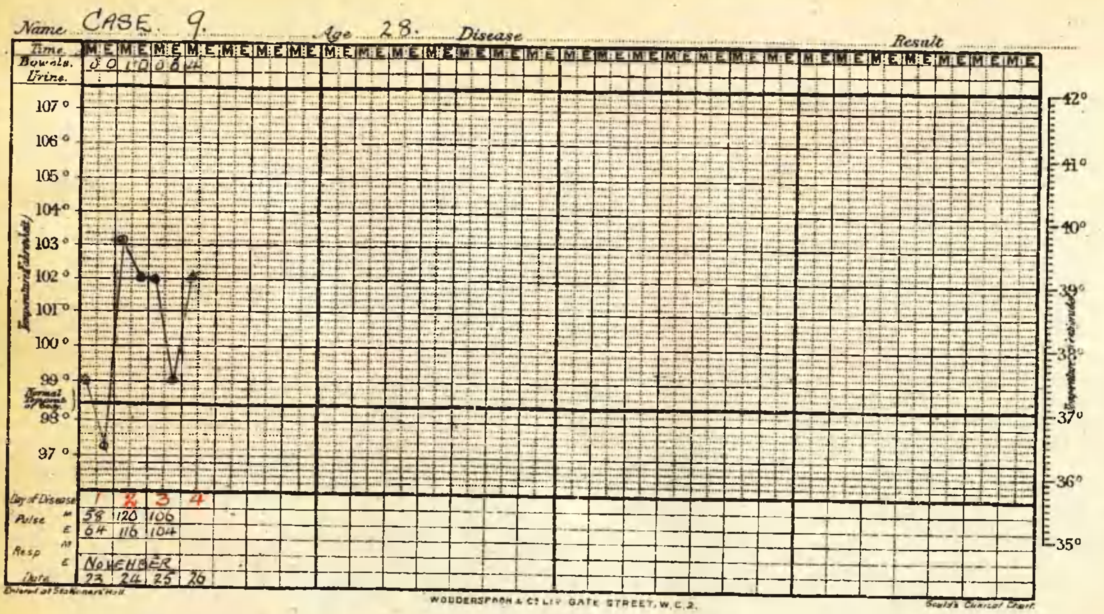
There is no further record except a statement that she died the same day.

Ante-natal record.

Patient had chronic bronchitis on admission.

Bacteriological findings.

Nil submitted.


Name CASE 9.
Age 28.
Disease
Result
Time.
Bowels.
Urine.
107°
106°
105°
104°
103°
102°
101°
100°
99°
98°
97°
42°
41°
40°
39°
37°
36°
35°
Day of Disease
1 2 3 4
Pulse
58 120 106
64 116 104
Resp
NOVEMBER
Date
23 24 25 26
WOODERSPOON & Co LTD GATE STREET, W.C.2.

CASE 9. Primipara. Aged 28 years.

Case 9 was admitted to the maternity home on November 22nd, was confined on the 23rd, and later in the same day became febrile. Delivery was natural but there was a slight perineal tear which required a suture. The suture was inserted by Doctor 'R' and the patient had a general anaesthetic. Labour lasted thirtysix hours. Immediately after the confinement the temperature was 99° F and pulse rate fifty-eight per minute. Next morning the temperature was 103.2°F and pulse rate 120, but the mother did not complain. The following day, November 25th, she was still fevered and so was isolated. She complained of pain and tenderness in both legs. On examination reddened patches were seen extensively from the ankle to above the knee.

There is no further report except a statement that the patient died on November 26th of Pulmonary Embolism.

Bacteriological findings.- nil submitted.

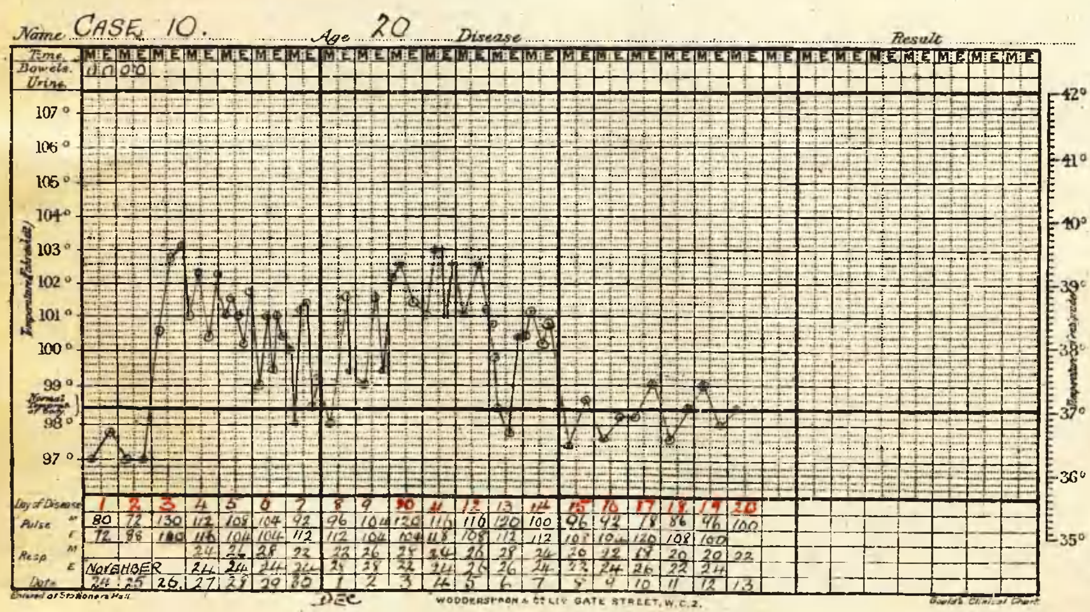
CASE 10. Multipara. 2nd pregnancy. aged 20 years.

Admitted to isolation hospital - November 26th,1926.

Disease certified - Puerperal Fever.

History relating to present illness.

Case 10 was admitted to the maternity home on November 24th and the same day gave birth to a full time



Name CASE 10.
Age 20
Disease
Result
Time. Bowels. Urine.
Temperature (Fahrenheit)
Temperature (Centigrade)
Normal
Day of Disease
Pulse
Resp
Date
NOVEMBER
DEC
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WODDERSPOON & Co LTD. GATE STREET, W.C.2.
Bould's Clinical Chart

female child. She was delivered by Nurse 'A', attended by Nurse 'D'. Delivery was natural. Labour lasted one and a half hours. There was slight post-partum haemorrhage which did not necessitate interference. On the second day of the puerperium, fever was ushered in with rigors. Case 10 was immediately diagnosed to be suffering from puerperal pyrexia and transferred to the isolation hospital.

26.11.26. Record since admission to isolation hospital.

Apart from fever the patient seems comfortable and is not complaining.

Temperature - 102.8° (
Pulse rate - 140 (Admission.
Respirations - 28 (

The tongue is clean and moist. There is subinvolution of the uterus - fundus is palpable two and a half inches above the symphysis pubis. There is no abdominal distension.

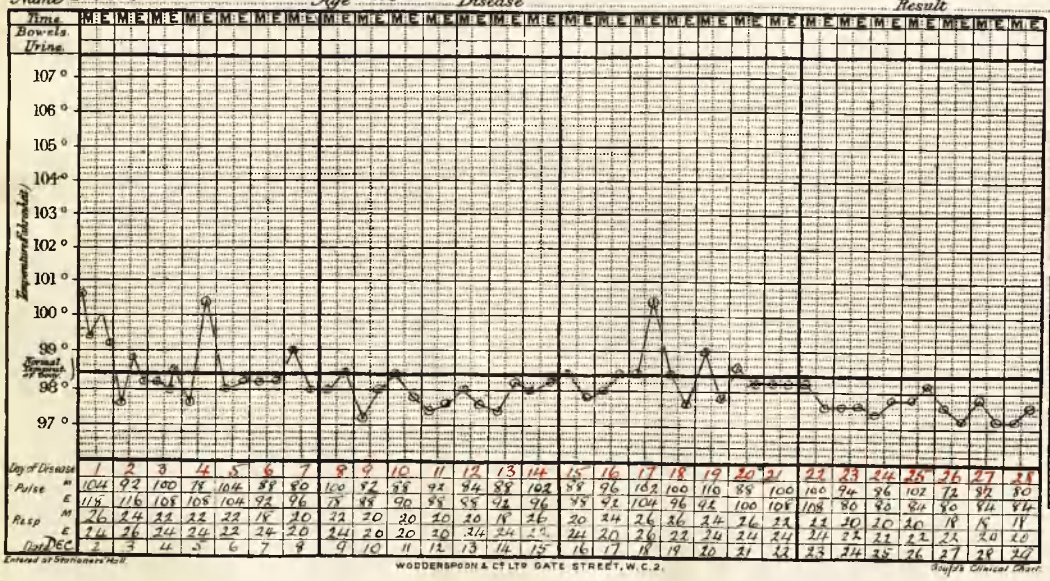
The mother complains of pain and difficulty with micturition.

Heart and lungs appear to be normal.

Vaginal examination.- There is an old scar of a former healed perineal tear. The os uteri which is displaced somewhat to the left is sufficiently patent to admit one finger.

Vaginal discharge is foul, profuse, purulent, and bloodstained. There is no sign of pelvic effusion

Name CASE 11 Age 25 Disease Result



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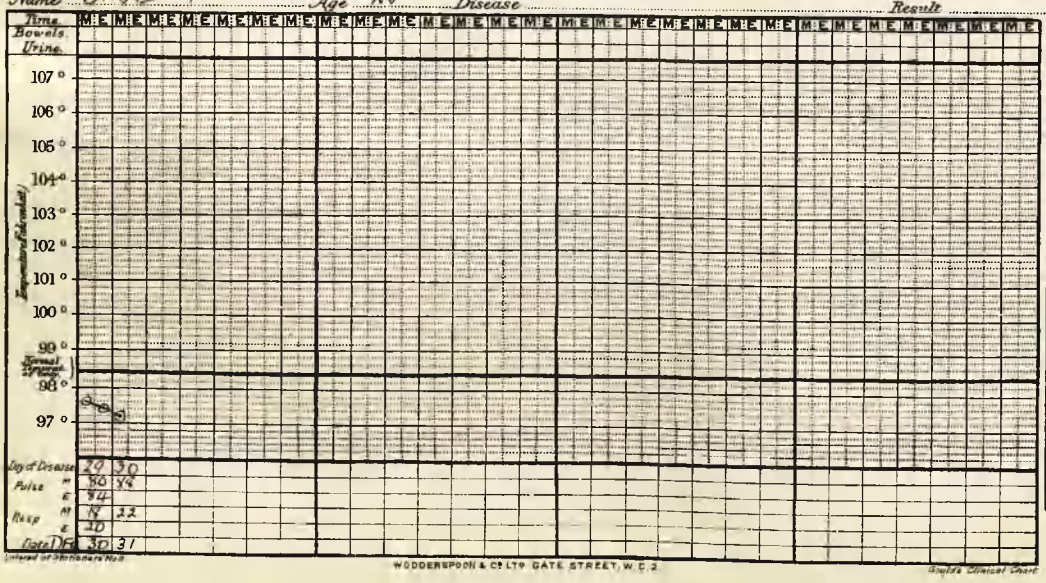
Graph's Clinical Chart

Name CASE 11 Age 25 Disease Result



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Graph's Clinical Chart

29.11.26. A small piece of placental tissue was expelled this morning. There was no undue haemorrhage.

1.12.26. Patient had a rigor lasting ten minutes.

8.10.26. Afebrile. Vaginal discharge has ceased. The mother's condition is distinctly improved.

13.12.26. Patient has been afebrile for almost a week. She was dismissed earlier than anticipated on account of her baby's death.

Bacteriological findings.

27.11.26. Blood culture - nil.

1. 12.26. Blood culture - contaminated.

1. 12.26. Intra-uterine smear - short chain streptococcus.

CASE 11. Outdoor Case.

This mother was attended by Nurse 'L' and 'M' and visited by Dr.'R! during the puerperium.

Case 11 was confined on November 25th in her own home, and attended by two nurses from the maternity home who had not, so far as is known, been in contact with any of the septic cases. Doctor 'R' visited this mother on November 26th, just to see if she were well. Next morning the mother was febrile and the onset of fever was accompanied by a rigor. Doctor 'R' paid another visit and was informed that a small piece of placental tissue had been expelled.

On account of the pyrexia and possible association with the maternity home this case was transferred also to ~~the to~~ the isolation hospital on November 27th.

27.11.26. Record since transfer to fever hospital.

The patient is comfortable and not complaining.

Temperature 100.6° F (
Pulse rate 132 per minute. (On admission.
Respirations 28 per minute. (

Her tongue is a little furred and dry.

The abdomen is quite lax - no distension. The uterine fundus extends to a point midway between the symphysis pubis and umbilicus.

The heart and lungs are normal.

Urine - No albumen.

Bowels - Stools are reported normal.

Vaginal examination - The os uteri is almost closed although the anterior lip is patulous.

Vaginal discharge is profuse, purulent and offensive.

4.12.26. Patient is afebrile this morning and progress continues to be satisfactory. The uterus is now well contracted.

18.12.26. Temperature is elevated and the mother complains of earache.

20.12.26. The ear is now discharging profusely.

27.12.26. Ear is dry.

Patient dismissed well to-day.

Disease certified - Puerperal Sapraemia.

Otorrhoea.

Bacteriological findings.

3.12.26. Blood Culture - nil.

5.12.26. Blood culture - nil.

2.12.26. Intra-uterine smear - Staphylococcus.

20.12.26. Pus from ear - Staphylococcus.

2 CASES OF ERYSIPELAS.

BABY 9 child of Case 9 - developed Erysipelas on November 30th, 1926. The baby was attended by Nurse 'H', who also attended the baby's mother.

NURSE 'H' developed Erysipelas of face on December 4th, 1926.

TABLE 1.

SUMMARY of EPIDEMIC.

Case Number	Nurse in attend-ance.	Confin-ed	Fever-ed.	Complications requiring Dr. in attendance.	Result of illness.
1.	A.B.	Nov.1.	Nov.3	-	Dismissed well.
2.	D.D.	" 7.	" 12	-	Dismissed well.
3.	E.D.	" 12	" 16	Perineal tear - sutures.	Irregular Dismissal Septic Pneumonia.
4.	F.D.	" 21	" 21		Died.Nov.28th.
5.	J.I.	" 22	" 22	Adherent placenta - manual removal.	Died.Nov.26th.
6.	H.D.	" 22	" 24.	Perineal tear - sutures.	Irregular Dismissal Pyosalpinx Pelvic Cellulitis.
7.	K.I.	" 22	" 25	Adherent placenta - manual removal.	Dismissed well
8.	G.D.	" 23	" 25		Died Nov.25th.
9.	H.B.	" 23	" 23	Perineal tear - sutures.	Died Nov.26th.
10.	A.D.	" 24	" 26		Dismissed well
11.	L.M.	" 25	" 27		Dismissed well

TABLE 2.

ISOLATION AND NOTIFICATION.

Case number.	Fevered.	Isolated.	Notified and transferred.	Actual delay in notification.
1.	Nov. 3rd.	Nov. 4th.	Not notified or transferred.	
2.	" 12th	" 16th	Nov. 21st.	9 days.
3.	" 16th	" 16th	" 26th.	10 days.
4.	" 21st	" 23rd	" 24th.	3 days.
5.	" 22nd	" 24th	" 25th.	3 days.
6.	" 24th	" 25th	" 26th.	2 days.
7.	" 25th	No record	Dec. 2nd.	8 days.
8.	" 25th	Nov.25th	Died before removal.	-
9.	" 23rd	Nov.25th	Died before removal.	-
10.	" 26th	Nov.26th.	Nov.26th	0 days.
11.	" 27th.	Outdoor Case.	Nov.27th	0 days.

T A B L E 3.

Table 3 illustrates the possible association of a throat infection with the outbreak.

Doctor 'R', Nurses 'A', 'D', and 'H', all gave a throat swab positive for the haemolytic streptococcus.

Case	Attended by.	Attended by.	Attended by.	Attended by.
1.	Nurse A			
2.		Nurse D		
3.		Nurse D	Doctor R	
4.		Nurse D		
5.			Doctor R	
6.		Nurse D	Doctor R	Nurse H
7.			Doctor R	
8.		Nurse D		
9.			Doctor R	Nurse H
10.	Nurse A	Nurse D.		

T A B L E 4.

AGE INCIDENCE, NUMBER OF PREGNANCY, AND RECORD OF PREVIOUS INFECTIOUS DISEASE.

Case.	Age in years.	Pregnancy number.	Previous Infectious Disease.	Result of Puerperal Infection.
1.	22	1	No record.	Dismissed well.
2.	22	1	Nil	Dismissed well.
3.	22	1	Whooping Cough.	Irregular Dismissal Septic unresolved Pneumonia and Septicaemia.
4.	19	1	No record.	Died.
5.	31	1	Nil	Died.
6.	26	2	Measles.	Irregular dismissal - Pyo Salpinx.
7.	19	1	Enteric Fever Scarlet Fever.	Dismissed well.
8.	24	3	No record.	Died.
9.	28	1	Nil	Died.
10.	20	2	Scarlet Fever.	Well.
11.		Multipara	No record.	Dismissed well.

T A B L E 5.

POSSIBLE RELATION OF ANTE-NATAL HISTORY TO THE PUERPERIUM.

Case.	Ante-natal history.	Complications during Puerperium which might be associated with ante-natal record.
1.	Cough - last six months.	Acute Bronchitis.
2.	Goitre.	Puerperal mania.
4.	Influenza - last weeks.	Death .
5.	Oedema of face, hands and feet.	Death.
6.	Nervous breakdown.	Hysteria.
7.	Anaemia - treated.	Septicaemia - recovery.
8.	Chronic Bronchitis.	Death.- 1st day of fever.

SECTION 5.

SUMMARY AND EPIDEMIOLOGY

OF OUTBREAK OF

PUERPERAL FEVER.

The main features of this outbreak of Puerperal Pyrexia have been summarised in Tables 1 to 5. During a period of twenty-four days (excluding cases 1 and 11) nine mothers became febrile. (Table 2). Four mothers died and a fifth probably did not long survive after irregular dismissal from hospital at her own request. This gives a mortality of fifty and possibly sixty per cent. Seven mothers were primiparae. The aged ranged from eighteen to thirty-one years. In no case was there need for instrumental interference. Cases 3, 6, and 9, were complicated by a ruptured perineum which required sutures; cases 5 and 7 were complicated by retention of the placenta which had to be manually removed. All five complications necessitated the administration of a general anaesthetic and the attendance of Doctor 'R'. The ante-natal record does not recount anything very unusual or likely to prove detrimental apart from case 5 - where there was swelling of the face and limbs on admission. On the whole one concludes that the mothers were healthy young women. At the same time reference to Table 5 shows that where recorded - even minor defects during pregnancy influenced to some extent the puerperium.

Two cases died before notification or removal to hospital. Only one case, the last of this series was notified on the first day of fever, which goes to prove what has already been mentioned that the diagnosis

of puerperal fever in institutions as in private, is nearly always late and only made when other possible causes to explain the pyrexia have been excluded.

Only after inquiry had been made into the history of this epidemic was Case 1, diagnosed as " acute Bronchitis" brought to notice and considered as a possible primary cause of infection. This mother gave a history of cough and chest trouble during the last six months of her pregnancy. Two days after her confinement she became febrile. It is very probable that the process of child-birth wakened to activity an existing endogenous infection. Her sputum was examined repeatedly for the presence of the tubercle bacillus, in each case with negative results. The sputum was not, unfortunately, examined for the presence or absence of a haemolytic streptococcus. Such sputum did it contain the streptococcus would be a very lucrative source of infection. Moreover, Case 3, who developed a septic pneumonia, had a rusty nummular sputum from which a short chained streptoccus was successfully isolated. Associated with pyrexia during the puerperium, especially in a maternity home, every discharge, even if apparently normal, and every other excretion likely to prove a possible source of infection should be examined to exclude the presence of the haemolytic streptococcus. Case 1 was dismissed apparently well, but reference to

the temperature chart (page 24) shows a rise of temperature on the eve of dismissal. After all, no definite group of symptoms can be included in the designation - puerperal fever,- and every case of pyrexia should be considered, for preventive reasons , a potential case of infection .

Case 11 was an outdoor patient, and the midwife in attendance who lived in the maternity home, had no association or contact with the septic cases in hospital. Doctor 'R' certainly visited on two occasions but merely to enquiry as to the woman's progress, and did not make any examination.
Bacteriological examination of swabs submitted from the case disproved the likelihood of infection carried from the maternity Home. The infection was staphylococcal. Case 11 then was very probably a coincident case of mild sapraemia.

Two cases of erysipelas occurred towards the end of the epidemic (Page 43).

The child of Case 9 developed scrotal erysipelas on November 30th, and Nurse 'H' who attended Case 9 developed facial erysipelas on December 4th. This is worthy of note in so far as erysipelas is common where there is sepsis and its incidence makes the record more complete. The incidence of erysipelas among cases of puerperal fever which came to my charge has not suggested

to me that the infecting organism was the same. Its incidence as Ihave found, is no higher in puerperal than other forms of sepsis.

The epidemiology of the outbreak was investigated thoroughly, although without bacteriological examination of specimens from Case 1,- the epidemiology to me is necessarily incomplete.

Several possible sources of infection were elicited as follows.-

(1) A maid, responsible for the cleaning of the wards wherein the cases were discovered was reported to have been incontact with scarlet fever in her own home. Four members of the family developed scarlet fever - two on October 2nd, a third on November 18th, and a fourth on November 22nd. The fourth child was desquamating before the diagnosis was made. The maid was known to have visited her home on November 4th, and 18th, but it was not known to what extent, if any, she had been in contact with scarlet fever as she was dismissed from the maternity home on November 24th. None of the sore throats which developed in the Staff were scarletinal in character. (Page 54)

It was later ascertained that the maid herself contracted scarlet fever on December 13th so she was not likely to be a carrier. This must be regarded as an extremely doubtful source of infection and in the presence of more likely source, was rightly disregarded.

(2). Case 1.- This mother gave a history of chest trouble or at least cough during six months of her pregnancy. She developed bronchitis two days after delivery and was fevered for 10 days. She also had a troublesome cough and an abundant frothy sputum and whatever the infection, it was in that way probably disseminated throughout the ward. Maternity wards are not unfortunately vacated at regular intervals, and a polluted atmosphere may therefore do much damage. The older theory of air borne infection should not entirely be disregarded. The sputum was examined for the presence of the tubercle bacillus and not for the presence of a streptococcus, which may not therefore be excluded.

Case 1 was probably an autogenous infection lighted to activity by the process of child-birth and may have given rise to the epidemic of tonsillitis which occurred in the hospital staff (see below) and so indirectly to infection in the nine mothers who subsequently became febrile.

(3) Only after investigation was the discovery made that an outbreak of tonsillitis among the hospital staff almost coincided with the outbreak of puerperal sepsis. Nurses 'D', 'F', the cook and one maid, were off duty for a few days during this period with tonsillitis. Further throat swabs from every member of the hospital staff were taken and a haemolytic streptococcus isolated from that of Nurses 'A', 'D', 'K' and Doctor 'R'.

(See Table 3).

It is interesting to notice that Nurses 'A', 'H', 'K', and Doctor 'R' did not at any time complain of sore throat nor was there any evidence when examination was made of recent inflammation of the fauces.

Table 3 clearly indicates that every m other, including Case 1 was attended by at least one of the above. It is significant that this outbreak of tonsillitis should so closely coincide with the outbreak of puerperal sepsis, and that the causative organism in both infections was a haemolytic streptococcus with identical, morphological and cultural reactions.

It is however, important to notice that Cases 1 and 2 proceded the tonsillar infection which suggests that the incidence of puerperal sepsis was the cause of the tonsillar infection.

Nurse 'D' figures in no less than 6 cases (Table 3). Her duties were purely supervisory - she only attended to nurses who effected the delivery. Nurse 'D' developed a sore throat on November 13th, and in consequence was off duty until November 19th. On return to duty, her first case - No.4.- became septic, fever commencing on the day actually of confinement. This mother was delivered by Nurse 'F' who also had a history of sore throat earlier in the month, but Nurse 'F's' throat swab was persistently negative. On December 3rd Nurse 'D' was still found to have excoriation round the nostrils and

congestion of the fauces. Her throat swab was positive on more than one occasion. If Nurse 'D' were a source of infection - and she herself did not apparently touch the women - this would indicate the high degree of susceptibility of a puerperal patient. It also suggests that the older theory of air borne puerperal infection should be further investigated.

Nurses 'A' and 'K' gave a positive throat swab, but in neither case was there any history or appearance of recent tonsillar inflammation.

(4) Doctor 'R'. On November 22nd Doctor 'R' developed a discharging ear. She gave a previous history of a radical mastoid operation. The ear was quite dry next day, but discharged again on November 26th. On November 22nd (this date corresponds with the duration of Otorrhoea) Doctor 'R' had occasion to attend cases 5, 6 and 7. (See Table 1).

These were the possible sources of infection elicited The maid, a possible scarlet fever contact was excluded. The further relation of scarlet fever to puerperal pyrexia is discussed on page 61. The incidence of tonsillitis no doubt gave origin directly or indirectly to Cases 3 to 10. The source of the tonsillitis is not definite.

Nurse 'A' who attended Case 1 gave a positive culture although she never developed tonsillitis. She was a

possible carrier and perhaps the originator of the epidemic. At the same time this evidence is contradictory because during the time when Nurse 'D' was absented on account of tonsillitis and Nurse 'S' still on duty, no case of sepsis recurred.
This is conflicting; it does not exclude the possibility of Nurse 'A' as the original source of the infection, but strengthens my theory of Case 1 being an autogenous streptococcal infection. The occurrence of tonsillitis among the nursing and medical staff is not uncommon in puerperal fever wards and its incidence is just as like to be the outcome as the source of the epidemic detailed.

Doctor 'R', whose ear discharged on November 22nd had occasion to attend three mothers, cases 5 and 7 to remove an adherent placenta, and case 6 to suture a ruptured perineum. At the time of the outbreak, Doctor 'R' was ruled out as a carrier of infection, but recently I have come across a puerperal fever case where the origin was definitely attributed to a discharging ear. It is perhaps permissible here to record briefly the features of this case.

Case - a multipara. aged 30 years.

Delivery was natural - the mother gave birth to a healthy full time child. There was a slight rupture of the perineum and two sutures inserted. An older child aged 5 years developed simultaneously an acute discharging

ear, and to quiet the child the mother insisted, against medical advice, on having the child to sleep with her. Next day the nurse noticed and remarked that the mother's gown was stained with discharge from the child's ear. The mother became febrile on the fifth day of the puerperium and died on the eighth day of puerperal Septicaemia and Pneumonia.
The sutures did not slough and remained intact."

The record leads me to believe that Doctor 'R' also must be regarded as a possible source of infection.

In Cases 1 to 3, the incubation periods - assuming infection to take place during the confinement - were 2 to 5 days respectively. All three cases showed early predominance of chest symptoms,- in cases 1 and 2, such symptoms appeared first.
This suggests entrance of the organism via the naso-pharynx. The idea has occurred to me while reviewing puerperal records - that milder infections usually have a longer possible incubation period, and that in some such cases the invading organism enters via the naso-pharynx or tonsils. In mild infections I have remarked that chest symptoms are often early exhibited, whereas in the more virulent infections chest symptoms are late - a terminal pneumonia ~~frequently~~ being very usual in fatal cases. After all, the tonsil is a very usual port of entrance for streptococcal infection. Moreover, in neither case 1 or 2 was the vaginal discharge

purulent or profuse, and chest symptoms were prominent in cases 1, 2, and 3.

This idea agreeably complies with my theory that case 1 - an autogenous chest infection - simultaneously by air dissemination or contact, caused tonsillitis in the staff and infected case 2.-X-

Case 3 might have been similarly infected but more likely the infection was conveyed by Nurse 'D', who developed tonsillitis the day following the confinement of Case 3 at which she attended.

Case 4, attended by Nurse 'D' after her return to duty, was a direct virulent infection. The mother became febrile within twenty-four hours and was dead within a week.

The infection in this, and other cases which followed was undoubtedly conveyed by the nursing and medical staff, probably at the confinement, and the entrance of the infecting organism was per vaginum.

-X-Case 1 was not diagnosed as puerperal pyrexia and the theory of an autogenous infection, aggravated by child birth, indirectly infecting the staff and subsequent cases, has only been suggested to me because of the prevalence of chest symptoms in Cases 1, 2, and 3.

The epidemiology then may be traced to Nurse 'A' as a carrier infecting Case 1, or Case 1, an autogenous infection aggravated or actuated by the process of child-bearing infecting the Staff and directly or indirectly the cases which followed.

The infection was rendered more virulent and further propagated by the occurrence of tonsillitis from the same infection among the nursing staff of the maternity home.

SECTION 6.

S C A R L E T F E V E R

IN RELATION TO

PUERPERAL PYREXIA.

Some reference has already been made to scarlet fever in relation to puerperal fever. Its incidence as a possible source of infection in the epidemic detailed was considered and dismissed as highly improbable.

It is unlikely that the same strain of streptococcus produces both diseases. It may be that the causative organisms have properties akin and that to an extent a former attack of scarlet fever might diminish the severity of a subsequent streptococcal infection during the puerperium.

Table 4 (Page 47) shows how cases 5 and 7 were in almost every way parallel. In both delivery was natural but complicated by retention of the placenta which had to be manually removed with the aid of a general anaesthetic by the resident doctor. Both mothers were primiparae, confined on the same day, and attended by the same doctor.

Case 5 died, and Case 7 recovered. Case 7 too was a definite case of puerperal septicaemia, as a short chained streptococcus was isolated from the blood culture. Case 7 in childhood had scarlet fever, and case 5 had not any previous infectious disease. It is just possible that the former attack of scarlet fever in Case 7 conferred a degree of immunity to the present streptococcal infection.

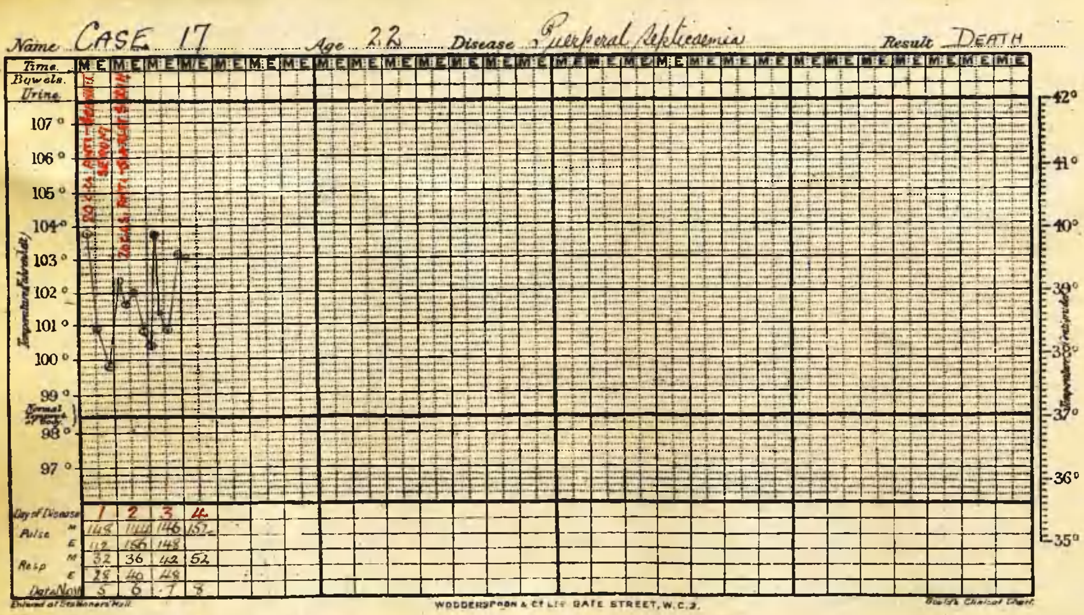
This is no more than an observation - probably of little value, but looking over the records of fatal cases which came under my charge, I find that only two mothers

fatal
out of sixty/cases, gave a history of previous scarletinal infection in childhood. In one of these two, death was due to pulmonary embolism (diagnosis was confirmed by post-mortem examination). This mother's progress had been absolutely satisfactory, and had not this unforseen complication arisen she would have made good recovery.

A further observation was that no case of puerperal pyrexia contracted scarlet fever, although I had simultaneous charge of acute scarlet and puerperal fever wards. It would almost appear as though a streptococcal infection during the puerperium confers a degree of immunity to scarletina.

This leads me to mention the use of scarlet antitoxin in the treatment of puerperal pyrexia. In a small series of cases, nine in all, I administered scarlet antitoxin, intramuscular, in doses varying from 10 to 60 c.c's, and in no case could I truly admit improvement the result of this treatment. There was certainly no fall of temperature and pulse rate within twenty-four hours as is usual when the serum is administered to scarlet fever patients. Still, it is just to mention that owing to delay in notification, and admission to hospital the serum was administered late,- from the third day onwards. Even in scarlet fever, serum might be of little avail at this late date.

It has occurred to me that scarlet antitoxin might be used to better advantage as a preventive measure.


Name CASE 17
Age 22
Disease Puerperal Septicaemia
Result DEATH
Time.
Bowels.
Urine.
M E
107° 106° 105° 104° 103° 102° 101° 100° 99° 98° 97°
Temperature (Fahrenheit)
Normal Temperature of Body
42° 41° 40° 39° 38° 37° 36° 35°
Temperature (Centigrade)
Day of Disease 1 2 3 4
Pulse M 148 144 146 152
Pulse E 112 156 148
Resp M 32 36 42 52
Resp E 28 40 48
Date Nov 5 6 7 8
Entered at Stationers' Hall
WOODERSPOON & Cº LTD GATE STREET, W.C.2.
Guild's Clinical Chart

A small prophylactic dose might be given to mothers, unavoidably exposed to infection in a maternity home, where puerperal pyrexia had occurred.

It was not unusual to find puerperal women admitted with an erythema, congested fauces, strawberry tongue, indeed all the clinical signs of scarlet fever. Little heed was paid to the erythema as it was known that the risk of infection to other mothers was negligible The administration of scarlet antitoxin in these cases was futile, which partly disproves the likelihood of such being a true scarletinal infection. Below is the record of such a case. Serum was administered on admission, but no improvement was noted, and the woman died three days later.

CASE 17. Primipara. aged 22 years.

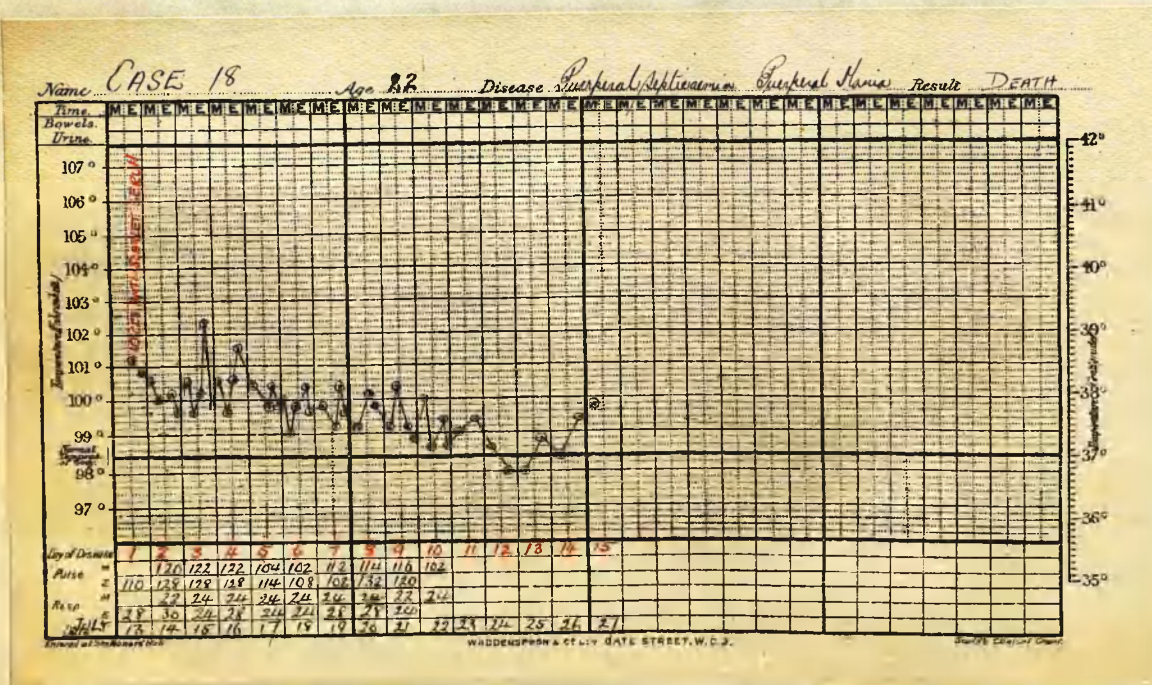
Case 7 was confined on October 30th 1926. Delivery was natural. She became febrile on November 3rd 1926. The onset of fever was accompanied by indefinite pains, sickness, delirium, and insomnia.

Vaginal discharge was profuse and offensive.

Hospital record.

5.11.26. On admission)Temperature 103.8° F.
)Pulse rate 148 per minute.
)Respirations 32 per minute.

The woman appears acutely ill. There is a bright generalized erythema intense on the extensor aspect of the limbs and indistinguishable from scarletina. The throat is deeply congested



Name CASE 18
Age 22
Disease Puerperal Septicaemia Puerperal Mania
Result DEATH
Time.
Bowels.
Urine.
107°
106°
105°
104°
103°
102°
101°
100°
99°
98°
97°
42°
41°
40°
39°
38°
37°
36°
35°
Day of Disease
Pulse
Resp
July
WADDENSPRON & CO LTD GATE STREET, W.C.2.

and the soft palate injected. The abdomen is quite lax, but the uterine fundus extends midway between the umbilicus and symphysis pubis. Vaginal discharge is profuse, purulent, and foul. Heart sounds are soft. Pulse is frequent but fairly well sustained.

Lungs appear normal. Urine - catheter specimen - contains a haze of albumen.

On admission 20 c.c. concentrated scarlet antitoxin was administered intramuscular.

Other treatment - Fowler position.

Ergot 3fs 4 hourly for 24 hours; salines per rectum.

8.11.26. Patient is toxic and delirious. Conjunctivae are jaundiced.

2nd injection of scarlet antitoxin - 20 c.c.

There was no response to treatment whatever, and patient died early on the morning of November 8th.

CASE 18. (Puerperal mania and septicaemia.) was one of the first of the series treated. A small dose of serum was injected on admission. No improvement was noted.

Case 18x Primipara, aged 22 years.

Confined July 3rd 1926. Delivery was instrumental

and placenta expelled broken. Febrile July 11th, 1926. History of insomnia and delirium.

Hospital record.

13.7.26. General condition is very poor. The woman appears extremely ill - skin bathed in perspiration. Conversation is not rational but not quite maniacal - could be described as nervous delirium. The tongue is fairly moist and only lightly furred.

There is subinvolution of the uterus which extends almost to the umbilicus. Vaginal discharge is scanty, purulent, bloodstained, and has a sickly odour. There is an extensive sloughing perineal tear and much laceration of the vaginal wall.

Pulse is running (Urine is clear).

10 c.c. scarlet antitoxin intramuscular.

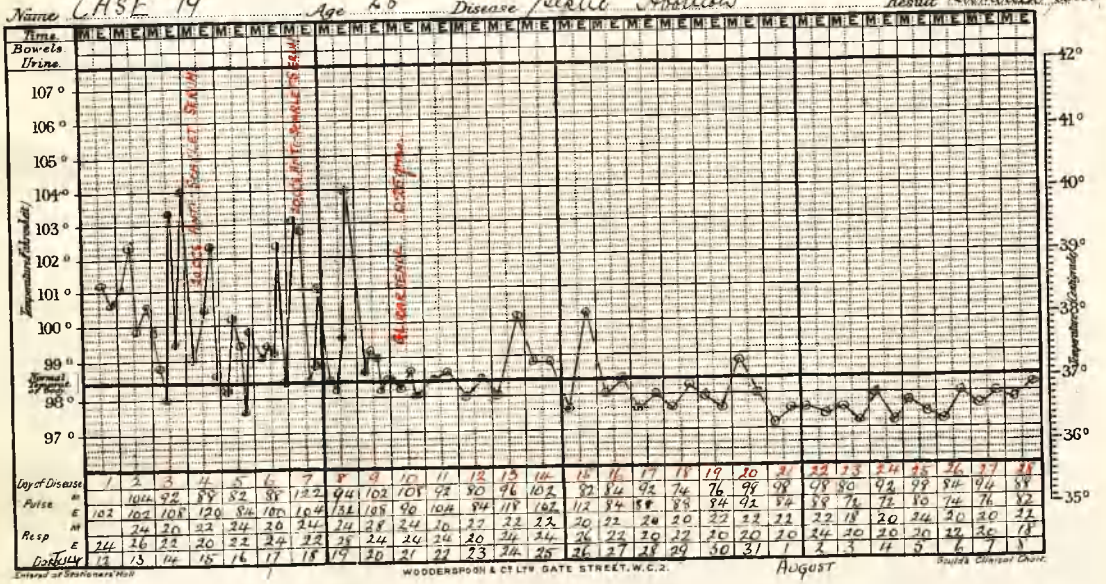
16.7.26. Patient is less talkative, more lethargic, at times can only be roused with difficulty.

19.7.26. A rounded swelling is palpable in the left iliac fossa. It appears to be slightly mobile.

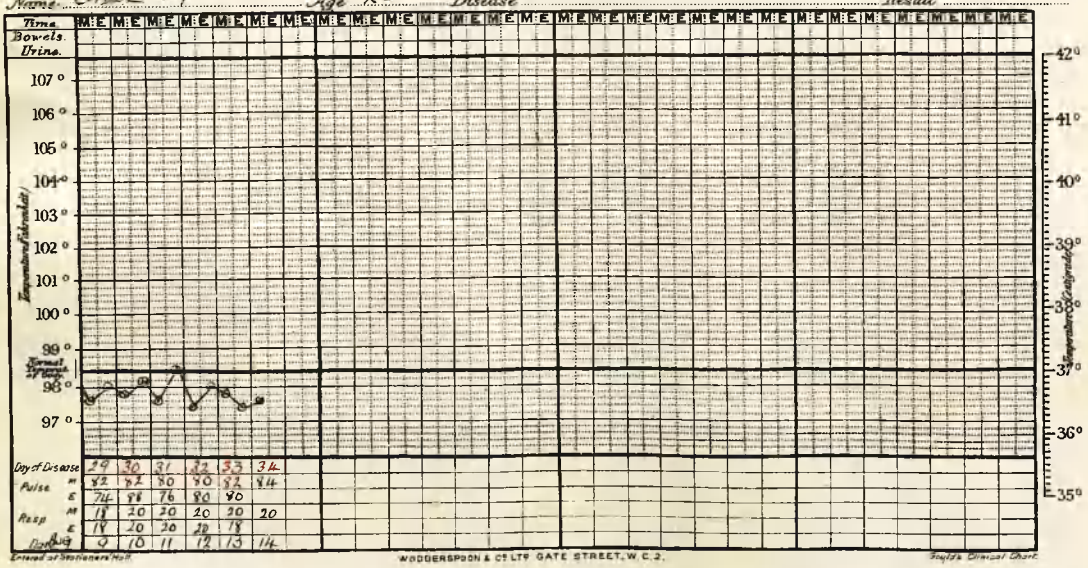
Uterus is now normally contracted - (patient had ergot 3fs 4 hourly for 24 hours on admission).

20.7.26. Patient has passed per rectum a small rounded fatty mass, like a teased out golf ball.(This mass was thought to be the remains of a small ball of wool or twine which patient had

Name CASE 19 Age 28 Disease Septic Abortion Result Recovered well



Name CASE 19 Age 28 Disease Result



inadvertantly swallowed).

26.7.26.No improvement. Death.

CASE 19. In this case recovery was good but there was no immediate benefit derived so far as one could judge from the serum administered.

Case 19. Multipara. Aged 28 years.

Aborted June 28th 1926 (10 weeks pregnant)

There was no doctor or midwife in attendance.

Fever began on July 10th 1926. Rigors were frequent.

Hospital record.

12.7.26. General condition is poor. Mucous membranes are very pale. The tongue is coated and rather dry. Abdominal examination is normal. Vaginal discharge is almost nil.

Bacteriological findings.

Blood culture - sterile.

15.7.26. Frequent rigors.

(1) 20 c.c. antiscarlet serum intramuscular.

18.7.26.(2) 20 c.c. antiscarlet serum intramuscular.

20.7.26. Daily rigors persist.

21.7.26. Afebrile, and more comfortable. Pulse rate has fallen. Mucous membranes are still very pale. Glucarsenol 0.25 grms.

14.8.26, General condition much improved.
Convalescence satisfactory.
Dismissed well.

Results from treatment with scarlet antitoxin were invariably disappointing but as before mentioned the serum was without exception administered after the third day of pyrexia.

The fact, however, that puerperal cases appear to have some immunity to scarletina suggests that prophylactic treatment might be more encouraging.

SECTION 7.

SOME OBSERVATIONS ON

(a) MATERNITY HOMES.

(b) ISOLATION WARDS FOR PUERPERAL FEVER.

There is a growing tendency for the general practitioner to urge mothers to arrange for confinement in maternity homes. No doubt there is a determining factor in each case, but the following reasons seem to apply to most. -

(1) The practitioner finds from experience that it is unprofitable to patients and himself to divide his time between routine medical work and midwifery. This particularly applies to the busy doctor who practises what may be termed "Good midwifery" (This expression I borrowed from the casual conversation of a country doctor. His explanation on question of "Good midwifery", was that he always waited for full dilatation of the os uteri and so seldom resorted to forceps or administered chloroform. He further explained that although he practised 'good' or 'safe' midwifery he was for that very reason losing his midwifery practice). It is easy to understand how the early relief afforded by forceps delivery with the aid of a general anaesthetic finds favour with mothers. It is difficult to convince a mother that further delay and a little more patience when she is in pain is the better course to follow and naturally the practitioner who offers such advice becomes less popular as an obstetrician. This particular

doctor's solution was to recommend confinement wherever possible in a maternity home.

(2) The practitioner, genuinely impressed by the high incidence of maternal mortality believes that in the maternity home, where aseptic precautions are possible, the mother is less liable to contagion. This belief, genuine no doubt, is fallacious. The idea has evolved from the ante-natal movement. It is right in so far as the practitioner admits danger of sepsis in private, but he has yet to prove that the mother is further safeguarded in a maternity home. An epidemic such as has been recorded occurring in a modern, well equipped, maternity home, gives food for thought.

I firmly believe that meantime the normal case is safer in private. The maternity home, where under existing conditions women are admitted without discrimination on application to the matron, is not the ideal place for mothers.

It is agreed that the attendant in charge of a woman during her confinement should not be associated with routine medical work. The daily round in private practice necessitates contact with incidental infectious disease - as scarlet fever, erysipelas,- other infectious conditions such as tonsillitis, influenza,- and all are likely sources of infection.

The foregoing outbreak illustrates only too plainly the disastrous effects of a simple tonsillitis. Doctors may not always practice what they preach to nurses and midwives. The midwife wears a uniform which can be boiled and is laundered weekly, whereas the doctor wears the same suit of clothes over a period of months and not always does he provide himself with a clean surgical coat for midwifery cases. The midwife is forbidden to attend any case of sepsis, and should a case of pyrexia occur in her practice, all her uniform must be sterilized. In some ways from an aseptic point of view the patient is safer with the midwife. In the country however, where the doctor's work is scattered and some distance necessarily traversed between visits in a relatively pure atmosphere, there is less likelihood of infection being carried. The doctor has been the victim of circumstance because he must always attend wherever he is required. He must attend clean and septic cases indiscriminately.

And yet, apart from this difficulty, one realises the many benefits to be derived from having the family doctor who knows the mother's medical history and has her confidence. The general practitioner, apart from specialists and consultants is the authority on midwifery, but experience has taught that even with aseptic precautions as are possible and recognised as necessary in private, maternal mortality from sepsis

haw not diminished.

The only solution appears to be found in a state maternity service, where the medical officer would be required to have specialised post-graduate experience in midwifery and would have at his disposal only fully trained midwives to work with him. He would follow the mother's condition during pregnancy, anticipate and possibly avert many complications. During the ante-natal period he would gain his patient's confidence. The mother in return would have an attendant who was familiar with her case from the early months of pregnancy, an attendant whose individed attention was given to this branch of medical work, and was not in daily contact with sepsis.

A full account of a complete midwifery service has been ably summarised by Dame Janet Campbell, but I think the general practitioner should be excluded from this service, unless he chose to devote himself entirely to midwifery, and that the medical officer in attendance of the ante-natal centre should be available if need arose at the confinement.

It is difficult to forsee a time when there will be absolute asepsis. In the operating theatre today where apparently every precaution against sepsis is taken - an occasional clean case turns septic. This is not infrequently observed to occur in a particular group of wards, or in a particular surgeon's practice.

May it not be that the surgeon, the theatre sister, someone constantly present is a carrier ? There may be someone with an intermittent aural or naso-pharyngeal discharge ~~=~~ a tonsillar condition - not sufficient to warrant interference or even treatment, but its existence as a source of infection has never been considered. No swab has been taken and the bacteriological findings compared with the existing infection in the patient.

Then the atmosphere of the operating theatre where, on a regular receiving night, case after case is hurried through without interval, can not be pure. The theatre is never really vacated for a period of some hours and although scrupulously clean for the first patient can not be so accounted for the last. Some infection may then be air borne. Where work is so congested the ideal would be to utilize two theatres in rotation for alternate cases.

All that has been said of the surgical theatre may be repeated of the labour ward. Maternity homes are in their infancy so to speak, and already the demand for beds exceeds available accommodation. The wards receive continuously and mothers are confined to bed there for a minimum period of ten days. All excretions are conveyed from the room. The same nurse in attendance on a number of patients - passes directly from case to case. If any infection exists there is

every opportunity for further spread. A harmless autogenous infection in one mother may be more dangerous or even prove fatal to her neighbour.

Beyond asepsis of the mother's toilet, no further precautions are taken. Admissions are not selected - more often the cases are urgent and needy, requiring surgical interference. Many mothers too are primiparae. The incidence of sepsis is admittedly higher in primiparae, and where delivery is instrumental.

No precautions are taken against the spread of gonorrhoea to other mothers, because as a rule, neither the nursing or medical staff are aware of its existence. Precautions are only directed towards preventing ophthalmic infection to the child. Gonorrhoea rarely exists for any time in pure culture, but becomes a mixed infection with which very possibly the streptococcus is frequently associated. And so it would appear that apart from the undoubted benefit which a trained nursing staff can provide and the maternity education which the mother incidentally acquires - she is safer in private.

Reference to TableNo.2, page 45 shows the delay in notification of puerperal pyrexia in a maternity home. Delay was due to some doubt in diagnosis. Where other mothers are exposed to infection, they should be given the benefit of the doubt. Every case of pyrexia should be notified early and the source of infection

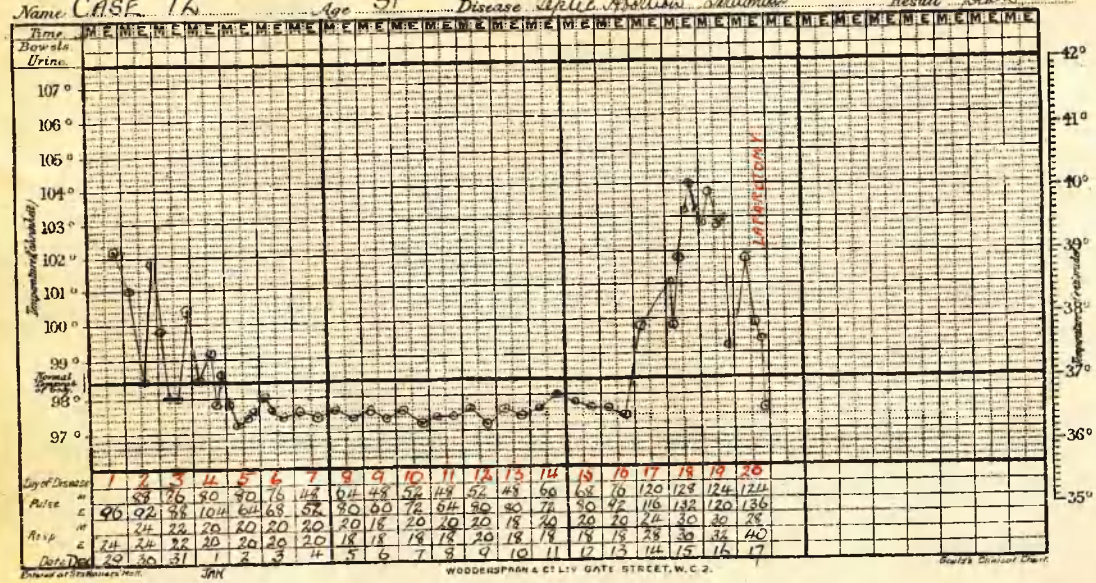
elicited.

The home should cease to receive until the source of infection has been removed. It is not sufficient to isolate the patient who has gone septic,- because unless the infection is autogenous, the same infection will be conveyed to other mothers. This point is made only too clear in the epidemic detailed,- in spite of prompt isolation of each case that turned septic, the occurrence of puerperal fever continued and the infection increased in virulence.

Perhaps this reasoning applies even more to puerperal fever wards. Accommodation at the moment is absolutely inadequate. There are only a few isolated hospitals who admit puerperal fever cases, and women acutely ill have to be conveyed many miles to have treatment. If every case of pyrexia were notified, and all needy cases transferred to hospital, the necessity would become imminent. There is at present just as much need to provide accommodation for puerperal fever cases as there is for prematernity and maternity cases, and this need will continue even with the intervention of ante-natal care unless the midwifery service both medical and nursing is revolutionised and made a separate branch of medicine.

The following case is recorded because of its possible bearing on the dangers of overcrowding cases of puerperal sepsis.

Name CASE 12 Age 31 Disease Septic Abortion Peritonitis Result Death



Day of Disease	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Pulse M		88	76	80	80	76	72	64	68	54	64	52	68	60	68	70	120	128	124	124
Pulse E	96	92	88	104	64	68	52	80	60	72	64	80	80	72	90	92	116	132	120	136
Resp. M		24	22	20	20	20	20	20	18	20	20	20	18	20	20	20	24	30	30	28
Resp. E	24	24	22	20	20	20	20	18	18	18	18	20	18	18	18	18	28	30	32	40
Date Dec.	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

CASE 12. Multipara. aged 31 years.

Previous maternity history.- 3 natural births. All children alive.

Patient aborted on December 4th when she was about six weeks pregnant. There was considerable haemorrhage from this date until admission to hospital. There has been a slight inoffensive bloodstained discharge. The woman became febrile on December 27th. Fever was ushered in with a slight rigor.

Hospital record.

29.12.26. Patient is febrile but quite comfortable. Her tongue is lightly coated, but quite moist. The abdomen is lax, no tenderness to touch. Heart and lungs appear normal. Vaginal discharge is scanty, bloodstained, and offensive.

2.1.27. Progress continues to be satisfactory and patient is afebrile.

13.1.27. Rigor lasting seven minutes. Patient complains of pain in the lower right abdomen. On abdominal examination - resistence to palpation is increased and there is a slight degree of tenderness over this area. The tongue is quite clean and moist.

14.1.27. Patient is more comfortable although temperature is elevated and pulse rate increased. Towards evening pain has diminished. There has been a little sickness and vomiting of greenish fluid.

15.1.27. Fever persists and the tongue is a little dry. Patient appears more rested and does not complain of pain. Bowels are regular.

17.1.27. Patient complains of severe abdominal pain, generalised. There is increased resistence and tenderness - not localised. The abdomen is slightly distended. Bowels are normal. Laparatomy was performed and the diagnosis of a general peritonitis (streptococcal) confirmed. The uterus was found to be well contracted. The incision was extended upwards to permit of examination of the stomach to exclude possibility of perforated gastric ulcer. Patient died the day following her operation.

Reference to the temperature chart clearly shows that case 12 had been afebrile for twelve days when she suddenly became ill. The wards at this time were much overcrowded, and for this reason Case 12, although afebrile for some time had to be detained in the 'Acute' ward. (Accommodation consisted of two large wards with adjoining side rooms. The side room attached to ward 1

was utilized as a theatre. Patients were receivedinto ward 1 and transferred through a partition to ward 2 immediately febrile symptoms had subsided.

This was a case of mild sapraemia where very possibly and unavoidably a virulent re-infection or additional infection due to overcrowding in a septic ward, proved fatal.

And quite apart from any risk of re-infection, it is most prejudicial to recovery for mothers to convalesce in an atmosphere of sickness. Puerperal women are prone to be emotional and highly sensitive. Apart from definite cases of puerperal mania, there are many mild cases of mental perturbance where treatment away from home has averted a more serious development. It was very apparent to me how quickly mothers improved after leaving the 'Acute' to convalesce with mothers who like themselves were on the way to recovery.

Ante-natal work if it is to achieve success,- must not be dissociated from post-natal work. Prematernity care must be continued as post-natal care under the same supervision, not only until the anxious period of the puerperium is passed but the mother should be encouraged to submit herself for examination at the end of one, three, and six months to ensure her condition is satisfactory.

It is often just after the tenth day, when the

mother is able to be about that complications arise. Difficulties too with breast feeding are prone to appear, and supervision is then important to ensure that breast feeding be continued.

The ante-natal movement as it exists, merely touches on the fringe of maternal care. Much of the good is assuredly lost if a strange attendant assumes charge of the confinement and puerperium, and if supervision is limited to the ante-natal period. This can only breed discontent between patient and doctor and will not make for co-operation in the medical service.

SECTION 8.

LATER EFFECTS OF CHILDBIRTH.

Little opportunity has been afforded me to watch the subsequent effects of puerperal sepsis, but daily in a rural area where puerperal pyrexia is said to be a rare occurrence, I am impressed by the number of multiparae who have some disability the result of pregnancy and childbirth.

Such are perineal ruptures, often extensive, where repair has been postponed and forgotten, or omitted; old standing adhesions and thickenings in the lateral fornices, undue sensitiveness of uterine appendages - the result of pelvic cellulitis or parametritis; chronic subinvolution, and all degrees of prolapse of uterus and cervix. There are other disabilities: as - permanent thickening of the leg which can be traced to an attack of phlegmasia alba dolens, and mammary scars from a former mastitis. Few of these mothers give a history of puerperal pyrexia. They more often boast how soon after confinement they were busy about household duties.

From the prevention standpoint it is wrong to consider puerperal fever a specific infection with a definite group of signs and symptoms and the above are disabilities commonly the outcome of septic complications of the puerperium.

These are only the local disabilities and already it has been suggested by Dr. Saleeby and others that such uterine disorders might predispose to or indeed

be the precursors of carcinoma.

Post-natal care should not cease on the tenth day of the puerperium.

Local disabilities are early apparent but even my short experience suggested to me that many diseases believed to be of streptococcal origin are, in women, liable to follow puerperal sepsis. Two diseases impressed me as worthy of investigation.

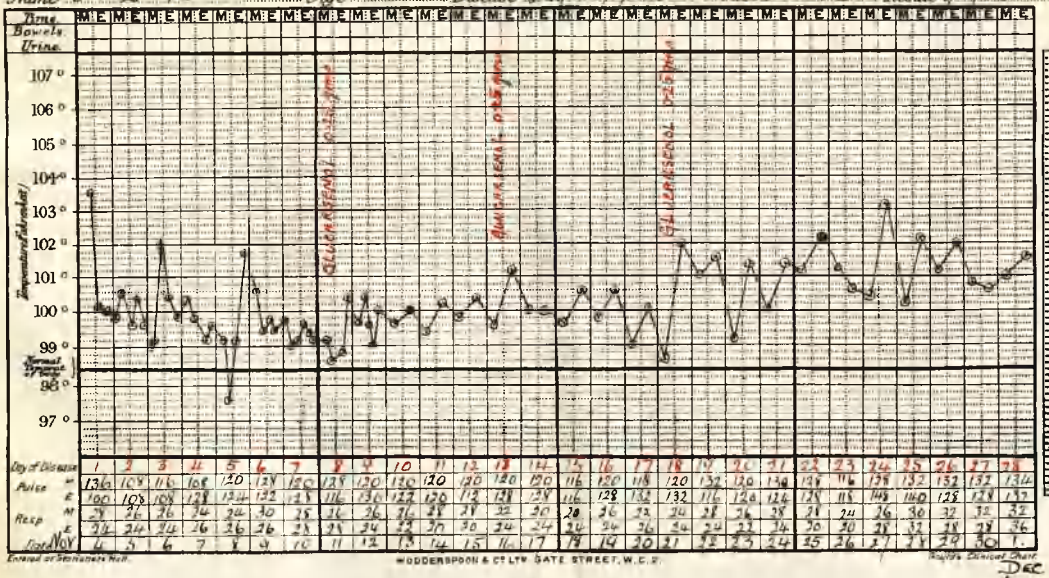
(1) Anaemia (a) Secondary.

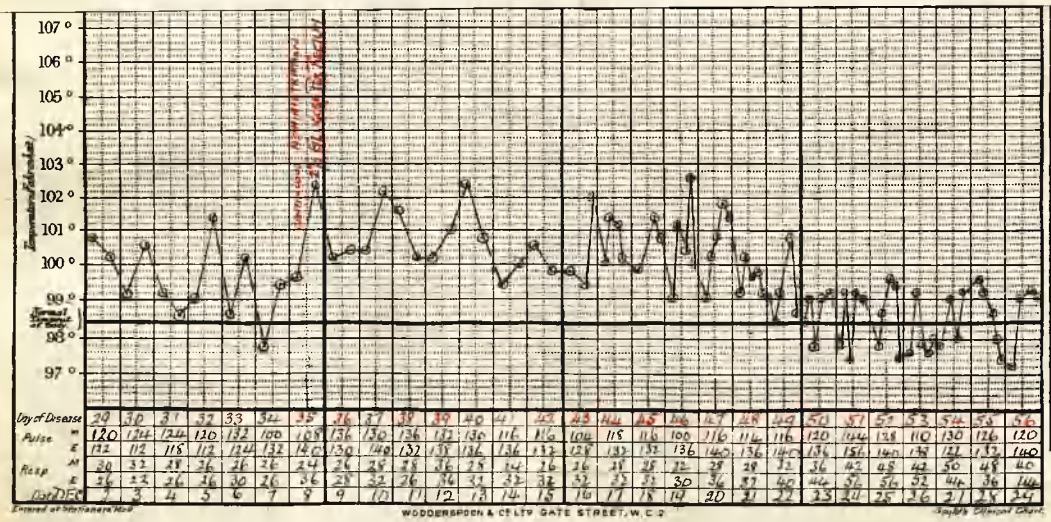
(b) Pernicious.

(2) Rheumatoid arthritis.

The very constant incidence of anaemia lead me to make when possible, blood examination. Anaemia was present in most multiparae who came under my charge. The blood was not, unfortunately, examined as a routine practice as time did not permit, but the results in the few selected cases submitted were striking. Anaemia of some degree was found in every case, and whereas the usual type was that of a secondary anaemia - three of the more severe cases were definitely pernicious in character. The latter, strangely enough, were not in any way associated with ante-partum or post-partum haemorrhage, nor so far as one could gather, was anaemia a prominent symptom during or before pregnancy.

Name CASE 13 Age 30 Disease Puerperal Septicaemia Pernicious Anaemia? Result Irregular Dismissal





Below are recorded three severe cases of puerperal anaemia.

CASE 13. Multipara - 4 previous pregnancies. aged 30 yrs.

Case 13 gave a history of abortion on October 27th when she was about 2½ montsh pregnant. No doctor or midwife was in attendance until November 2nd. There was considerable haemorrhage. Fever began on November 1st accompanied by rigors, pains in the head and insomnia.

4.11.26. Hospital record.

General condition is poor and anaemia is extreme. Patient appears very weak,- mucous membranes are almost blanched. The tongue is clean and moist. The abdomen is normal. Heart sounds are soft and pure - borders are within normal limits. Pulse is frequent, regular, but soft. Vaginal discharge is profuse, purulent, and bloodstained. Urine - catheter specimen - contains a haze of albumen.

Treatment prescribed - Fowler position, douches 4 hourly, Saline with glucose per rectum. Stimulant.

11.11.26.Left phlegmasia alba dolens.

Patient is having a course of glucarsenol injections - intramuscular. Dose 0.25grms.every 5th day.

23.11.26.Anaemia shows no apparent improvement.

Right phlegmasia alba dolens.

Rigor lasting ten minutes. Temperature continues to swing.

29.11.26. Blood examination - Red cells 2,120,000.
Colour index 0.4
White cells 12,8000.

Mucous membranes are not so pale.

8.12.26. Slight rigor.

Further treatment - continuous administration of 2% glucose per rectum (this was contrived by means of an inverted thermos flask, rubber tubing, a small rubber catheter and a regulated dropper).

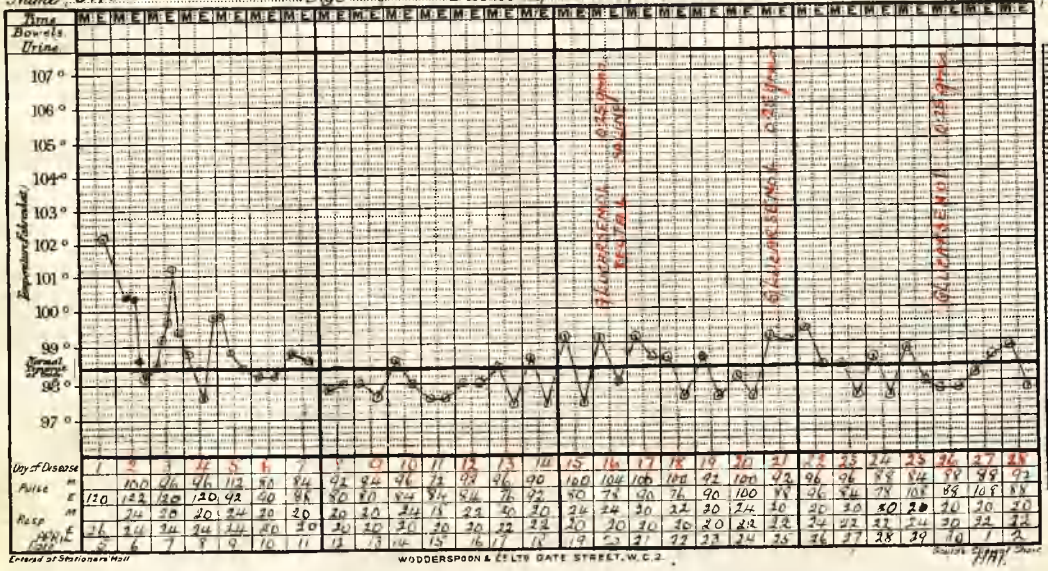
19.12.26. Patient has developed a short cough. Percussion note over right base is relatively dull. Respiratory murmur over the area is slightly bronchial in character accompanied by coarse crepitations and wheezing rhonchi.
Sputum is negative for tubercle bacilli but streptococci have been found - also a gram positive diplococcus.

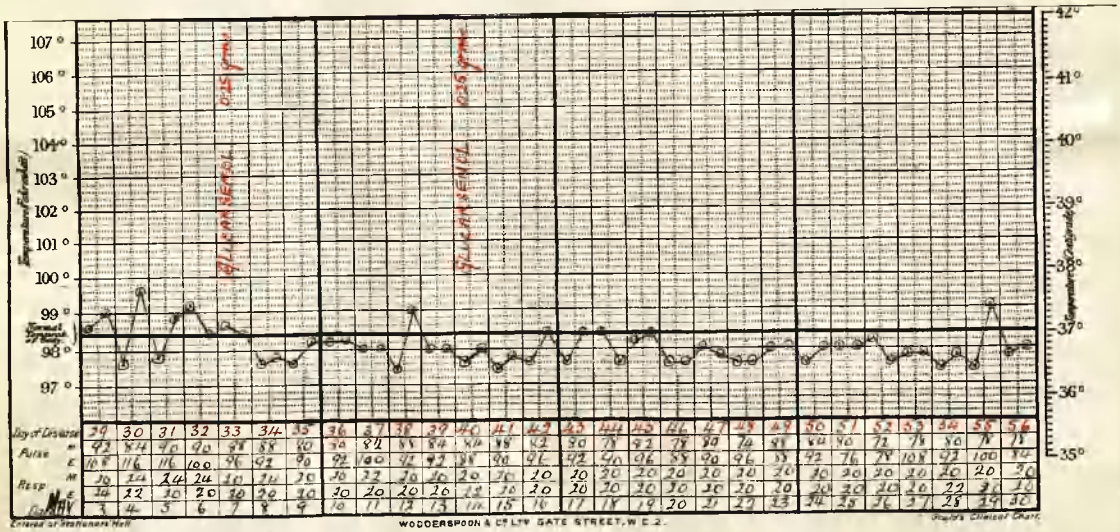
20.12.26. Right side of chest explored with negative result.

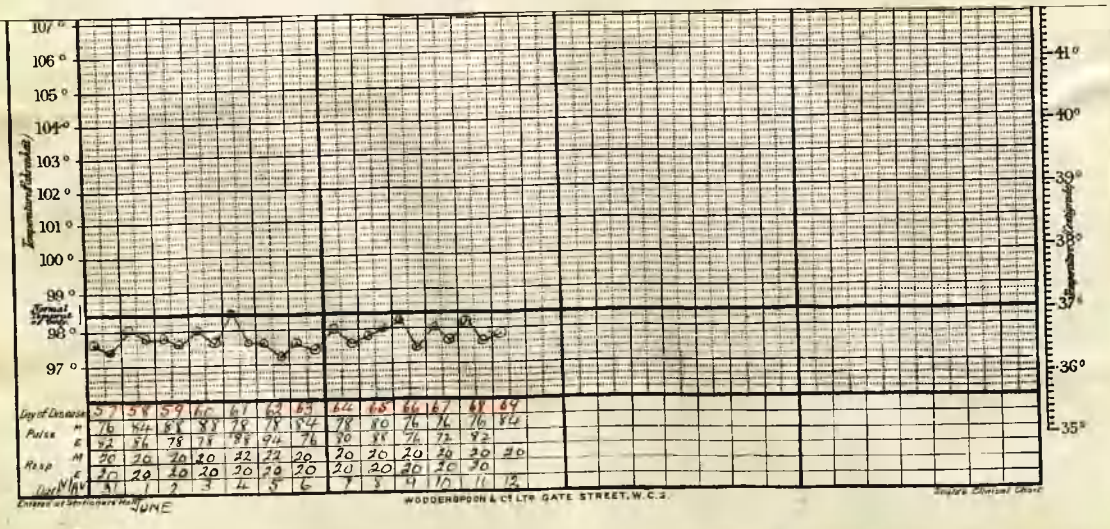
21.12.26. Afebrile. Pulse is extremely soft. Brandy prescribed four hourly.

23.12.26. Patient collapsed - pulse imperceptible.
Strychnine gr. $\frac{1}{60}$ and digitalin gr. $\frac{1}{100}$
Hypodermic injection.

Name CASE 14 Age 37 Disease Septic Incomplete Abortn. Anaemia Result Improved







24.12.26. Blodd examination 1,800,000 red cells.
8,200 white cells.
Haemoglobin not estimated.
Blood film shows ringed staining, anisocytosis, and poikilocytosis. Film now suggests a pernicious anaemia, although on results of first blood examination, secondary anaemia was diagnosed.

30.12.26. Chest shows no sign of improvement. Patient has attacks of air hunger. Between these attacks she appears to be distinctly improved. Case 13 was dismissed a few days later at her own request in the belief that a change of surroundings might do good. I visited one month later and found the patient improved in every way and able to sit up in a chair.

CASE 14. Multipara. - 7 previous pregnancies.aged 37 yrs.

Case 14 gave a history of incomplete abortion (4 months) on March 29th. Bleeding commenced on March 28th, but was very slight. She was admitted to hospital on April 5th 1926.

Hospital record.

5.4.26. Temperature 102° F (
Pulse rate 124 per minute(Admission.
Respirations 24 " " (

Patient appears listless and tired, but does not complain.
The abdomen is rather full, but there is no tenderness.
Uterine fundus is not palpable on abdominal examination.
Vaginal discharge is scanty, blood stained and offensive.
Pulse is soft - varies in force.
Heart sounds have a tic-tac rhythm.

Bacteriological findings.

Intra-uterine smear - Streptococcus and gram+ve diplococcus. Blood culture - nil.

8.4.26. Small piece of placental tissue and blood clot expelled - no haemorrhage.

20.4.26. Extreme pallor of skin surfaces - lips are cyanosed. Patient ordered a course of glucarsenol injections.

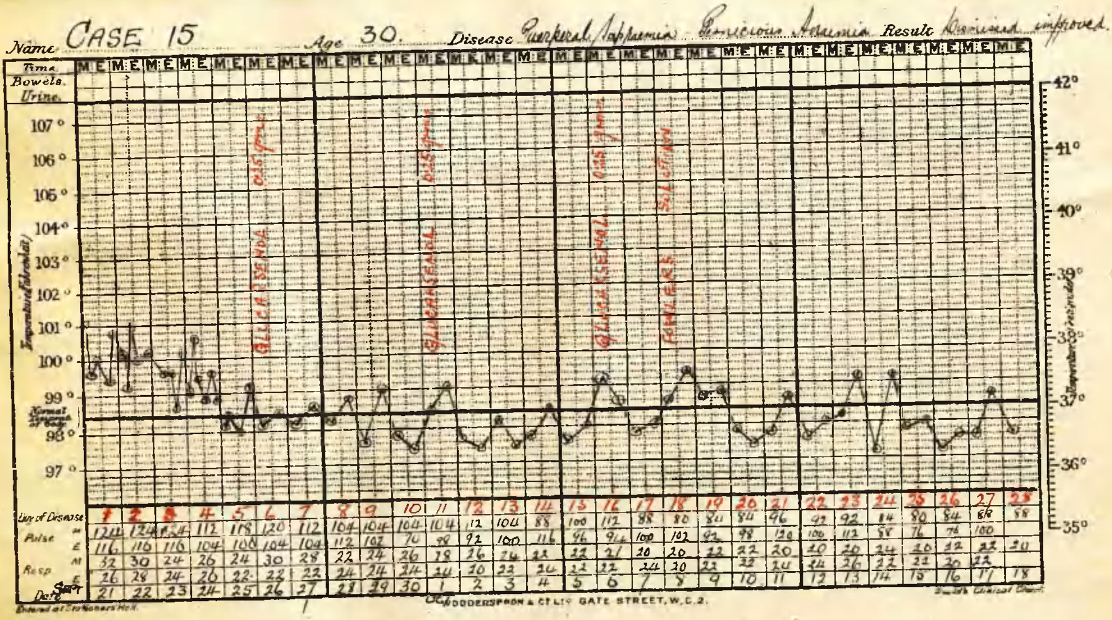
Blood examination - Red cell count - 1,256,000
White cell count - 10,000
Haemoglobin 26%

Blood Film.- Red corpuscles are faintly stained, vary in size. The white cells are polymorphonuclear leucocytes, large and small lymphocytes. There appears to be a relative increase in the number of large lymphocytes.

11.5.26. Afebrile. General condition is distinctly improved.

Blood examination - Red cell count 2,670,000
White cell count 11,000

Film shows no change. Haemoglobin percentage was not estimated.


Name CASE 15
Age 30.
Disease Puerperal Sapraemia – Pernicious Anaemia
Result
improved.
Time
Bowels.
Urine.
107°
106°
105°
104°
103°
102°
101°
100°
99°
Normal
98°
97°
42°
41°
40°
39°
38°
37°
36°
35°
Day of Disease
Pulse
Resp
Date
Entered at Stationers' Hall.
GATE STREET, W.C.2.

11.6.26. Second course of glucarsenol injections completed Colour is much improved.

12.6.26. Dismissed.

CASE 15. Multipara. 2 previous pregnancies.aged 30 years.

Full time male child born September 3rd 1926. Delivery was natural. Patient became febrile on September 5th 1926 and fever was accompanied by abdominal pain. She gave a history of cough and pain in chest one week previously. There has been some sickness. Bowels have been constipated There has been no haemorrhage.

21.9.26. Hospital record.

Patient appears well developed. There is an extreme degree of anaemia - skin surface and mucous membranes are blanched.

Temperature 1010 F (
Pulse rate 124 per minute(On admission.
Respiration 30 per minute(

She appears quite exhausted and the slightest attempt at conversation is an effort. The tongue is fairly clean but rather dry.
The abdomen is slightly full - no rigidity or tenderness. Uterus appears to be normally contracted. Vaginal discharge is scanty, purulent, and foul.

Cardiac borders are within normal limits - sounds are ill-defined and soft. Pulse is soft - regular in force and rhythm.

Lungs - The respiratory murmur over the left base is harsh but not accompanied by adventitious sounds.

Urine - catheter specimen - haze albumen.

Bacteriological findings.-

Intra-uterine smear - streptococcus (short chain)

Blood examination - Red cell count 1,320,000

White cell " 5,000

Colour index 1.0%

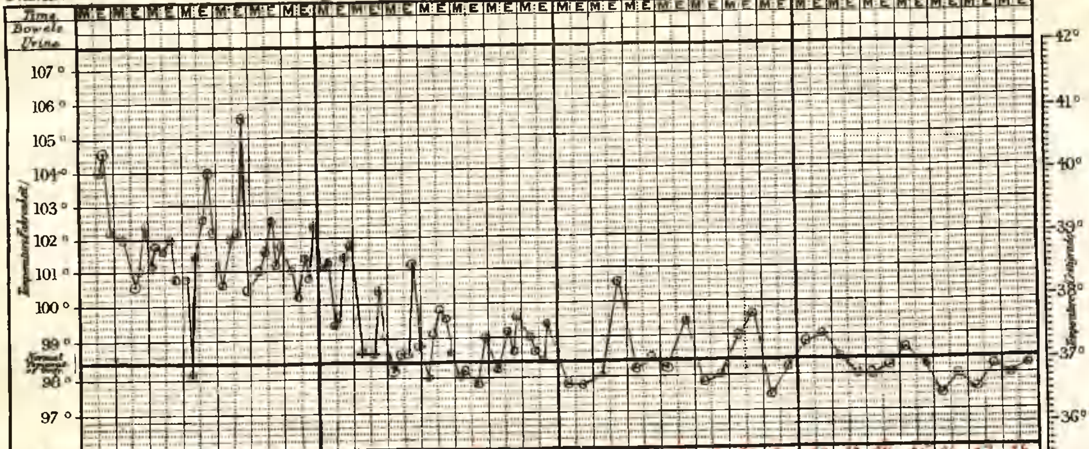
Blood film is indicative of pernicious anaemia.- Red corpuscles are faintly stained and shews anisocytosis, poikilocytosis and polychromasia. There is an occasional megabolast and mast cell, and a degree of leucopenia.

26.9.26. Afebrile.

Patient had a course of three injections of glucarsenol (0.25grm dose) followed by a course or arsenic and iron by mouth. Her condition steadily improved and she was dismissed on October 18th on the understanding that she would attend her private doctor.

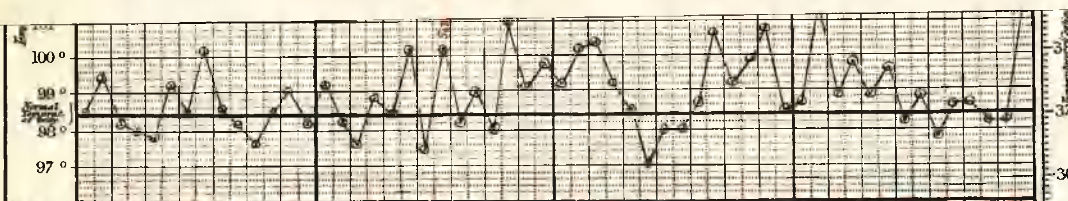
Unfortunately there is no further record of blood examination as I was off duty for some time.

Name: CASE 16 Age: 37 Disease: Puerperal Septicaemia - Puerperal Pyaemia / Pneumonia - Rheumatoid Arthritis Result: Discharged / Rheumatoid Arthritis



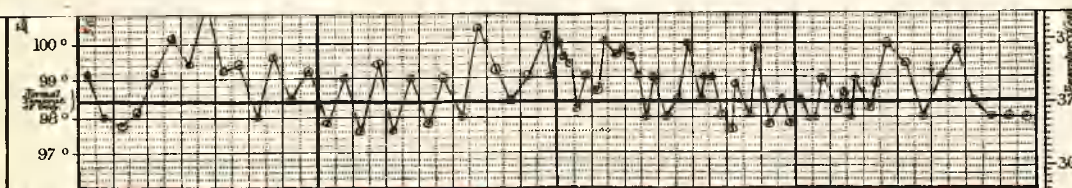
Day of Disease	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Pulse M		136	140	130	108	132	118	112	108	108	108	96	96	104	96	104	108	104	96	92	112	96	94	92	88	84	78	100
Pulse E	124	116	120	140	122	126	136	116	120	112	100	88	104	110	108	108	112	112	104	108	112	108	92	108	100	92	108	100
Resp M		32	32	32	32	36	32	32	30	32	30	28	26	26	26	20	28	20	28	34	30	24	24	24	24	20	24	22
Resp E	26	26	32	32	36	34	48	28	28	24	26	32	32	26	26	22	32	22	24	24	36	26	22	22	22	24	22	22
Date NOV / DEC	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

Entered at Stationers' Hall WOODERSPOON & Co LTD GATE STREET, W.C.2. Boyd's Clinical Chart



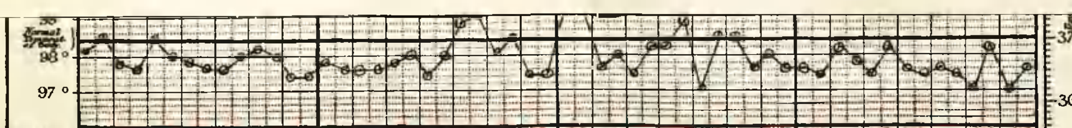
Day of Disease	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
Pulse M	100	100	96	92	112	88	104	104	88	100	104	96	104	116	100	112	96	112	104	118	120	104	120	100	116	124	120	120
Pulse E	116	118	116	120	112	120	108	108	112	124	128	112	136	120	128	118	120	120	112	120	108	112	108	124	108	108	108	104
Resp M	22	22	24	22	24	24	24	26	24	24	26	24	24	28	32	28	28	26	22	26	28	26	26	24	30	24	28	22
Resp E	24	22	22	22	22	24	24	24	22	24	30	32	40	26	26	26	26	26	26	28	24	24	24	26	24	24	24	24
Date DEC / JAN	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14

Entered at Stationers' Hall WOODERSPOON & Co LTD GATE STREET, W.C.2. Boyd's Clinical Chart



Day of Disease	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84
Pulse M	120	116	116	128	124	112	108	112	116	116	104	116	124	108	144	132	136	116	116	110	136	108	128	112	108	112	108	100
Pulse E	92	92	124	128	128	124	112	108	104	116	108	108	128	144	142	128	136	132	138	128	128	131	132	132	136	128	128	128
Resp M	24	26	26	28	26	24	22	24	24	24	24	22	26	22	36	30	36	26	28	32	32	28	32	28	28	28	28	24
Resp E	26	20	26	32	44	24	24	24	24	24	24	28	28	28	28	32	36	32	36	32	28	32	32	32	32	28	28	28
Date JAN / FEB	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11

Entered at Stationers' Hall WOODERSPOON & Co LTD GATE STREET, W.C.2. Boyd's Clinical Chart



Day of Disease	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112
Pulse M	96	90	92	88	84	84	84	88	88	84	86	100	90	96	122	102	112	108	100	92	96	96	108	92	88	88	88	96
Pulse E	92	128	96	112	120	108	108	108	100	116	108	112	112	98	112	112	104	92	96	96	96	98	90	90	94	96	92	92
Resp M	24	22	24	22	22	20	22	22	20	22	22	24	22	20	22	24	22	24	24	24	24	24	24	24	22	24	24	20
Resp E	20	28	24	24	24	24	24	20	24	24	24	24	24	20	24	24	24	20	20	22	20	20	20	22	20	20	20	20
Date FEB / MARCH	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	1	2	3	4	5	6	7	8	9	10	11

Entered at Stationers' Hall WOODERSPOON & Co LTD GATE STREET, W.C.2. Boyd's Clinical Chart

Day of Disease	113	114	115	116	117	118	119
Pulse M	88	100	96	100	96	88	96
Pulse E	86	100	92	02	104	88	
Resp M	22	22	22	20	20	20	22
Resp E	20	20	20	20	24	22	
Date MARCH	12	13	14	15	16	17	18

Entered at Stationers' Hall WOODERSPOON & Co LTD GATE STREET, W.C.2. Boyd's Clinical Chart

2. RHEUMATOID ARTHRITIS.

There appears to be a tendency during the latter part of the pyrexial period or in convalescence to joint pains. The condition does not always respond to salicylate treatment. The joints are swollen, very painful on the slightest movement and the temperature is elevated. Treatment with salicylates in some cases relieves pain but temperature continues elevated. The condition suggested to me a type of rheumatoid arthritis commencing with acute febrile symptoms. Such a condition has been described by Dr. Stockman.

Stockman 12.

I have also noticed an occasional case of so called acute rheumatism complicating scarlet fever where the joint condition did not respond to salicylate treatment.

The following case is well worthy of record because typical joint deformities appeared before the patient's dismissal from hospital. Deformity also persisted after febrile symptoms had subsided.

CASE 16. Multipara. 3 previous pregnancies. aged 27 years.

Case 16 was confined on November 9th 1926. Delivery was natural and placenta expelled whole. Fever ensued on November 18th with a slight rigor. Patient complained of severe pain in the left shoulder and persistent sense of nausea.

Hospital record.

20.11.26. General condition is fairly good.
Patient appears very toxic and ill. Breathing is distressed. The tongue is dry and coated with a closely adherent brownish fur. There is no abdominal distension and the uterus is involuted. Vaginal discharge is moderate, offensive - purulent.
(Bacteriological findings.- Intra-uterine smear - streptococcus, short chain).
Pulse rate is accelerated and heart sounds abrupt. The second pulmonic sound is slightly accentuated.
Lungs.- Percussion note over left base is flattened. Respiratory murmur over the right apex anteriorly and left base, posteriorly is tubular and accompanied by moist crepitations. Sputum is rusty.
Urine - catheter specimen - haze albumen.

22.11.26. Conjunctivae are jaundiced.

30.11.26. Fall of temperature by lysis.
Chest is much improved - percussion note now almost resonant. Conjunctivae are clear.

2.12.26. Tense swelling - non fluctuant - over left buttock. Swelling explored with negative result.

20.12.26. Swelling again explored and a few c.c of thick

pus aspirated. Swelling incised and free evacuation of considerable quantity of foul smelling pus.

(Pus examined - streptococcal infection).

28.12.26. Temperature sharply elevated and patient complains of joint pains. Wrist and finger joints are swollen and tender. Sodium salicylate gr.20 with sodium bicarbonate gr.20 four hourly was administered by mouth and mythyl salicylate applied to the inflamed joints.

(Temperature continued elevated although salicylate treatment was pushed to produce tinnitus)

13.1.27. Elbow joints now painful and swollen. Temperature continues to swing. Patient has had a further course of salicylate treatment.

18.1.27. Left ankle swollen and extremely painful on movement.

28.1.27. Left leg and thigh swollen almost three times normal size.- very tense. The leg is cyanosed - dark purple in colour - and shews a few purpuric spots. The swelling does not pit on pressure.

Left thigh was explored to exclude the possibility of abscess formation but no pus was aspirated.

6,2,27, Left leg almost normal but right leg and thigh now tense swollen and discoloured.

7.2.27. Oedema and bulging of the right lower abdominal wall so that it appears to be constricted by poupart's ligament.

9.2.27. Left leg is normal. Swelling on right left is quickly subsiding. Patient still complains of 'rheumatic ' pains in her finger joints and left arm. There is now definite enlargement and flexion deformity of the finger joints and ulnar deviation of the wrist.

18.2.27.Patient has been afebrile for three weeks. Swelling and deformity of fingers and wrist joints persists and there is thickening of both ankles.

There is a little residual dullness over the base of the left lung probably due to pleural adhesions. Dismissed.

This was a case of puerperal septicaemia, complicated by pneumonia, jaundice, gluteal abscess, phlegmasia, and rheumatoid arthritis.

These are only a few isolated cases recorded because they particularly impressed me at the time and have remained fresh in my memory. They suffice to show that the ill-effects of puerperal sepsis are far reaching.

The immediate prognosis of puerperal sepsis may be

favourable, but the ultimate prognosis has been largely disregarded. The immediate effects of childbirth too may be favourable but the ultimate prognosis will only be understood when post-natal supervision is continued after the tenth day of the puerperium.

The state ante-natal clinic even now admits post-natal cases, but as a rule attendance has to be discouraged because such supervision rightly falls to the doctor in private who delivered the mother.

This makes still more desirable the establishment of continuous ante-natal, natal, and post-natal supervision under one authority, when a complete record of every mother's maternity history would be available for future reference.

These few cases, chosen at random are sufficiently striking to suggest that the results of routine post-natal investigation would make urgent the need for preventive treatment of septic complications of childbirth. There is no other satisfactory treatment and the mortality constantly high is not diminishing. Preventive measures limited to aseptic precautions during delivery have proved futile because ante-natal prevention has been lacking.

Ante-natal prevention embodying a complete and continuous maternity service conducted entirely apart from general medicine which necessitates contact with sepsis would to a large extent minimise the incidence of infection.

SECTION 9.

C O N C L U S I O N S.

The ante-natal movement is incomplete for all concerned because the pre-maternity centre is dissociated almost entirely from natal and post-natal work. This is prejudicial to the mother and makes for discontent between public health authority and general practitioner. The medical officer who follows the ante-natal record should be available if need arise at the confinement and the doctor who delivers the mother should rightly continue post-natal supervision. Post-natal supervision should not cease on the tenth day of the puerperium. Every mother should have continuous maternity care from the early months of pregnancy, during delivery, and until her condition post-natal is satisfactory. It would then be possible to have a record of every mother's maternity history and much light would be thrown on diseases of women as the outcome of child birth and septic complications of the puerperium.

Maternal mortality from childbirth is largely attributed to puerperal septicaemia and the only satisfactory treatment of this disease is preventive. Preventive measures limited to aseptic precautions during delivery have only partially achieved success

because -

(1) Pre-natal care and examination is lacking or incomplete.

(2) Patients entrusted to midwives are not examined before labour ensues by a doctor.

(3) Aseptic precautions are unavoidably incomplete at the hands of the general practitioner whose daily work necessitates contact with sepsis and infectious disease.

Routine confinement in maternity homes, under existing conditions, will not reduce maternal mortality from childbirth. Admissions are made without discrimination. Primiparea and abnormal cases likely to require surgical or instrumental interference figure largely. In such the incidence of sepsis is high and mortality correspondingly increased. Every mother and particularly primiparae should be carefully examined by a doctor before application for admission is made.

Maternity wards receive continuously. They should be vacated at regular and frequent intervals for cleaning, airing and disinfection.

As in private, the possible incidence of venereal disease is largely disregarded . Precautions are for the most part directed towards preventing ophthalmic

infection to the child and not towards preventing further spread of gonorrhoea and associated infection to other mothers. The gonococcus rarely exists in pure culture and it is equally important to examine vaginal discharge for the presence of the streptococcus which is just as like to infect the mother as the gonococcus is to infect her child. An apparently harmless autogenous infection in one mother may prove more serious to her neighbour. Aseptic precautions can not be accounted complete until risk of infection from venereal disease is averted by compulsory notification.

Notification of puerperal pyrexia in the maternity home, as in private, is frequently delayed or omitted. Every case of pyrexia should be accounted a potential case of infection, for preventive reasons, and notified within twenty-four hours from onset of fever. The patient should be isolated without delay, and further admission refused until the original source of infection has been traced or eliminated. It is not sufficient to isolate the patient because, unless the infection were autogenous, other mothers would still be exposed to the original infection. Intra-uterine smears should be taken from the pyrexial case, or even in the absence of pyrexia, from any case where vaginal discharge is purulent or offensive, and examined bacteriologically.

The isolation of the haemolytic streptococcus would almost justify the diagnosis of puerperal fever although its absence would not negative the same diagnosis.

The occurrence of any inflammatory conditions among patients or staff should immediately be investigated. Any member suffering from inflammatory condition, or in the absence of clinical signs, - submitting a swab positive for the haemolytic streptococcus, should be isolated until such swab has been returned as negative.

Mothers exposed to streptococcal infection during the puerperium might have administered a prophylactic dose of anti-scarlet serum. Puerperal fever cases seem to have a degree of immunity to scarlet fever and the earlier incidence of scarletina seems to lessen the severity of a streptococcal infection during the puerperium.

Apart from incidental maternity education, the luxury and benefit of a well equipped institution, the normal case, given adequate accommodation and home facilities, is safer in private . Without due precautions, the schooling and intimate association of mothers during the puerperium, - a time when conditions are favourable to infection - will not decrease the risk of sepsis.

Persisting high mortality from puerperal septicaemia calls for the establishment of isolation

wards to admit necessitous cases. Existing accommodation is quite inadequate. Mothers acutely ill have often to be conveyed many miles to receive urgent treatment and the delay incurred makes the prognosis of recovery less favourable. All isolation hospitals might be designed to receive puerperal fever patients. It is not in every way advisable to nurse septic cases in the isolation block of the maternity home, as the same doctor would then be in attendance on clean and septic patients The isolation block of the maternity home should be used as an observation ward for doubtful cases of infection. It is undoubtedly beneficial to the pyrexial patient to have further attendance from the same doctor, but in hospital, for preventive reasons, consideration only is extended to the individual, and preference must always be given to the majority. At the same time it is unjust to transfer a woman acutely ill to an overcrowded septic ward where there is unavoidable risk of further infection.

The chief objections to the practice of midwifery in private seem to be -

(1) Occurrence of complications which might warrant surgical interference.

(2) Want of necessary accommodation and home facilities.

(3) Risk of contagion.

Ante-natal care preceded by prenuptial examination would minimise the necessity for instrumental or surgical interference. The maternity home could be reserved for abnormal cases likely to require surgical interference or specialised treatment and for cases where facilities at home were unsuited. Available accommodation in private should be inspected and where inadequate, confinement in a maternity institution strongly recommended.

Preceded by scrupulous ante-natal care, to include inspection of accommodation available for confinement - the risk of infection would be largely averted by the establishment of a maternity service conducted apart from general medical practice, which necessitates contact with streptococcal infection.

There is now no lack of doctors and a proportion of the existing medical service could be allocated to this branch of medicine, - the selection to be made according to midwifery experience. If possible the medical officer should have a knowledge of puerperal pyrexia. The general practitioner apart from consultants and specialists is the authority on midwifery and has the benefit of wide experience. For financial reasons the maternity service, both medical and nursing should be partly under the State, or at least, financial assistance should be available

for the needy case to ensure satisfactory attention for every mother.

The doctor's aim would be to perfect pre-natal prevention and so ensure a normal or safe pregnancy, confinement, and puerperium for every mother. He would avert or anticipate most natal and post-natal complications and safeguard cases entrusted to midwives.

Such a scheme would complete the ante-natal movement, giving requisite maternity care - continuous ante-natal, natal, and post-natal supervision under one authority, minimise the incidence of puerperal infection, and appreciably diminish maternal mortality from childbirth.

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