These notes are the outcome of my observations on Scarlet Fever in the neighbourhood of Forest Row a small village in Sussex, during the two years of my residence there (1892-93) as Assistant in an extensive country practice.

In a few cases only was it possible to make a complete report, many of them being only visited at intervals after the first day or two. Partly on this account and partly because they were scattered in a thinly populated district, and presented for the most part typical symptoms only, I made it my business to record the conditions under which the disease occurred and extended rather than the details of the individual cases. Although these cases occurred

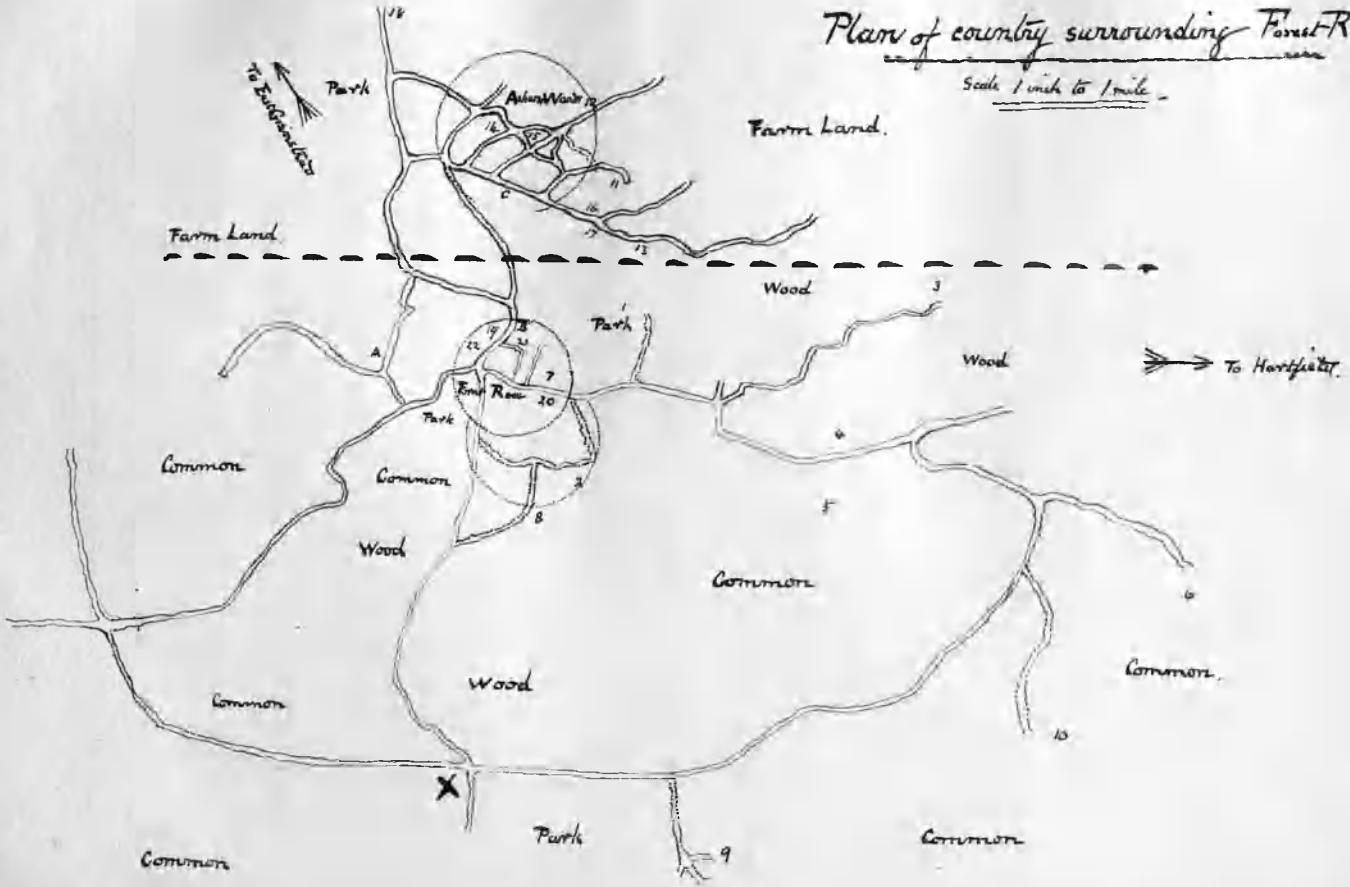
in a district, which had been free from this disease for over two years, and often in isolated houses, circumstances most favourable for an investigation of this sort, I was frequently baffled in all endeavours to discover a definite source of infection in each instance. However one was most forcibly impressed with the casual manner, in which some patients contracted the disease, in contrast with the lengthy or complete immunity enjoyed by other presumably susceptible persons, constantly exposed to its influence.

All the cases to be discussed occurred in a district almost completely under our own observation, among people with whom one was already more or less acquainted, and who, in the majority of instances, would not intentionally offer any obstacle

to an enquiry conducted in a friendly manner. Apart from forgetfulness on the part of the patient, or want of appreciation by a cottager of what really constitutes exposure to infection, the chief obstacle to the quest lay in the possibility of cases having been concealed by neighbours, and in a part where all the inhabitants are known to one another, all cases of illness were apt to obtain popular credit as being cases of scarlet fever, (during the prevalence of this disease,) unless direct contradiction could be given on medical authority. In consequence I was repeatedly hearing of supposed cases of fever, many of which I was able to refute, being in attendance on these patients for some other complaint, and for the remainder I could obtain no definite proof in any instance. ~~and~~ As the result

of what enquiries one could prudently make. I was led to believe, that to one family only could any feminine suspicion be attached, an inference, which will be more particularly noticed in due season.

In the investigation attention was paid to the habits of the people; their occupation; intercourse with neighbours, especially those living in infected houses; absences from home, visitors; lodgers; the school and school fellows of the children; illness amongst associates or fellow work people, or amongst stock in the case of farm hands; the milk-supply; the condition of the house and its position with regard to other dwellings; the water supply; and the general lie of the surrounding country.


Plan of country surrounding Forest Row.
Scale 1 inch to 1 mile.
To East Grinstead
Park
Ashen Wood
Farm Land.
Farm Land
Wood
Park
To Hartfield
Forest Row
Park
Common
Common
Wood
Wood
Common
Common
Common
Wood
Common
Park
Common
X

4.A.

Country surrounding Forest Row

1. Grimes & Dewdney.
2. Moss.
3. Miller.
4. Scott & Withers.
5. Barrel.
6. Pollock.
7. Taylors & Cudd.
8. Burstowe.
9. Irish
10. Whitty.
11. Pott
12. Matthews
13. Shayne
14. Ellis.
15. Thornton & Joller.
16. Higgs.
17. Shepherd.
18. Gunn.
19. Broom.
20. Seccombe (School).
21. Mallet.
22. Stubbs.
A. Harman.
B. Hy. Broom Jr.
C. School at Ashurst Wood

The dotted curves contain the greater portions of Forest Row and Ashurst Wood respectively.

The black dotted line runs along the brow of the hill and separates the F.....R.. and A..... W... districts. An imaginary line parallel to this drawn through F.....R.., would traverse the deep valley running almost due East and West lying between the ranges of hills. Partly on account of the hilly character of the country the perspective is not well represented in the diagram; in particular the distance between 1 and 13 is far greater than is there apparent.

X marks one of the highest points in the country. One slope from it extends Southwards to F.... R.., another S and E. Due S the country becomes more level after a mile or two, whereas on the E is another valley runs in the direction 10 - 6 there being a high hill still further E of this.

The common extends Southwards for some miles further than the district represented in the diagram.

Cases of Scarlet Fever in 1892 and connected cases in 1893.

Emma Dewdney	Sep: 19th 1892
John Grimes	" 28th "
Kate Moss	Oct: 31st "
Mary Miller	Nov: 27th "
Emily Miller	" 27th "
Emily Scott	Jan: 24th 1893
Mildred Darrel	" 26th "
Harold Darrel	Feb: 19th "
Maud Darrel	Mar: 13th "

The brackets connect those occurring in the same house.

The sir-names have been altered throughout.

Emma Dewdney . Sep: 19th 1892

John Grimes .. 26th ..

During part of September I took charge of a branch practice in a village four miles distant and the practice at Forest Row was left under the care of the medical man whose place I took, our employer being absent. It was during my absence, that these cases occurred, and they did not come under my treatment until the end of the month. As previously stated we had had no case of scarlet fever in this district for over two years, though cases had occurred in outlying districts four or five miles distant this same Autumn, which was a rather prolific season for scarlet fever throughout the kingdom. These outlying cases being few in number and in a village separated from Forest Row by several miles of country, hilly, wooded and for a large part uncultivated were not included in my list, as the village in which they occurred came partly into the

sphere of a neighbouring practitioner which prevented me from becoming acquainted with the full extent of the epidemic. The villages had little inter-communication being on different lines of railway, and though I made a point of trying to find a link between the two outbreaks I was unable to, and am convinced that none existed.

The cottage, in which these two cases occurred, was situated on a hill a mile out of the village, and was quite isolated from any other human habitation, the nearest being the residence of the owner of the estate which was separated from it by a large field. In all other directions fields and woods stretched for some distance. There was no public footpath to it, and access could be obtained only by crossing the estate. Hence it was quite out of the way of traffic. It was occupied by a groom, who had charge of a stud of horses, (the stables being on the

field a few yards distant,) and it had had no previous inhabitant, having been built only a year or two. It was a well constructed brick building, much superior to an ordinary cottage, but not kept particularly clean or tidy inside by its occupants. There were three down-stair rooms, including the back-kitchen; a passage, stairs, and three bedrooms, the head of the stairs being on a landing, and not in one of the bed-rooms. The outdoor sanitary arrangements had also been somewhat neglected. In the first place a grating, through which the contents of the back kitchen sink were intended to pass, had become choked, with the pipes leading from it, and had for some time been a source of offence. The closet also, which was a dozen yards or so from the back door, and furnished with a pail under the seat, and a trap above for the supply of ashes, was attended to less frequently than it should have been, and the contents being

emptied into a ditch close by, instead of being buried, when removal was necessitated by the full state of the bucket, another and more serious nuisance was caused.

The water supply was decidedly good being derived by pipes from a well, situated in a field on higher ground, and quite free from any chance of animal pollution. The supply to the owner's house came from the same source.

The inmates consisted of the groom, his wife and four or five young children, the wife's sister and her mother, the last named being a visitor, though she ultimately became a permanent resident.

The groom, a steady fellow, well known to me before the occurrence of this outbreak, as previously explained, worked close at hand, and I ascertained, that he had not been out of the neighbourhood for a considerable time. His wife was confined on Sep: 10th, and consequently had not been from

from home for some weeks.

I am not sure of the exact number of the children, but two only - a girl and a boy (John) - were old enough to go to school, and they attended regularly at the National School in Forest Row a mile away. But had been nowhere else of late, whilst the others played about at home.

The wife's sister, Emma Kewdney, was living in the house permanently. She had not been out of the parish lately, her only excursions from home being occasional visits to the village for shopping purposes. She was rather a weakly woman.

The mother, Mrs Kewdney, was a professional midwife (uncertified). She came from her home in Shropshire to be with her married daughter during her confinement, but as a matter of fact did not arrive until a day or two later. The exact date of her arrival is uncertain, but we may regard it as having occurred not later

at any rate than Sep: 14th. Presumably there would have been time for incubation, supposing her to have been the vehicle of contagium, between her arrival and her other daughter's failure, which probably occurred on Sep: 17th. as she was notified on the 19th. No suspicious circumstances could be elicited on enquiry however, and Mrs Dewdney denied having been aware any case of illness for a considerable period prior to arrival.

The midwife who assisted at the confinement and remained in the house for some days afterwards, was an old woman from the village. Mrs Grimes accused her afterwards of having been dirty, and of having allowed soiled diapers to accumulate under the bed, but there was no evidence tending to implicate her as the introducer of scarlet fever.

A stable help came daily from the village

and frequently entered the cottage. His family was well known to me, being patients, and they certainly had none of them suffered from scarlet fever lately, nor was there any other circumstance to indicate him in this connection.

I myself had visited the house twice previously, while attending the cases of scarlet fever mentioned before ~~as~~ having been under treatment in a distant village. The second of these visits however was made at least six weeks previous to Emma Drudney's failure, so can scarcely have had anything to do with it.

There had been no other visitors to the house that I could hear of, and indeed the people being comparatively newly come into the county, saw little of the villagers.

The milk supply was enquired into but no fault could be found with it. They obtained

it from the estate in common with several other families, in none of which did any case of scarlet fever occur.

It will thus be seen, that no evidence was forthcoming as to the origin of the outbreak from any of these details, nor could the Grimes inform me of any connection, by transmission of clothing or in any other way, between their cottage and one in which scarlet fever had recently occurred. Apparently the only other medium was the doctor who attended Mrs Grimes at her confinement. A suggestion to this effect was made me, and in view of the negative evidence so far obtained seemed worth following up. As before stated he came to Forest Row on Sep: 9th from a village nearly five miles distant. He had at the time two or three cases of scarlet fever under his care, and had visited at least one of them on the morning of the 9th. In the afternoon he rode over to

Forest Row on horseback crossing a large tract of common, which intervenes between the two villages, towards one of which it slopes on either aspect from its elevated centre. This ride over an exposed and always windy area nearly five miles across, would in itself greatly aid in ridding him of the germs of fever, which might hang about his clothes after visiting a patient, not to mention the customary steps taken to disinfect oneself. That night he was called to Mrs Grimes who thought her confinement was coming off, and, after taking precautions, visited her, and remained in the house some time. The child was not born however until the next day (Sep: 10th). The doctor having come away in the meantime and returned in time to be present at the delivery, which was safely accomplished, and apparently without harm to either mother or child.

Between Sep: 9th 15 and Sep 17th 15 (or quite possibly 16th)
the dates of the doctor's first visit and Emma
Dewdney's failure. There was ample time for
incubation of the disease. Indeed if it were
transmitted to her direct from him, one would
be inclined to think this must have occurred
at a subsequent visit, 7 or 8 days being, though
perhaps not an impossible, at any rate a
lengthy period for the disease to lie latent.
But we should not expect to find this direct
transmission, or at any rate to find it alone.
Were the doctor the medium through which
it was imparted, we should expect two crimes
to be affected; both from the closer relation
between her and the doctor, and from the
recognised susceptibility of parturient
women to the scarlatinal poison. Were her
recovery perfectly normal throughout we could
scarcely believe that infection was conveyed
by the doctor. From what I could gather of

the history of the case, there is strong reason to believe, that she did come under the influence of the scarlatinal virus, and that this took place at an early date after her confinement, prior to her sister's failure. Of her condition during Sep: 11th & 12th I have no knowledge. But it appears that on the 13th her temperature was much elevated. This in itself on the third day would not excite much suspicion, but it remained up for several days as is evidenced by her being supplied with antipyretic remedies and by the continuance of vaginal syringing. Of the other features of the case I am ignorant, or of the duration of this feverishness. There was however no rash on her at any time during her illness. The treatment came into my hands at the end of the month, and at my first visit on Sep: 30th. The patient, who was never very tractable was dressed and sitting downstairs. But evidently far

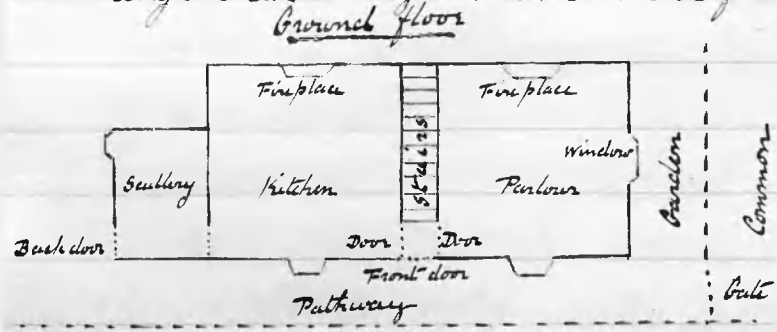
from well. On being questioned she complained of feeling weak, and of pain in the abdomen, but was not ready to believe that she was seriously ill. Though the thermometer recorded a temperature of 102°F (or 103°. I am uncertain which). She was immediately ordered back to bed and an abdominal examination was made, when it was ascertained that the uterus was very tender and much larger than it should have been at that period. Moreover the Fallopian tubes could be plainly felt, and one seemed able to follow them along the edge of the broad ligament right up to the fimbriated extremities, especially on the right side, which was more resistant than the left. It would be out of place here to enter into a full record of the case, the foregoing details having been given only with the object of showing the probability of Mrs Grimes herself being one of the sufferers

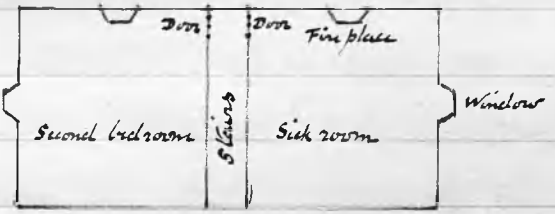
in the form of puerperal fever.
from scarlet fever. It is only necessary to state,
that she eventually recovered without suppuration
having taken place, after several weeks retention
in bed. In support of this easy though tardy
recovery, it is interesting to learn, that some
years previously Mrs Grimes served for six months
as probationer in a fever hospital, being then
constantly in the presence of scarlatinal patients.
She had never had this disease as far as she
was aware, nor did she contract it, while
in residence at the hospital or afterwards
up to the period we have noticed. This implies
either a forgotten or unrecognised attack
during earlier life, or some insusceptibility
natural to her, and possibly explains the
fortunate course of the illness following her
confinement.
It is thus an open question as to whether
Emma Dewdney took the infection from the
doctor or from her sister. She assisted in

nursing her sister and constantly removed the soiled diapers. Presumably infection might be imparted in this way. Though otherwise I am unaware, whether a woman with scarlatinal affection of the uterus and its appendages can infect another person through the atmosphere in the ordinary manner. Evidently sufficient time elapsed between her first recorded high temperature (Sep: 13th) and her sister's failure (Sep: 17th or possibly 16th) for the latent period, which is usually 3 or 4 days. John Grimes failed 9 or 10 days after his aunt (being notified on Sep: 26th) from whom he probably took the complaint. It is difficult to account for his selection, in the absence of any information on this head from his parents. The people were not inclined to pay too much attention to the directions given them, and possibly being the eldest

boy, he was allowed to have his own way as regards entering the sick-room. After his failure isolation of the invalids from the rest of the family was better maintained, the mother being in one bed-room and the aunt and nephew in another. None of the other children took the complaint during the time I remained in attendance, but boy afterwards I learnt that they succumbed at later dates, but that the attacks not being severe were concealed by the parents, who were anxious to avoid additional expense. Whether any reliance is to be attached to this rumour or not, I am unable to say, but the children remained away from school for considerably over the usual six weeks.

Kate Ross a servant girl home for a holiday had a pronounced attack of scarlet fever. The rash appearing on the day of her return home. She was in service at Tunbridge Wells where the disease was rife at this time (Oct: 31st 1892.) The chief interest in this case lay in the fact of it's having terminated without any one else having taken the disease from it.





Her father's cottage was semi detached and in a row with several similar dwellings situated on the border of an extensive common, at one

end of the village. The house had its side towards the common from which it was separated by a small strip of garden, the front door opening on a private path at right angles to the edge of the common. On the other side it was separated by a vegetable garden from a muddy lane. A good many cottages existed in the vicinity, and there was consequently a fair amount of passing.

The cottage is fairly well constructed, and contains on the ground floor two rooms and a scullery, with a flight of stairs at the top of which a door opens into a bedroom on either side - this being the only storey. The invalid was kept in the upstair room over the parlour the window of which overlooks the common. During the first few weeks ~~~~ isolation and disinfection were conducted in a fairly efficient manner, the mother alone of the other members of the family entering the sick-room

It is doubtful however whether this was kept up quite so strictly after the first two or three weeks, when the medical visits were less frequent. There were three or four brothers and sisters living at home, all believed to be unprotected, the youngest being a girl about 14 years of age. None of them took scarlet fever nor was the disease conveyed by them to any of the surrounding houses.

Mary Miller (mother). Notified on Nov: 27th 1892

Emily Miller (daughter) " " " "

I was called on Nov: 27th to see Mrs Miller, who complained of "sore throat" and "weakness", which she dated from Nov: 22nd. On examining her a faint scarlatinal rash was found, and pointed out to her. She had apparently not taken much notice of it, but was certain it did not appear

until the 26th. Taken in conjunction with the state of the throat and other symptoms there could be no doubt about its being a mild attack of scarlet fever, a diagnosis confirmed by my principal, who saw the case a few days afterwards, and still later by abundant desquamation. She was disinclined to believe this at the time and stated that she and the two eldest children had had scarlet fever some years previously. The family consisted of herself, her husband and four children, the youngest a baby seven months old, at whose birth I had been present. She stated that the children were all quite well, but on being questioned admitted, that they had been out of sorts during the preceding week having been attacked by diarrhoea. On examining the children they were all found to have "strawberry-tongue", but nothing further could be found amiss, except in the case

of the eldest, a girl about 12 years of age, whose tonsils were enlarged and rather sore, and on whose chest the skin was dusky, with manifest patches of desquamation. It is also worthy of note that a few weeks later the baby became affected with enlarged lymphatic glands in the parotid region, which ran rather a chronic course, but did not break down. This of course may or may not have had some connection with the previous existence of scarlet fever in the house.

The only other resident in the house was the father, who remained unaffected throughout. It would thus appear as though the disease were brought amongst the family some weeks previous to Mrs Miller's failure. The fact of desquamation being in progress on the eldest girl's chest possibly indicated, that she was in her third week, but though several distinct patches were visible on that

region. The process could not subsequently be followed all over the body, being fine and quite in contrast to her mother's condition at the same stage. Supposing we are right in dating her illness from say Nov: 10th, it is still a matter of doubt, whether she were the first victim, as none of the other children developed the disease subsequent to my first visit, no desquamation was visible on any of them, nor was there any evidence to prove that the attacks of diarrhoea, which fell upon them in the preceding week were of a scarlatinal nature. Quite possibly the disease may have been in the house for a month or more before the mother failed with it. The origin of the outbreak was similarly indefinite, and it only remains to review the habits of the people and the circumstances, under which they lived.

Miller himself was a game keeper and

consequently spent much of his time out of doors. His work consisted in the usual routine of men of this occupation, and in addition he went to the village of Forest Row ~~a couple~~ three & miles distant some two or three evenings a week, and to a hamlet not quite so far off, more frequently. Apart from infection having been conveyed at any chance meeting with a stranger, no clue could be obtained from his account of himself.

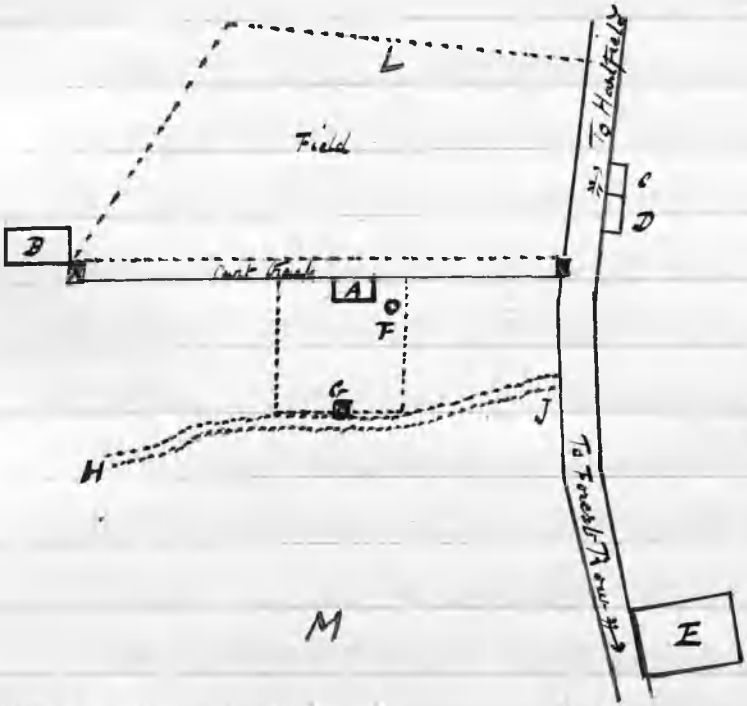
His wife, always a delicate woman, seldom went far from home, and had scarcely left the house since her last confinement. Of the children two, including Emily, went to Forest Row school daily, the other two being younger remained at home. Nobody else ~~worked~~ lived in the house, but a neighbour from one of the nearest cottages often came in to help in the household work during the day.

This woman had children of her own, and they went to school at Hartfield a village about the same distance away as FrestRow but in an opposite direction. There had been one or two bad cases of scarlet fever at Hartfield a few weeks previously, but the infection had not spread much, and I could learn of no connection between this woman's children and the patients at Hartfield, nor had any illness been observed amongst them by the parents. The cases referred to were under the care of a practitioner residing at Hartfield. I heard of them only from the cottagers, and learnt from the same source that none had occurred on this side of the village. This information could probably be relied upon as country people are much more prone to exaggerate the number of infectious cases, than to under-estimate

them, and even in thinly populated districts the news of any such soon becomes universally known. One could have imagined the disease to have been picked up casually in Hartfield by these children and to have been then transmitted by them to the Millers, but in the absence of any illness amongst the former, who were unprotected, we can scarcely ascribe the failure of the latter to their instrumentality. This knowledge however led to more direct enquiries as to any connection having existed between the Millers & Hartfield with a negative result. There had been no visitors or strangers in the house, with the exception of a chance call from one of the neighbours, who were limited in number, and who were none of them known to have recently suffered from this complaint. Moreover nothing suspicious could be learnt regarding

correspondence or the introduction of furniture or clothing.

The cottage itself a substantial brick building had been in existence for less than two years, and had had no previous occupants. It stood by itself in a field, about seventy yards back from an old and little used road between the villages of Forest Row and Hartfield, being a little over two miles from each. There were four other dwellings in its proximity. One a small farm-house at the far end of the field, two others cottages on the road almost opposite the gateway leading to Miller's and the small farm: the fourth a larger farm about a quarter of a mile along the road towards Forest Row, from which the Millers obtained their milk. A reference to the diagram will explain the position of these houses.



A : Miller's cottage standing in garden with F : well & G : privy

B : small farm at end of cart track

C and D : cottages from one of which children go to school at Hartfield - (The children at the other are too young to go to school.)

E : farm at top of hill from which Millers get milk.

H · J = a water course, the current of which runs from J to H. The fields on

either side L and M slope towards it.
It will thus be evident that the Millers'
garden is also on a slope, and that the
well is on a higher level than the privy
from which it is over twenty yards distant.
The bottom of the well is probably below
the privy level however. The well was
kept covered, had a coping round it,
and had its sides lined with brick.
The privy was small and had a stone
slab under the seat. Though not emptied
every day as it was evidently intended
to be, it could scarcely contaminate the
well, even though the bottom of the
latter be below its level, as the slope of
the ground would carry any soakage
away from it towards the stream.
This fact of course has no particular
bearing upon the cases under consideration
but the course of the stream was noted

when future cases occurred in the possibility of infection having been conveyed thus. The direction of the current at once refuted this idea - Of course notices were ordered to be disinfected, when medical treatment commenced, and attention was drawn to the necessity of burying the refuse daily. The milk supply as already mentioned was derived from the farm marked E in the diagram, and the Millers stated that they were the only customers, all the rest of the milk being made into butter and sent away. Probably however the labourers on the farm obtained their milk there also. The farmer's wife took lodgers from London in the Summer, but no illness had existed at the farm or we should have been called in, and I could learn of none amongst the employés or stock.

At the other smaller farm B there were,

I believe, no children, and I could hear of nothing to incriminate it.

The inferences to be drawn from all these facts are: -

1. That there was no scarlet fever in the immediate vicinity of the Millers before the outbreak in their cottage.
2. That the disease did not come to them from any great distance, as none of them had been far from home, and no person or thing had come to them from any great distance.
3. That consequently it was caught from one of the known foci not very close to them, but within ordinary walking distance.

Now we have seen, that there were three such foci viz the cases in Gardner's practice at Hartfield, the Grimes' cottage, and the Moss' cottage.

The first of these has been already dismissed on the grounds that there was no direct communication between the Millers and Hadfields, and that the only indirect communication traceable took place through a channel which must almost certainly have betrayed itself during the transmission of the infectious matter, i.e. the children, who went to school at Hadfield, would have failed with it probably, and if they could transmit the disease to the Millers, they would probably have also given it to the children next door, one of whom was 3 or 4 years old. It remains then to be decided, whether the Millers were more likely to have caught scarlet fever from Kate Moss, or from the Grimes.

Kate Moss was at this time (Nov. 27th) in the fourth week of her illness, and consequently

able to get about a little, though communication between her and the rest of the family was still interdicted. The Millers stated, that they had not been near her father's cottage, and it was quite unlikely, that they should have been, as it was well away from the road leading from Miller's to the village, and not near any of the shops they would go to. They represented, that no communication of any kind had taken place between the two families, and indeed seemed to have only a very vague knowledge of the Moss's. However had the disease spread at all from Moss' it is scarcely possible, that it should have selected a family two miles or more away across country, while all the people in the immediate neighbourhood escaped.

With regard to the Grimes's also no communication were known to have existed

but in this instance circumstantial evidence was less corroborative. It will be remembered, that the last notification in that household was dated Sep: 28th, six weeks from which would take us to Nov: 8th, as the date by which sufficient time for disinfection would be supposed to have elapsed, and we have seen, that it was not at all improbable, that the disease had been acquired by some of the Millers before that time. Emily Miller herself failed with it about then. In addition it may or may not have been the case, that some of the Grimes's were at this time in a more or less active stage of the disease without medical supervision. Now in any case there were no houses in the immediate vicinity of the Grimes's, (moreover there were no children in the big house), so that an atmosphere of infection might

surround it without giving rise to much suspicion - It is then quite possible, that members of this family were going about in a highly infectious state, about the same time that some of the Millers sickened with the disease. Moreover the nearest high road to Grimes' cottage was the very road along which two of the Miller children passed daily going to and from school - These children were schoolmates, and though no information could be extracted from them upon which one could form a reliable opinion either one way or the other, it is not unreasonable to suppose, they may have walked or played together and imparted the disease thus. The main point on which stress is to be laid is, that while such a mode of transmission was quite possible even probable in this case, it was almost impossible in that of the Moss's / amongst whom

also the youngest child was about 14), without cases having occurred nearer home in addition. To sum up then, the origin of the outbreak at Miller's was never clearly proved, but the most probability seems to be, that it was derived from Grimes' family. This is of course under the assumption, that outbreaks of scarlet fever do not occur de novo.

Emily Scott . Notified on Jan: 24th 1873

Mildred Darrel . . . 26th .

Harold Darrel . . Feb: 19th .

Fraud Darrel . . March: 13th .

These cases were closely connected with one another, inasmuch as Emily Scott and Mildred Darrel went to school together daily

Emily Scott was an orphan 13 years of age, who lived with her uncle John Withers a mile and a half from the village of Forest Row, to

which she went daily, being a pupil at the National School. On her return in the afternoon she was usually set to do some of the house work by her cousin Margaret Withers a young woman of seven or eight and twenty, who was reported to be a little severe on her in this respect. This routine was continued up till about Jan: 20th, when the girl seemed unwell and complained of a sore throat. Medical attendance commenced on Jan: 23rd when the rash was just beginning to shew itself. Neither she nor her relations could give any information tending to clear up the origin of this attack. Enquiries were made as to journeys from home, visitors to the house and so on, but with quite negative results. John Withers himself, a farmer and brick-manufacturer, constantly drove around the neighbouring country, and to the nearest market towns, but he was unaware of

having exposed himself to infection. His wife and daughter went very little from home and had not been away recently, while the only other resident in the house was Emily Scott's sister a girl many years older than herself, who taught in the school during the day. Two or three men worked on the farm and at the brick-kiln, but no suspicion could be attached to any of them, and they mostly lived in the immediate neighbourhood. The house, which was a comparatively new one, and had had no previous occupants stood amongst several outbuildings some way back from the high road a mile and a half out of the village. There were a few scattered cottages along the road occupied by farm-labourers. The milk used in the house was derived from their own cows. Attempts were made to trace any connection with the Millers, Moss's or Grimes's, but without

success, at the time at any rate, though as will be detailed further on, there were some suspicious circumstances in which the last named were concerned. The case was mild and ran a typical course.

Mildred Darrel was notified on Jan: 26th the first day on which she was visited. This was supposed by the parents to be the second day of her illness. But the universal state of the rash would rather incline one to believe, that it must have been the third at least. Her first day probably coincided with Emily Scott's third, but conceivably she might have failed on Scott's second day. Thus it would be possible for them to have taken the disease from a common source, while it seemed more probable that Mildred Darrel took it from Emily Scott, at the time. This would however leave a very short period for incubation, and in itself inclines one to the former view.

There had been no recent illness in either house previous to these two cases so that at any rate the origin was to be sought for away from home, and might be expected to be found at the school or on the road leading thither. In the bare chance of the Darrels having been the first to catch the disease, it should be mentioned, that no clue could be obtained from the movements of any of the family. Darrel himself had a small farm, and in addition he worked for a golf club, whose links lay at the back of his house. The other members of the family at home consisted of Mrs Darrel, three daughters and two sons. The milk used in the house was got sometimes from their own cows, sometimes from Withers's, the two houses being on opposite sides of the road, with a field intervening in each case. I questioned Mildred with the view of tracing the illness to the Millers, Innes's or Grimes's, but she denied having met any of these, and

indeed one hardly expected any of these to be the immediate source, having almost ceased to suspect any infection from them by this time. The only puzzle was, that if it did not come from some of these, where could it have come from, there being no others cases anywhere in the neighbourhood to my knowledge? Curiously enough on talking it over with Mrs Farrel months later, I was told by her that Mildred afterwards admitted, that a few days before she fell ill, she had played with one of Grimes' children, and that the latter having fallen and cut itself, she stanched the bleeding with her (Mildred's) own handkerchief. Emily Scott was with her on this occasion as usual, it having apparently occurred on the road to & from school. This was the only semblance of a clue obtainable in these cases, and with on that account, and from its nature, it merits

a little consideration.

The last case at Grimes' which received medical attention was notified on Sep: 26th 1892, i.e. nearly four months before Emily Scott failed with the same complaint. Supposing no other member of the family to have developed the disease later this would mean that according to the usual custom, the Grimes's might be looked upon as having ceased to be infectious for over two months. If however the disease did not stop with this case, the next must have occurred during John Grimes' fifth or sixth week, when he was getting about again, as our attendance at the house lasted for some weeks, and it must have commenced after cessation of the latter. One such case then would reduce the two months to less than one month, and if by any chance another child (as mentioned there were others) failed a few weeks later still, the interval between the

outbreak at Grimes' and the illness of Scott and the Farrels is completely bridged over. (as mentioned earlier it was surrounded by the neighbours that there were other cases but Grimes' after medical attendance ceased.)

In this uncertainty, supposing the disease to have come from the Grimes's, what explanation should we adopt?

The first to strike one would be that the child of Grimes, who played with Scott and Farrel, was desquamating, or wearing infected clothing. The latter having perhaps been unworn for some time. But in either case it must be remembered that the child was now at school, and would most likely have communicated the disease to several other children, with whom she must have been in constant contact. One then wonders whether any special significance is to be attached to her blood having been handled by Farrel, and perhaps by Scott. The importance of doing so would be more imperative were there known to be an

abrasion on the hand of either through which inoculation might take place. (In opposition to this however, it might be urged in view of recent discoveries, that such inoculation might confer protection instead of imparting the disease, unless the active stage were not yet terminated.) This would imply, that infection lurked in the blood for some time after it ceased to be given off from the surfaces of the body, and the points in its favour are:- That the blood of a child from a house known to have been lately the seat of scarlet fever, did actually come into contact with one and probably with two other persons, and that each of these developed the disease, without having knowingly been exposed to its influence at any other time, and that no other associates of the presumably infectious child received any harm from her. The flaws which suggest

themselves to this theory in addition to the one mentioned above are: That there is no proof, that the blood does retain infectious matter after infection has apparently ceased elsewhere. If it do so, when does it cease to do so? - That Mildred Farrel was the more implicated of the two victims, the handkerchief used being hers (possibly Scott's was also used), and hence should have developed the disease at least as soon as her friend. - That there is always the possibility of the disease having been transmitted in some casual manner, which defied discovery. Such as from a passing tramp, or gipsy caravan. The most difficult matter to understand in this connection is why Scott and Farrel did not fall at the same time, if they took the disease together. As already shewn it is probable, that the latter succumbed

within two days of the former. Her parents were evidently frightened on hearing that Scott had scarlet fever, and that this had to be notified and so on, and so were perhaps inclined to make the least of the illness preceding medical attendance. Allowing a couple of days difference between the two cases, we can only assume, that this was due to some idiosyncrasy. It is always taught, that the latent period of scarlet fever varies in different individuals from about two days to a week, but whether the length of this period bears any relation to the severity of the attack is less certain. In this instance the first to fail, Emily Scott, was a thin, pale-faced child, but the attack was a very mild one, while Mildred Farrel, who was a robust child, had a longer period of incubation, and a fairly sharp attack of scarlet fever, and curiously the other members of this family who failed at intervals after the disease had been in the house

for some time all had much sharper attacks than Scott. The throat symptoms being severe and persistent.

Another way of regarding the matter is, that Scott was the more susceptible of the two girls, and that she alone took the disease from Grimes' child, and that she gave it direct to Darrel after developing it herself. The presumably strong infection thus generated being sufficient to overcome the natural power of resistance inherent in the tissues of the last-named, which had enabled her to escape with immunity from the slighter degree of infection to which she had been exposed in common with Scott. The two days, which elapsed between their respective failures, would be sufficient to permit this, and it is pretty certain Darrel visited Scott after she fell ill, though one could get less clear information on their movements, than one would have wished, while we should be glad now

to avail ourselves of the uncertainty of the exact number of days between the two illnesses, which allows us a possible period of four days for incubation in Farrel's case. It may seem, that in going back to Grimes' family for the origin of this outbreak we have rather overlooked the more recent cases at Moss' and Miller's. This is not so however. Apart from the fact, that no connection could be traced between Farrel's and either of these, we may apply here again the same line of reasoning with regard to Moss, that was urged when considering the outbreak at Miller's, while regarding Miller it is enough to say, that I attended the family and one in one of the two cottages close by at intervals for some time afterwards, and must have known had there been any fresh cases. Moreover they were people, who ran to the doctor for every little ailment. Finally then, in the

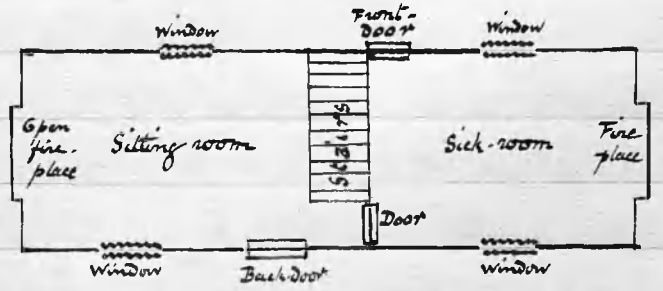
absence of any other cases of scarlet-fever in the neighbourhood, than those discussed the probability is that this new outbreak of the disease at Scott's and Farrel's originated from that at Grimes'.

We may now proceed to consider the progress of the disease amongst the Farrels. As previously stated the members of this family at home amounted to seven persons the father, mother, three daughters and two sons, all believed to be unprotected and of whom the three youngest alone took the complaint. The children varied from 7 years (Mildred's age) up to 20 (the age of the eldest girl at home).

The house in which the Farrels lived was old and not very conveniently arranged. It was situated alone in a field some two or three hundred yards back from the road, nearly

opposite John Withers's house - Emily Scott's guardian -
a little under two miles from the village of Forest
Row and between it and Hartfield., the road
mentioned being the modern thoroughfare between
those places, and not that which passed near
the millers house. At its back were a few out-
buildings, & a courtyard separated by a fence
from the common, which occupies so large a
portion of this and the adjacent parishes.
The land let with the house consisted of some
half dozen acres of pasturage, on which Daniel
kept a few cows.
The ground floor of the house contained two down-
st good sized rooms, one of which was used as
the sick-room, while the other served as the
living room for the rest of the family during
the day. There were a couple of upstairs rooms,
which they used as bed-rooms, but the ground-
floor room had to be used for the invalids, as
there were no fire-places upstairs. The downstairs

rooms communicated directly with one another through a doorway over which the customary sheet soaked in antiseptic solution was suspended. Between the rooms along the remainder of this side ran the staircase (walled in). The front door opened into the sick-room, but was not used until the convalescents were allowed to pass through it, to prevent them from mixing with the rest of the family, while the back door opened into the other room. A glance at the subjoined diagram will explain this arrangement.



although the sickroom was airy, well lighted with a good fire-place so as to answer its purpose very well as far as the invalids were concerned, it plainly was far from being sufficiently isolated from the rest of the house. Not only were the mother and eldest sister who acted as nurses constantly passing from the bedside into the midst of the family, but every time the door was opened fresh laden air, to which the sheet could offer only partial opposition, would find its way to the inmates of the other room. Moreover the household work, preparation of food for the whole family &c all fell upon the nurses. Under these circumstances one would have expected the disease to rapidly gain hold of all in the house susceptible to its influence, whereas we find ^that^ quite the reverse ~~[illegible]~~ happened. That two such members existed is apparent from the subsequent course of the disease, yet Harold did not fail until 25 days after Mildred, and

Fraud not until 23 days later still or nearly seven weeks after the notification of the first case. Harold's attack was ascribed by his mother to his having rushed into the sick room one day. It followed within a few days of this occurrence. Fraud's failure took place in rather less than a week from the time at which her sister was re-admitted to the family circle, which happened at the completion of six weeks from the commencement of her illness. Fraud had also been about out of doors with Emily Scott for some little time

It will also be noticed, that each successive case commenced soon after the completion of the third week of that preceding it. This may be a particularly dangerous time, desquamation being in progress, and perhaps nursing a little lax, but if so Fraud at any rate was able to pass unscathed through this period of her sister's illness. The simplest explanation seems to be, that these two children were susceptible only to strong doses

of the virus, and that Harold succumbed on breathing the undiluted atmosphere of the sick-room, and Fraud on coming into proximity with her sister. The elder son and daughter had apparently outgrown any great susceptibility to the disease. It would thus appear, that the family as a whole was not very susceptible, and reasoning by analogy, that Emily Scott was very susceptible and transmitted the disease after developing it herself to Mildred Deverel.

One other case may be mentioned in this connection viz that of Margaret Withers, who was notified on June 15th. the second day of her illness. She was the daughter of John Withers, and had nursed her cousin Emily Scott all through her illness, without developing it herself. She might thus have been considered insusceptible, due probably to her age (27 or 28) as she had never had the disease before. She could in no way account for her eventually going down with it. The obvious inference is, that the house was not efficiently

disinfected, which is all the more probable as the furniture was good, but why she should have escaped, when daily exposed to infection, and have failed when this was minimised can be only guessed at, on such a supposition as that some lowered state of her system eventually allowed the virus to gain the upper hand, or that daily association with an invalid gave temporary protection (the associate not being very susceptible), much on the principle that "familiarity breeds contempt"; but that this wore off after a time.

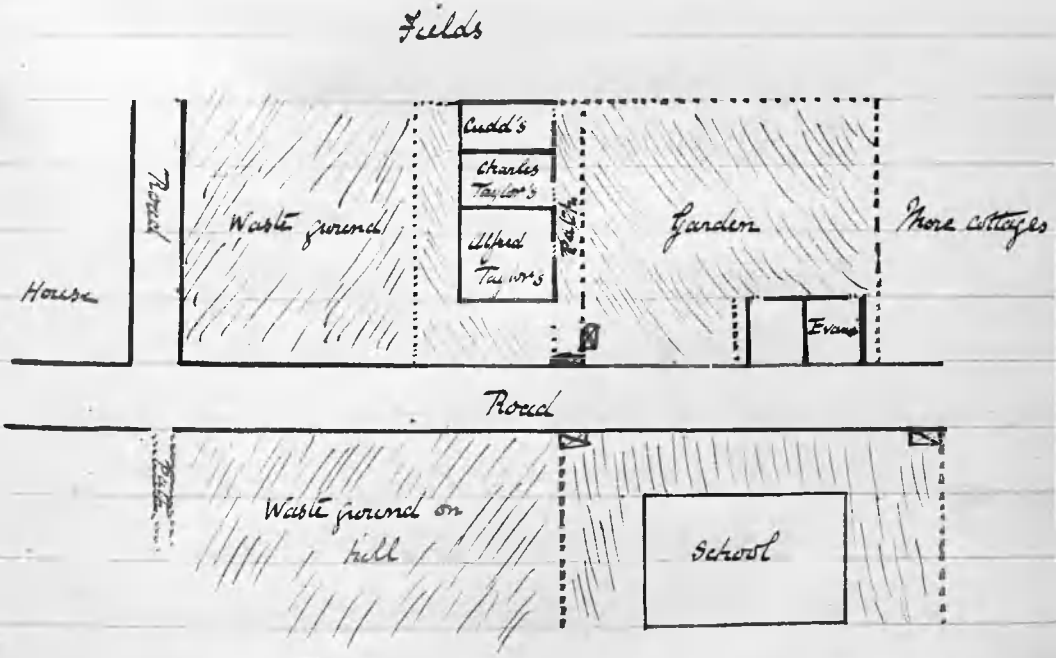
Outbreak of Scarlet Fever

in Forest Row village. May 1893.

Ernest Taylor	..	May 25th 1893	all live close together
Ethel Taylor	..	.. 25th ..	
Agnes Taylor	..	.. 25th ..	
Frederick Taylor	..	.. 26th ..	
(Baby) Evans	..	.. 26th ..	
Lucy Taylor	..	.. 28th ..	
Mrs Chas. Taylor	..	June 2nd ..	
Caleb Cudd	..	May 28th ..	
Mrs Thos. Cudd		June 2nd ..	
Harry Burstow	..	July 9th ..	Isolated
Henry Irish		June 15th ..	Isolated.

The dates given are those of notification, usually the second or third day of the disease.

This outbreak occurred suddenly in a group of old tumble-down cottages situated in the village of Frest Row opposite the National School. The three worst, inhabited by two families of Taylors and the Cudds respectively, formed a block fronting at right-angles to the road, while the Evans' dwelling was built of wood semi-detached and had its back turned to the road, its front opening into a garden common to it and the other block.



These two blocks were the only ones infected. and it will be seen from the diagram, that all the families in the larger block took the disease, while only one failed of the other two. In the family which escaped there were I believe no very young children, the youngest being about 14 as far as I am aware. The two families of Taylors were related to one another, and all in this block were a good deal mixed together.

Alfred Taylor's family started the outbreak, the whole of the children (four in all) going down with scarlet fever in the course of a couple of days, and having sharp attacks. Neither of the parents took the disease.

Charles Taylor's family consisted of himself, his wife and two children, the youngest being a baby a few months old. The elder child failed three days after the first of her cousins, from whom she presumably took it. The mother had a sore throat about a month later, and

stated, that she had had a slight rash. It was not quite certain, whether this was genuine scarlet fever, but it seemed better to include it with the others, being at any rate suspicious.

At Cudd's There were husband, wife and three children, the youngest being only a few months old. Of these Mrs Cudd and the eldest child failed, being notified on the dates assigned to them. Later on a woman and two boys turned up in this house having come from a distance and being quite regardless of infection, indeed the boys were said to have recently had the disease. This advent was a little mysterious, and one could not help being struck by the fact of their recently having had the same complaint. However no previous communication could be unearthed (They came from another part of the county) and the Cudd's child, being three days later than the Taylors in shewing signs of the disease, presumably took it from the latter.

Evans' child was only a few months old, and both from this fact and from the slight nature of its illness and the doubtful character of the little rash it shewed, it is quite possible that it did not really suffer from scarlet fever, though one classed it with the other children at the time.

Alfred Taylor's cottage was the largest containing two downstair rooms and two bed-rooms. The smaller of these latter was turned into a sick-room but was far from fulfilling the conditions desirable for such. It was very small & badly ventilated, having one window, no fire-place, and a door-way reaching only about four feet from the floor, through which one had to stoop, when entering the room. As might be expected in such a case, the children all suffered somewhat severe attacks, and lingered rather over the convalescent stage. They were nursed at first by their mother, and later by the

woman staying at Cudd's. The house like the rest in this block was in bad repair and old, the inner walls being of wood a good deal worm eaten. The down-stair floors were of stone or cement, those upstairs of planking, which had become uneven with age and use. Nor as might be expected, were the inhabitants of this block people, over careful about keeping their rooms as cleanly as possible. The Cudds were the most respectable of the three families but all were exstremely ignorant. The Taylors bore a very bad name in the parish being of a very low class. The men did occasional work only, and for the most part lived by their wits. Alfred Taylor's children all failed with the disease as mentioned, while he himself and his wife escaped. About a week after the children were allowed down-stairs, and before the house had been disinfected Mrs Taylor was confined, and

this was to me the most interesting feature of the outbreak. Infectious matter must have been rife in the house at this time, the children themselves being still a source of infection. Her confinements were usually troublesome, there being marked prominence of the sacrum, and on the last occasion she was totally blind for several days afterwards. This we attributed to albuminuric retinitis, and recovery was complete. Naturally the present confinement was looked on with some anxiety, and representations were made to the authorities on the matter, (it was a parish case) but no steps were taken by them to avert evil consequences. When the labour did come off Mrs Taylor was put into the second and larger bed-room, which was separated by a small landing from the other, and disinfectants were freely employed. On account of the obstruction at the brim the long forceps had to be applied

and delivery was effected by Peur aid without much damage to the perineum. For some days afterwards the vagina was syringed regularly with an antiseptic solution. The result was highly successful recovery taking place without a hitch. This certainly surprised me, and relieved me of some of the fear, though I hope, of none of the caution, attaching to confinements in scarlatinal houses.

In Charles Taylor's house there were a kitchen and a scullery on the ground floor, but only one large bed-room upstairs. The invalid was treated in the bed-room, the baby being kept downstairs. The child's attack was mild, and recovery took place without misadventure. The parents slept in the sick-room at night, and as related, the mother ultimately developed a sore throat with a faint rash. The men in each case escaped. Cudd's house was similarly arranged, and here also the sick child and the mother, after she failed, ~~slept~~

occupied the bed-room, while the two unaffected children and the father were kept downstairs. What arrangement was made after the arrival of the visitors I am not quite sure, presumably they also occupied the sick-room. The two younger Cudds never showed any signs of the disease, though it is absurd to think, that they were not exposed to infection.

Regarding Evans' house little need be said from the doubtful nature of the case in it. The house though composed of woodwork was kept clean and was fairly comfortable, and there was never any evidence of its having originated or protracted the disease. That is of the fever having been imported by this family or passed on by it. There were no other children in the house.

The origin of this outbreak remained unshrouded in mystery. The people themselves gave no clue, and unfortunately their statements were too likely to be actuated by their wishes for one to place much reliance upon them. Their habits were irregular

and even the milk supply was derived from various sources, when they got any milk at all, which probably implied the production of ready money. The men wandered over the country a good deal, but no visitors other than those mentioned could be heard of. As to external evidence there was also great deficiency, and the Darrels, whose cases were last described, had left the country altogether; not that any connection would have been likely to exist between these families in any case; nor could any link be ~~found~~ discovered between them and Scott.

This being so, one was reduced to speculation for a cause, being guided by any probabilities which might occur to one. One would infer from all the children in Alfred Taylor's house having fallen within two days, three indeed on the same day, that there had been simultaneous exposure to strong infection, such as might happen were a person suffering from

scarlet fever to be suddenly dropped in amongst them. Now it will be seen by the diagram previously given of the position of these houses, that a waste piece of ground extended from a broken down fence at the back of these houses to a road running at right angles to the main road. This plot of ground formed the camping ground of most of the travelling shows, and caravans, which constantly passed through the village, and it is by no means improbable that one of these may have brought a fever stricken or desquamating child into the village, with whom the Taylors played, and as these caravans remained usually for one or two nights only, it was difficult to expose a danger of this nature.

Another possibility arises from the fact that a case of this disease was removed about the end of May from a large temporary militia camp on the common about a mile distant. This patient was removed out of the district immediately the nature of his complaint was recognised by the ambulance surgeon.

and no evil should have resulted from it, though curiously Mary Burstowe, whose case is presently to be related lived in a cottage just bordering on this part of the common, and there was strong reason to believe that her attack was preceded by illness of a similar nature in a neighbour's family - However these last bore the same name as these people we have ascribed the name of Taylor to, though whether any relationship existed between them is unknown to me. This information came to me much later when the chance of following it up was lost. Whichever of these views we may accept as the more probable, or whether we reject both, there can be little doubt, that this was a fresh outbreak quite unconnected with any of the cases previously narrated, which probably all had the same initial origin.

Mary Burslowe lived in a house on the outskirts of the village bordering the common. She passed through a mild attack of scarlet fever, and on July 9th the day of notification was desquamating. The other members of the family consisted of her father and two brothers, the latter being aged 14 and 12 years respectively. Her mother was dead, and consequently the care of the house fell upon Mary, who may have been 20 or 21 at this time. Neither of the boys presented a rash at any time, that I saw them, but it is noteworthy, that the elder was laid up with sub-acute rheumatism, and that the younger, a weakly boy, was considerably out of health in a rather obscure manner, being very anaemic, and having an elevated temperature, which persisted for some time (quite three weeks), and unassociated with any organic lesion, that I could detect. Constant pain on taking food of any kind, in the epigastric region, was a symptom which

persisted for some time, and the fear of which debarred him from taking sufficient food. Whatever the nature of this illness may have been, no albuminuria or other sequela of Scarlet fever could be discovered, and consequently it would be beside our purpose to enter more fully into it here. But being contemporaneous with the two other cases of illness in the house, it seemed to require mention. Satisfactory though tardy recovery ultimately ensued. On its own merits, there was certainly nothing to connect it with Scarlet fever.

The father remained in good health throughout, and there were no other residents in the house. The sister's illness may have commenced during the third or last week in June, desquamation having been first noticed on July 4th, and indeed I had attended her for some time before discovering beyond doubt the true nature of the sore throat, of which she complained

though I had repeatedly made careful search for a rash. The elder brother was recovering from his attack of sub-acute rheumatism, when his sister first took to her bed, and the nursing consequently fell to his lot, an office which was later shared by his brother. Neither of the boys took the disease from her, so it is just possible that the rheumatism in the elder was the sequela of an unrecognised scarlatinal attack, whereas the younger's escape may or may not have had a similar explanation. It becomes evident, that the disease may have had a much earlier introduction into the house, than would have been at first imagined, dating possibly from some part of May. One naturally at first exhausted the known places of infection previously discussed. The younger boy, it was found, had attended the school until recently, but there was no assignable reason for his having taken the disease from

the houses opposite (Taylors &c), while the other school children escaped, hence this could scarcely have had anything to do with his sister's illness, and it shewed that he himself had not been very much out of sorts at any rate, prior to coming into my hands.

The elder brother was sent home with his rheumatism from a village in another part of the county, whither he had gone to obtain work, for which he had been on the outlook for some time. He had only been there a fortnight, and had not been near any infectious case. The father worked in the neighbourhood. He was not very temperate, and probably did not get very regular work.

A case of scarlet fever has already been mentioned as having occurred during May in the militia camp opposite these cottages. It was in the care of the military medical staff, so I did not know much about it beyond this, that it was a

solitary case, believed to have been imported from the man's home, and that immediate removal to hospital (at a distance) was effected. Under these circumstances one would imagine that no extension should have taken place nor did any amongst his comrades. The encampment lasted about a fortnight and during the whole of that time the villagers walked freely in and out amongst the tents. When Mary Burstowe was found to have scarlet fever, one was led to inquire a little into this matter. The only suspicious circumstance elicited was, that in a cottage a few yards from that in which she lived, all the children had a short time previously been ill with sore throats and slight rashes. I did not see any of the children, but Mary Burstowe, who had been a good deal in this house told me so, and her evidence was corroborated by the children's mother. What the exact relationship was between all these cases is not plain, but it is possible that these children picked up the disease in the camp and gave it

to the Burstowes, and it may be also as before suggested, to the Taylors. I was unable to push enquiry very far, but it appeared that all illness in this cottage had disappeared for some time by July 9th - the date of Mary Burstowe's notification. A less probable view is that these children took it from the Taylors -

Henry Irish a lad 18 years of age lives with his father, a coachman, two and a half miles or more out of the village of Forest Row - He himself works for a builder in the village returning home every evening - He continued at work until June 14th, when he came into the Surgery with a sore throat - He was ordered to bed, and on the next day, a copious scarlatinal rash was out all over his body. He was quite at a loss to account for his illness, and could give no clue as to its origin. There had been no ill health at his home which was tenanted only by his parents and himself. Numerous out-door servants lived on

the estate, but they were all patients of ours, and no other case of scarlet fever had occurred amongst them. Nor had anything out of the common occurred at his home, which might have served as an introduction to the disease. There could be little doubt then, that he had picked it up in the village, though from whom was not apparent, and no enquiry elicited any information, which would trace it to its source. His work-place it is true was within a couple of hundred yards or so, of the Taylors' cottages, but aerial convection is not a very prominent feature of scarlet fever, and there were several people in closer residence to the infected houses than this, not to mention the presence of the school just opposite. It only remains then to attribute this attack to some chance contact with infection, which was either unknown to him or had slipped his memory. He was treated at home in an upstairs room under satisfactory conditions and made a good recovery.

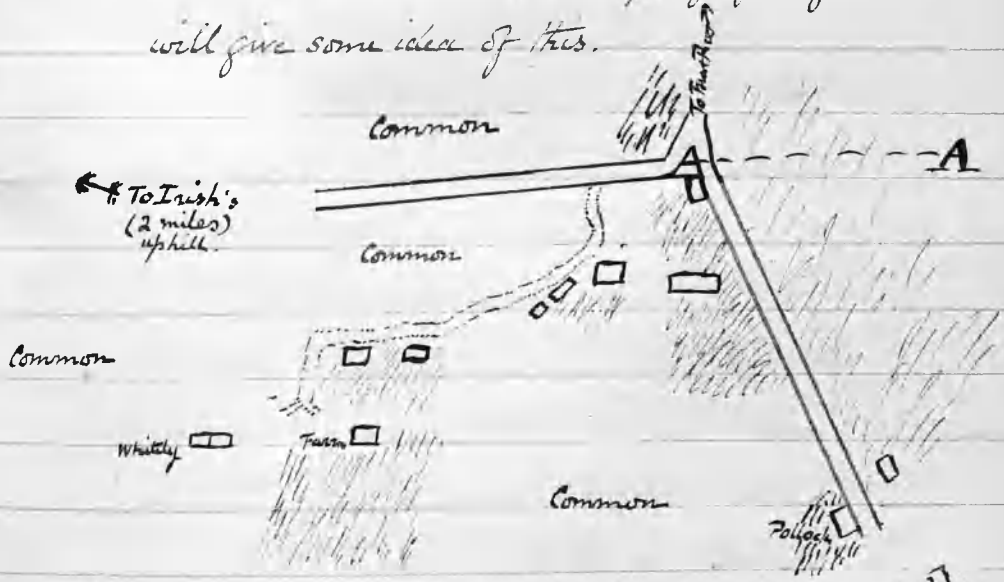
Fanny Pollock. May 20th 1893.

This is a case about which I have very little information. It was very mild and occurred amongst a cluster of houses situated in a valley over three miles from Forest Row. It was visited only occasionally, and its origin was quite unknown. The family was a large one comprising the father (a small farmer) mother, and numerous young children. Nobody else in the house had been ill, and as far as could be ascertained there had been no previous scarlet fever in their neighbourhood. Comparatively little communication existed between the people of this district and Forest Row much of their shopping being done in Hartfield situated about the same distance away. The children went to neither of these villages for their schooling, there being a nearer school on the common. The patient was treated upstairs and recovered without imparting the disease to any of her brothers or sisters.

Isaac Whitely . July 4th 1873
Jack Whitely .. .. 7th ..
Ernest Whitely . .. 11th ..
Doctor Whitely .. Aug: 18th ..
Joseph Whitely . .. 24th ..

Isaac Whitely was the father of the other four, who varied in age from 4 to 12 years. He was a labourer poor and intemperate and lived far out on the common at one end of the scattered cottages, amongst which Pollock's was placed being however nearly a mile further up the valley than the latter, the intervening expanse consisting of common.
In addition to the members of the family already mentioned, there were the mother and one daughter, the latter a girl of about five. The whole were heavy, unintelligent people, inferior in many respects to some of their neighbours. There were two other houses in proximity to Whitely's, one

indeed adjoining it while the other was rather a better class of house and had a few acres of reclaimed land around it. This latter was in the occupation of a relation of Whitely's, who employed him as a labourer to assist in the field work and in the care of stock. In addition there were other houses at intervals in a string, of which Isaac Whitely's might be regarded as one end, leading up over the common to the road. The accompanying diagram will give some idea of this.



The shading represents cultivated ground.

The approach to Whitely's and the neighbouring cottages was by means of a cart-track, which terminated there.

Isaac Whitely, the father, was the first member of the household to develop the disease apparently. He presented himself at the Surgery at Forest Row on July 4th 1893 with a thick scarlatinal rash on him, and he believed it to be the second day of his illness. He was of course sent back to bed at once, and treatment was undertaken at his home. The sons failed successively in the order mentioned, none escaping, while the mother and daughter showed no signs of the disease at all as far as could be ascertained. Nobody could offer any explanation as to the origin of the outbreak, and they positively denied having had any intercourse with any of the Pollocks, or with Irish, whose father's house was two miles distant across the common. None of them had been out of the neighbourhood lately, and

no strangers had entered the house. The milk, used by them, was obtained from the farm close by, upon which Whiteley worked. There were two or three young children in the farm-house and also in the cottage adjoining Whiteley's, but no illness was known to have existed amongst either, and the mother of each family was well known to me, and would I think have admitted such, had it attracted her attention.

It is comparatively seldom, that the father of a family is the first to fall with scarlet fever, and when it does occur, one naturally inclines at first to believe, that a previous case must have existed amongst the children and have been overlooked. Reflection however will shew, that this was not probable in the instance under consideration. That the introduction was not due to one of the boys is fairly evident, from their having all failed subsequently. It is so

uncommon for a second attack of Scarlet fever
to succeed a first attack within a few weeks
and to shew all the symptoms of an ordinary
attack of the disease, that in the absence of
any previous attack having been observed, we
are quite justified in exonerating them from
having been the first to fall. We have not
the same clear evidence in the case of Isaac
Whitely's wife and little girl. The former ~~might~~
would perhaps have been the least likely
member to have caught it first, and the
mother's escape in spite of nursing the invalids,
is too common a feature, for any deduction from it
of her having recently sustained an attack.
The little girl appeared to pass through the whole
outbreak quite unaffected, and as she was not
known to be protected this might arouse some
suspicion. Against this however may be
put the facts of no sign of the disease having
ever been apparent on her, while her father

and brothers suffered severe attacks, of the first son having failed 3 or 4 days after his father, just what we should expect, were it his first exposure to infection, and also the probability, that had the girl taken the complaint first of all, she would have imparted it to one of her brothers, with whom she would be constantly, before her father, who was at work a great part of the day.
On the whole then there seems no sufficient ground to doubt, that the father was not only apparently but really the person, who brought scarlet fever into the family, and it remains to find some possible explanation of the means by which he caught it. Before passing on to this consideration however, it should ~~first~~ be observed, that there is always the possibility of the contagium having been brought into the house on the clothing of some member, who did not himself or herself

sicken with fever at the time, although serving as a medium by which it was conveyed to the others: but that in the absence of any known exposure to infection, this possibility having nothing in its support, and being in any case rare and difficult to prove, at all events where a child acts as the medium of infection this to its father, may be disregarded.

A consideration of Isaac Whitely's habits then would recommend itself before we dismiss the investigation altogether. His work lay close at hand and probably brought him into contact with his immediate neighbours only, while his means, and the want of locomotion would prevent him from going far from home. The only place in fact at which he was known to appear frequently, when away from home and not at work, was at the nearest public house, which was situated at the cross roads marked A in the diagram. Adjoining the public house

was a smithy, and these two places served as a rendezvous for the cottagers scattered within a radius of a mile or so. Two people deemed suspicious might meet him there, one certainly attended fairly often. This one was Irish the coachman, father of the lad, who was notified on June 15th (having failed on the preceding day). Whether Irish and Whitely actually met, I dont know, nor did I care to push enquiry into what was a delicate subject with each, but the dates tally fairly well. For Whitely having failed on July 3rd must have probably contracted the disease on June 20th or 30th, about a fortnight later than young Irish. We may well conceive, that the latter's father at first very careful might by this time, when the rash had disappeared and probably desquamation had just commenced, have become a little less cautious, and have betaken himself to

his old haunt, a quiet out of the way place, and about two miles from home as near as any to him. That Whitely was more susceptible to this disease, than most men is evident, as in most cases the fathers mix freely with their fever-stricken children and with impunity, though it is almost certain, that a large number of them have not been protected by a previous attack. This is a fact, which, I think, would be corroborated by all old standing country practitioners, who have kept a record of the cases, which have occurred in their district for 30 years or more. This susceptibility would account for his picking up the disease in this manner and also for there not being a general dissemination from this centre. The other suspicious person in the neighbourhood was Pollock, and attempts to establish any connection with him in any other way had failed. He was a fairly steady man, and I am unaware whether he

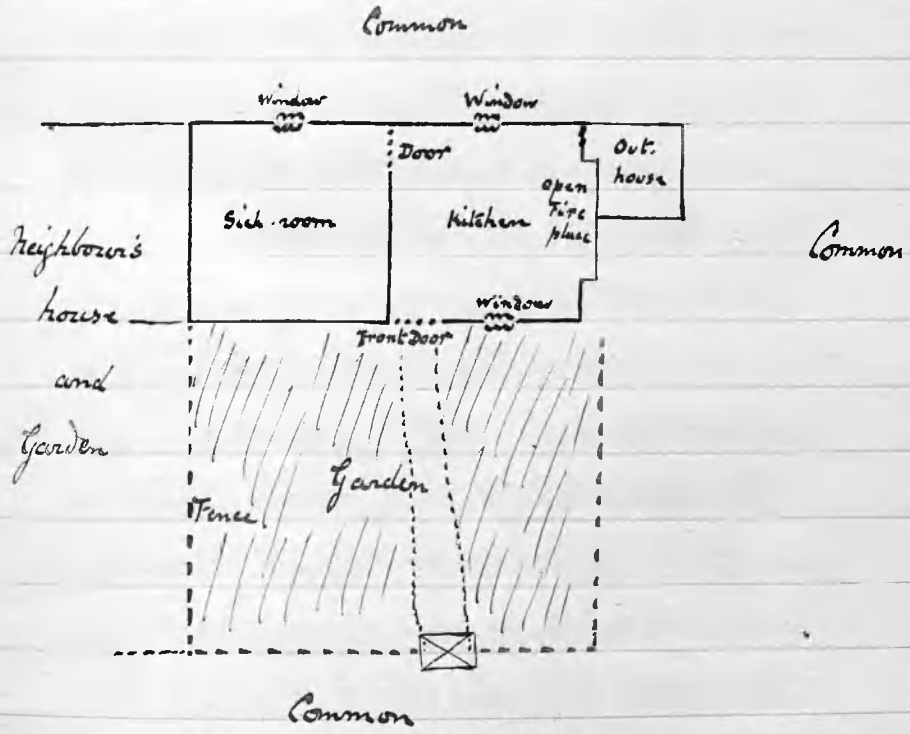
frequented the tavern or not. The distance between his house and it was not great and it is probable, that he called in there occasionally at any rate.
It is improbable, that either Irish Sen? or Pollock suffered themselves from the disease. The mode of infection in either case would be by the clothing, and it should be noted, that the latter's daughter was at about the completion of her sixth week at the time of Whitely's failure.
One other circumstance merits our attention in this connection, and as it depended upon rumour only, it has been left to the last. A report reached me, and it came at various times and from several different quarters, that the family of a man, whom we may call Smith, a small farmer who enjoyed an oasis of a few acres in the midst of the common, had all been ill with sore throats and rashes. Some of my informants stated, that they had heard this

direct from Smith, who himself admitted the illness to be scarlet fever, and who rather gloried in doing without medical attendance, to which he had an aversion. This last fact should prevent us from being too ready to condemn him as a source of danger to his neighbours, but the position of his house and the period, during which the illness, which must have existed, whatever its nature, remained in the family, were both intermediate and may have served as a bridge between Farrel's and Whitely's, the last case in the family of the former having, it will be remembered, been notified on March 13th of the same year, which would give an interval of from the end of April to the end of June - two months. This of course also suggests itself as possibly connected with the outbreak at Pollock's, previously unaccounted for.

Having thus pursued our investigation of the origin

as far as means will allow, we may follow the course of the disease once established in the family. The position of the cottage on the common has been already indicated. This building had a small piece of garden in front, with one or two outhouses, and was by no means in a satisfactory condition for the treatment of an infectious disease. It stone building, old, badly lighted, and still worse ventilated, with small windows and a low roof, its interior comprised two rooms only, and on the same level. Not only so, but the occupants being of a low ignorant order, and the children five in number, these two rooms were far from being in the best state circumstances would allow. One of them, viz that into which the front door opened, was used as the kitchen and sitting room, while the other did duty as a bed-room. The former had two windows and an open fire-place, and always seemed crowded with tables, dressers

and kitchen utensils, while the latter contained two old wooden bed-steads, with scanty and dirty bed-clothing a few boxes, a chair and a table; the whole room imparting an impression of dirt and discomfort. Moreover it contained one window only, no fire-place, and its only door-way communicated directly with the sitting room.



It will be readily understood from this, that the means for isolating the invalids were far from being efficient. The routine use of disinfectants and damp sheet was enjoined, but the want of ventilation and squalid condition of the room rendered the atmosphere foetid and oppressive, with a noxious odour one would have associated in one's mind with small pox, rather than with scarlet fever, when two or three invalids were confined in it. To add to its discomfort it harboured swarms of flies, which the people seemed careless or unable to rid themselves of. No neighbour could be got to lend any help, most having children of their own, and all probably fearing, their labour would be unremunerative. The mother acted as nurse and also did the housework, and looked after the healthy members of the family. In the former duty the husband was able to assist during convalescence, and, I believe, they both did their best as far as their very limited means, and

feeble comprehension of the necessity for sanitary surroundings would allow them. They certainly attempted to feed the children often, although the food prepared did not look very appetising; and they endeavoured to follow the directions given them, and to dress sores, which formed on one of the children according to the method shewn them. All the attacks were severe, that of the father perhaps least so. One of the children suffered from suppurative inflammation of the temporal bone, followed by numerous pyæmic abscesses in various parts of the body, with great wasting. Incisions were made freely wherever these were discovered, and the cavities were kept constantly syringed with carbolic solution, but the patient refused nourishment and gradually got feebler, death ultimately resulting. This was one of the earlier patients. Jack, I think.
We have here another instance of the wonderful way in which people remain exposed to

the influence of scarlet fever for a considerable time with immunity, who are ultimately to sicken with the disease. Under circumstances such as these, where one half of the house acted as a hotbed for disease of a malignant type, and the other half, separated from it only by a wall and a sheet, gave shelter to several unprotected children, with a woman constantly passing from room to room, and ventilation depending largely upon these displacements of the sheet, it would have seemed but natural, had the disease at one fell swoop victimised the whole family. Far from it, we find, that while two boys developed the disease within eight days of the time their father fell ill, one shewed no sign of scarlet fever for six and another for seven weeks from the same date, succumbing eventually as though only to prove, that their previous indifference

to the virus was not dependent upon acquired protection. While the girl apparently escaped altogether. One of course endeavours to explain the failure of the last two boys to desquamate but feels bound to admit that the infection even through this medium was tardy. Possibly freer intercourse was now commencing between the convalescents and healthy children, as time would justify. The father alone in this case had, I believe, resumed his place in the family circle, though under such circumstances as these one always feels doubtful as to whether the same rigorous separation of sick from healthy members is maintained in one's absence as in one's presence. If so it evidences the infinitely greater risk in actual contact between these, than when a few cubic feet of air form almost the sole medium of division.

Another interesting event reminding us of a similar occurrence at Taylor's is worth notice.

Mrs Whitely had engaged us to attend her at her confinement, which she expected to take place in July or August, and, as the time drew near, it was felt, that some steps must be taken both for her safety and for the care of the patients. Accordingly as the result of representations to the authorities it was arranged that she was to be removed to the loft of a neighbouring shed for her accouchement, and the woman, who had been at Cudel's during the existence of fever there, was engaged, to act as nurse to the invalids. I was away on a holiday during the last week of July and the first of August, and on my return found, the confinement had taken place about a week previously. A bed had been made up in the loft, which was warmed by means of a small stove, and another woman had been found to attend to the mother and baby. This shed was two hundred yards or more from the Whitely's cottage

but there appeared to be a good deal of passing between the two, and the woman who undertook the nursing at the latter shortly threw up her office and left. The result of this attempted isolation appeared highly satisfactory, Mrs Whitely making a good and complete recovery, and the baby coming to no harm. After a month had elapsed they were obliged to return to the village, and no ill effect followed this removal. It would be useless to contend that the immunity in this case depended entirely upon isolation & the use of disinfectants. These no doubt were of great service, and without their aid one might well have feared to undertake the treatment. But the penetrating power of the scarlatinal virus is acknowledged to be so great, and its vitality so persistent, that the two great obstacles to its progress could not have been so effectually applied as to entirely debar it from obtaining admission to the labour room. Much of the

clothing and many of the utensils came from the cottage, and the the nurses certainly moved freely between the two, while it would be very difficult for the doctor to enter with a thoroughly disinfected coat every time. The explanation must be sought a little further than this, and probably depends upon the power of natural resistance, possessed in various degrees by unprotected persons, being strengthened by small daily doses of the virus, as in the case of poisonous drugs, toleration of which can be established in a similar manner. Whether Mrs Whiley had suffered from scarlet fever as a child or not is uncertain, but that she was at all events not very susceptible is evident from her having nursed the patients without succumbing to to its influence. She would meanwhile have been acquiring temporary protection, which probably was of great service to her, when presumably placed in a very precarious position. The out-come of this is, that a woman, who has

associated with scarlatinal patients for a period immediately preceding her confinement, has less to fear from that disease, than if the virus meet her for the first time at that event. Of course it is not intended to deduce a generality such as this from three cases, it should rather be viewed as an inference put forward tentatively, to be affirmed or refuted by comparison with other cases, but it is certainly the view held by many general practitioners, who have been subjected to treat cases under similar circumstances.

We may now turn our attention to a new outbreak of scarlet fever, in a different part of the neighbourhood to that, in which any of the preceding cases occurred, and quite unconnected with any of them.

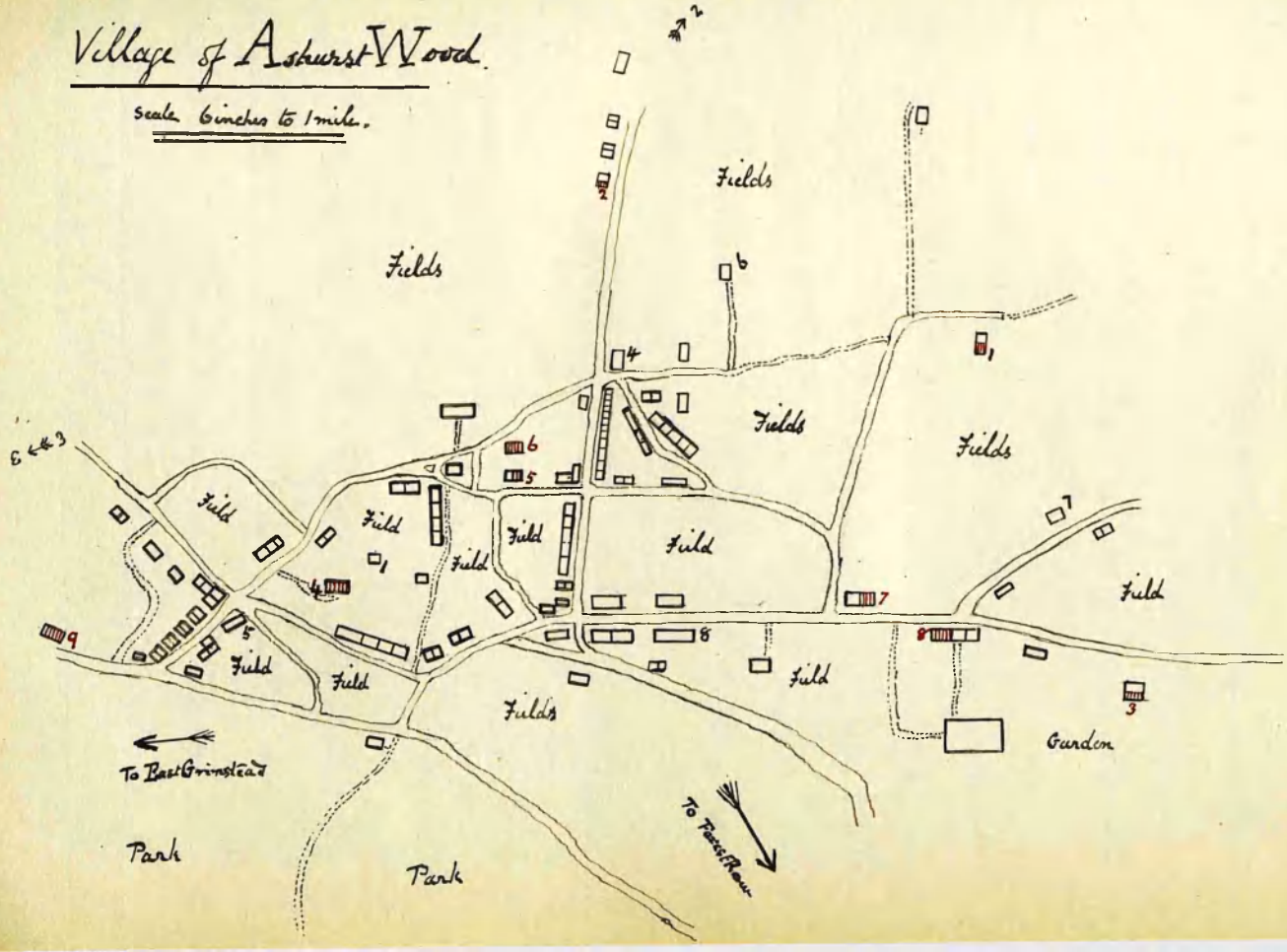
Outbreak at Askurst Wood.

	Notified on	
Alda Pott	Oct: 31st 1893	school-girl
Mrs Pott	Nov: 1st	housewife
Mrs Shayne	" 3rd	gardener
Margaret Matthews	" 3rd	pupil teacher
Stevie Ellis	" 22nd	
Ellen Martin	" 22nd	
Fannie Martin	" 22nd	
Charles Geo. Martin	" 25th	
William Martin	Dec: 15th	school-children
Alfred Joller	Nov: 23rd	
John Joller	" 23rd	
William Joller	" 29th	
John Higgs	" 30th	groom
William Shepherd	Dec: 4th	schoolboy
Mrs Gunn	" 7th	housewife

All notified on the second or third day except Ellis, who was desquamating.

Village of Ashurst Wood.

Scale 6 inches to 1 mile.



A 1001

Village of Ashurst Wood

1. Pott.
2. Malthews.
3. Shayne
4. Ellis.
5. Martin
6. Joller
7. Higgs
8. Shepherd.
9. Gunn (should be more to the left.)

1. Cottage at back of Ellis', in which children with sore throats lived.
3 ⇐ Direction of house in which their father's employer lived.
2 ⇐ Direction of house, in which children lived, who were treated for sc. fever by practitioner from E... G.....
4 & 5. The two public houses.
6 Farm from which Malthews & Pott obtained milk
7. Farm on which Ada Pott's brothers worked.
8. School.

The village is on the top of a hill with several irregularities of surface, which causes the diagram to give a rather cramped representation of it. From the upper part of the diagram the country slopes gradually away; from the lower part it descends abruptly to the valley in which F..... R.. is situated.

About a mile due north of the village of Forest Row, perched on a hill, are clustered some hundred cottages, which constitute the hamlet Ashurst Wood. The majority of these dwellings accomodate labourers and small tradesmen, but interspersed amongst them a few houses of a better class are occupied by gentry. The houses are mostly arranged in rows, either in the form of terraces or of semi-detached habitations, but there are many solitary houses, and the whole are so scattered as to occupy a considerable area of ground, without forming a single street, properly so called. There is a good deal of communication between Ashurst Wood and Forest Row, the railway station for both being at the latter; while two miles on the other side of Ashurst Wood is the town of East Grinstead with about seven thousand inhabitants.

The first case of scarlet fever in this epidemic, to come under our notice, occurred in a

semi-detached cottage without the hamlet, on the Forest Row side, at the end of a long and little used bye-lane, a school-girl Ada Pott 10 years old being the victim. The dwellings were both occupied by families well known to me, and there was no other building for human habitation within a field's length. As usual in such cases the parents of the patient were able to give no explanation of the sudden appearance of a disease, which had been absent from their vicinity for quite three years. Ada went to school in Ashurst Wood regularly, and had continued to do so until the time of her failure. She had moreover not been out of the neighbourhood. The family at home in addition consisted of the father mother and two sons, one a lad of 18 the other perhaps 14. Of these the father went to East Grinstead daily, being in the employ of

the railway company, while the sons worked on a neighbouring farm, and the mother seldom left home. None of them had knowingly been exposed to infection, though a good many cases of scarlet fever existed throughout East Grinstead during the Summer and Autumn of 1893. The position of their cottage did not facilitate much communication with their neighbours, except those next door, the youngest of whom must have been about 20, and who were unknown to have been ill lately. It should also have been mentioned that Mrs. Pratt's father was staying with his son having been there for some time, when this outbreak occurred. He had come from a distant part of the county, and stated, that there had been no fever in the part he came from. He was a very old man. The milk was obtained from a farm a short way off - not that on which the sons worked.

Alden Pott was notified on Oct: 31st and from that date was kept strictly in an upstair room, of which there were three in this house, until convalescence was established. At first the mother took charge of her, but 11 days later, when she herself sustained an attack of the disease, both the nursing and housework fell to the lot of the sons, for a few days, until a trained nurse was procured by the neighboring gentry. Both the attacks were mild and recovery ensued in due course. The usual steps for preventing infection were taken, and no case could be traced back to this household afterwards. The sons apparently escaped, and that they did so is the more probable from the fact, that the members of this family usually came for medical treatment for every ailment however trifling. It will thus be seen, that so far the origin of this outbreak was by no means clear.

Three days later on Nov: 3rd two new cases cropped up at different ends of the hamlet, ~~and~~ neither very near Pott's. In one of these especially the circumstances were very peculiar viz that of Margaret Matthews aged 16 or 17 years, a pupil-teacher in the Cokurst Wood national school. This girl was under our treatment for some other complaint of a not very serious nature, and had been kept in bed for over a week immediately preceding the appearance of a rash on her. Here then we had to face the choice of two views, either exposure to infection had taken place after her retention in bed had commenced, or it had taken place previously, and the latent period had lasted for a week at least - its maximum - One would much prefer to find an explanation consistent with the first of these, being loth to believe that the period of incubation often extends the length of a week, but as the result of careful enquiry

only one suspicious fact was elicited. viz that these people obtained their milk from the same farm as the Potts. This established a connection between these two cases consistent with the first view but whether it had any value depended upon the existence of disease or infection on the farm or amongst the milkers, while an equally strong or stronger connection existed between them agreeable with the second, in that Ada Pott might have imparted infection to Matthews at the school. This of course implying, that we had been misled as to which was the first day of the former's illness. Other enquiries yielded only a negative result, and with the previous knowledge, we possessed of these people, which was intimate, may be briefly summed up as follows.

The house, which was a semi-detached substantial brick building in a line with several similar dwellings, contained four inmates only -

These were Margaret, her father, her mother and the head schoolmaster, who, being a stranger, lodged with them.

Matthews himself worked for his father a builder, and his labour, at which he was very regular was mostly effected in a workshop a few hundred yards distant, opposite the school. In the evening he often took a spin on his bicycle, but apart from this and an occasional visit to East Grinstead seldom left the neighbourhood. His wife, as is the case with most women of her class, found her home duties occupied the greater portion of her time, while the school master was tied to the place in a similar manner. They were very respectable people and were quite willing to give any information, which might aid in clearing the matter up, but felt confident, they had none of them been in an infectious house (apart from the school) and likewise asserted, that no visitors had entered the house. In addition the school

master came to us shortly afterwards to undergo a medical examination prior to being temporarily transferred to another school. He was examined twice, an interval of a week being allowed to elapse between the two examinations, and on neither occasion was any trace of desquamation, or any other form of the disease, to be discerned on him.

The room, in which the patient was treated, and which she had occupied previous to her failure, was a small, but otherwise sanitary, up-stair room with a fire-place, and a good sized window overlooking the garden at the back of the house. I enquired whether any friends had been in, but was told that none had; and that the attack was not the result of the doctor's visits was evident from the fact that hitherto she had been attended solely by my principal, who had not recently been in a scarlatinal house; Ada Pott having been under my exclusive care.

I did not visit this case myself on the day of notification, but it having come into my hands after the first few days, I was able to ascertain the foregoing particulars.

Mrs Shayne, head gardener to a gentleman living on the border of the hamlet, presented a copious rash and other symptoms of scarlet fever on the same day. Nov. 3rd. He lived in a good semi-detached cottage on the garden, the other part of the building being in the occupation of a fellow-servant. The premises were comparatively new and in very good condition. His work of course was constant and occupied the major portion of his time. The gardens being large and well stocked, while several men worked under his supervision. The family at home in addition to himself consisted only of his wife and a daughter, the last named a school girl aged about 12 years. None of them had been away from home recently, nor had they suffered from illness immediately preceding Shayne's

failure. No visitors had been to the house, there was no known illness of this sort amongst any of the other servants, and there had been no communication with the Potts, except possibly in an indirect way to be presently noticed. Being in the garden the house, although easily accessible, was rather out of the way of casual infection. The road, from which it was approached, was in a direct line with that passing the school, which was a third of a mile distant, but being a bye road and much out of repair, was little used except by people coming to the Estate, or children whose way to or from school lay in this direction.

Unfortunately I did not overhaul the daughter, but remained content with the mother's assurance that she had complained of no soreness of the throat, or any other feeling of illness. I rather fancy she went to a private school at East Grinstead instead of to the Ashurst Wood National school, her parents being in a comfortable position.

but this also is a point upon which my notes are insufficient, and which I am now unable to ascertain. There was naturally a good deal of anxiety on the part of the parents as to whether the girl would also take the disease. She was kept strictly apart from her father, who was confined to an upstair room where he remained under the care of a trained nurse after the first few days, and apparently with good results, as she showed no sign of the complaint throughout. Whether this escape implies a previous unrecognised attack, or is a tribute to the efficiency of isolation and antiseptic precautions, which were pretty thoroughly employed, or was due to her own good luck, is a question we cannot decide. We have already however had abundant evidence from other sources to prove, that it is by no means imperative for us to adopt the first of these views. What would incline us to do so would be the mere fact of the father,

who would presumably be the ~~more~~ less susceptible failing. while the daughter escaped. Curiously however we have already had an illustration of this afforded us by the Whiteleys, and it was interesting to learn, that a few years previously, Shayne had suddenly developed measles in a similarly unaccountable manner.

The one suspicious piece of information gleaned had reference to the milk supply, which came, not from the same source as Pott's and Matthews', but from the farm on which Ada Pott's brothers worked, and where until this was forbidden on the appearance of their sister's illness, they had helped in milking and tending the cows. As however she was not seen until the second day of her illness (Oct: 31st), there was at any rate one day, during which she was infectious, that her brothers continued at their usual work. This day was Oct: 30th, while Shayne's first day was Nov: 2nd (the rash having

first attracted notice on Nov: 3rd/1. This would allow a little over two days for the latent period supposing Shayne's illness to have been derived from this source. It is to be noted however that no other case was suspected of having been derived thus, though several people drank milk from this farm, and that there was no suspicion of either of Ada Pott's brothers having himself sustained an attack of scarlet fever.

Shayne made a good recovery without complication. He was rather more reputed looking than most men of his class having a delicate skin, which perhaps accords with the rash having been very profuse, and desquamation, which commenced early, remarkably free. With regard to his apparent susceptibility to infectious complaints, both this attack of scarlet fever, and the measles casually mentioned were believed by him to be first attacks. Had it been otherwise the coincidence would have

been more readily explained. It is difficult also to believe that a man forty years of age could have never been exposed to their influence (i.e. their infectious influence) before. Up to this time then, although connections of uncertain value were traceable between the three cases, (Mrs Pitt had not yet failed) of scarlet fever, which, having cropped up in different parts of the hamlet, seemed to herald an epidemic, no evidence indicated the actual starting point, or the medium by which the disease was brought into the community. Priority lay with Pitt, but it seemed more probable, that she and Matthews had derived their illnesses from a common source, than that she had been the sole cause of the outburst, and that this common source had exerted its influence either through the school, or the milk supply, both of which were common to the two patients.

Shayne's failure had done nothing to clear this up. Unless indeed we accepted it as a derivative of Pott's attack, it only complicated matters. With the exception of Mrs Pott's succumbing to the influence of the disease, there was now a lull until Nov: 22nd, when evidence was furnished, which shed much light upon this outbreak. On this day an urgent message came requesting us to see Reevie Ellis, who was said to have suddenly become seriously ill after having been slightly indisposed for some time. I went to Adderstone Wood at once, and found the boy in a highly emaciated and moribund condition. He was quite conscious, but very breathless, and unable to move in bed without a good deal of assistance. The room was comfortable, a bright fire burnt in the grate, and the boy's mother sat by the bed-side endeavouring to administer some liquid nourishment. A few questions elicited from her, that the patient

had been confined to his bed for three weeks, with, as she had supposed until lately, a cold or some trivial complaint. She had nursed him herself and he had had every care, but she had not regarded the illness as serious enough to require a doctor. On turning down the bed clothes to cautiously examine the patient he was found to be little better than a skeleton. His skin bore a dusky mottling and was desquamating freely, chiefly about the abdomen, there being every appearance that the boy had had scarlet fever. On being questioned his mother now admitted that he had come out in a bright red rash three weeks ago, when first he fell ill. But that she had not thought much of this, and had only suspected the case to be scarlatinal during the last few days. Examination of the lungs gave me decidedly the impression that he was also suffering from pneumonia, but pleurisy being a more

usual sequela in scarlet fever, it is just possible that I may have mistaken the latter for it (i.e. pneumonia) as death, which was obviously approaching took place an hour afterwards, and there was no post mortem examination, there was no opportunity of revising the diagnosis.

The Ellis's were fairly well to do, having private means and being much in the position of small farmers, but they bore by no means a good reputation in the neighbourhood, their past history being not at all adapted to recommend them. The family at home consisted of the mother (a widow) two daughters, and two sons, in addition to Fannie: the youngest after her death being one of the daughters, who was about 18, the rest were much older. The house, in which they dwelt, was of a good size, and was surrounded by a small plot of ground. There could be no doubt as to the origin of Fannie's illness, which must have commenced at least as early as Viola Pott's

As already mentioned there had throughout the Summer and Autumn of this year, been a good deal of scarlet fever in the neighbouring town of East Grinstead. Mrs Ellis availing herself of the size and position of her house, had until quite recently been receiving batches of convalescents from an institution in that town, in which temporary accomodation for Scarlatinal patients had been made, and Seriously from one of these the disease had been ultimately communicated to her own family. That the son's attack had been wilfully concealed until death was imminent seemed only too probable, and it leaked out, that the youngest daughter, who taught in the national school at Ashurst Wood, had also been unwell with a sore throat some weeks ago, having been obliged to keep it tied up for some time. It was immediately suspected, that she also had suffered from scarlet fever, and probably she had

It now came out, that this girl visited and spent an afternoon with Margaret Matthews three or four days before the latter shewed signs of scarlet fever, thus clearing up the mystery associated with the origin of the latter's illness, acquired while in her own room. This visit had been overlooked by the Matthews's, but readily occurred to their minds now. Again the girl Ellis had no special class at the school, but took different classes on different days. She took the class to which Elda Pott belonged twice or thrice a week, but why the latter should have been selected from amongst all the children in the class is not easy to explain, unless from the fact that she was ~~sitting~~ head of the class, she was brought into closer proximity with the teacher, than the other children were. No light however was thrown upon Sharpe's failure, nor was any more information obtained on that head, than has been already given. The other members of Mrs Ellis' family were

all grown up, and no hint ever reached me of any of them having suffered from an attack. On Nov. 22nd also I was called in to see Ellen and Fannie Martin two school-children living two or three hundred yards from the Ellis's, and found them both suffering from scarlet fever, and within a few days of the commencement in each case. On Nov. 23rd Alfred and John Joller also schoolchildren, and who lived in a cottage near the Martins, were also found to have this complaint, which progressed in these two families in the order given below

Ellen Martin	Nov. 22nd	Alfred Joller	Nov 23rd
Fannie Martin	22nd	John Joller	23rd
Chas. G. Martin	25th	Willie Joller	29th
William Martin	Dec 15th		

These two families lived near the centre of

Oakhurst Wood. Their houses faced diverging roads, and their back-gardens were open to free communication from one house to the other, without any intervening wall or hedge. No doubt the children picked up the disease at school - They were in different classes and the exact manner in which the infection was conveyed to them in the first place and afterwards from one to the other was not demonstrable. Ellis appears to have been constantly shifting her class, and probably came into contact with one or more of the children, after which they spread it amongst themselves. Probably the stir caused in the neighbourhood by the death of Annie Ellis was in some way accountable for my finding two cases at my first visit in each of these houses. About this time also cases of fever occurred in a family just outside the hamlet, under the care of a doctor from East Grinstead

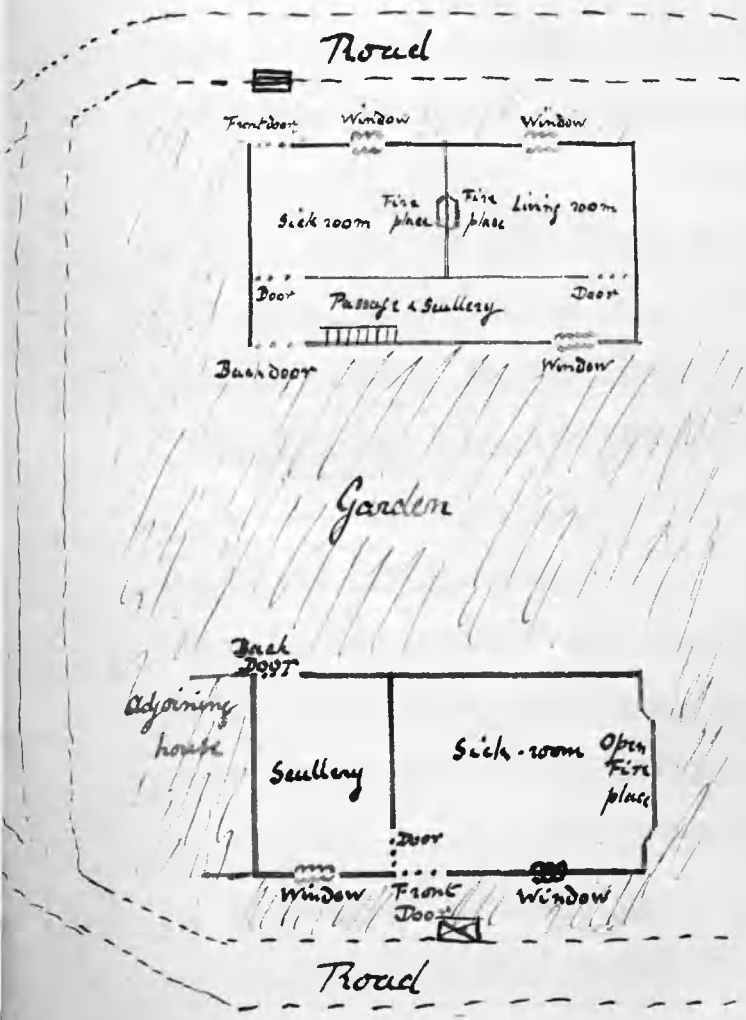
They appear to have been the only cases in this district, which were not under our care, and owing to these various outbreaks the Medical Officer of Health ordered the National school to be closed. This step probably had great influence in preventing further extension. The Mearns dwelt in a rickety semi-detached cottage situated between Ellis' house and the school. The interior was badly arranged, and, like its occupiers, in an untidy and dirty condition. On the ground floor were a kitchen and scullery only, the former alone being suitable for constant use. There was one storey, but the rooms being without fire-places, it was decided to make up a bed for the invalids in the sitting room. This room had a low ceiling and always seemed dark and stuffy, although it possessed ~~two~~ one window (lattice) and an open fire-place. Disinfectants were supplied, and to some extent used.

There was little real endeavour to check the progress of the disease, the parents being regardless of this and anxious only to get through with as little trouble as possible. The downstairs room, in which the sick children were kept, was still used by the whole family during the day. They took their meals there and went in and out as usual. Martin himself it is believed took certain precautions recommended him before going to work of a morning, but the interior of his house, or of the front room at any rate, must have been a hot-bed of infection. The family consisted of the father, mother and four children. The parents believed, they had never had the disease, but neither of them failed with it on this occasion. Of the children it will be seen, that the two girls failed first, and three days afterwards one of the boys, as though he had taken it from his sisters. The eldest, a boy about 12, was the last, and for over three weeks he constantly inhabited the sickroom before he showed any

sign of the disease himself, this although the cases were severe, and the atmosphere of the room heavy and unwholesome. The patients all suffered from the same semi-malignant, sluggish type of disease as was found under the somewhat similar circumstances at Whitely's. The hygienic conditions were worse however at the latter's than at Martin's and correspondingly the cases were worse, one it will be remembered having died, while at Martin's all recovered. In neither instance however did the degree of infectiousness seem proportionate to the severity of the attacks, which makes it probable, that the latter depended rather upon the tissues being compelled to struggle under disadvantages, than upon any exceptional qualities of the virus. The adjoining house contained no children, and with the exception of Joller's block, there was no dwelling very close to these cottages, so that fortunately no extension occurred from them.

The Jollers were treated under more favourable circumstances, and the attacks they sustained were milder. Whether they took the disease at school or from the Martins is uncertain, but the first to fall in this family was a boy (the only girl did not take it), whereas all the cases attributed to school influence so far had been girls, in correspondence with the teacher's sex. The two families would be much thrown together, and possibly the Martins may have developed it a few days earlier, than we were led to believe, in which case there would have been time for it to have incubated in the Jollers by Nov: 23rd, if transmitted early.
The Jollers' cottage was commodious, and enabled isolation to be fairly well maintained, the mother moreover was cleanly. The only inhabitants, besides the boys, were the parents and a girl 12 years old, who all escaped. The patients were treated downstairs in order to obtain the benefit of a fire, and as their room did not communicate

directly with the living room, there was no need for anyone to enter it, but the mother and women, who assisted in the nursing. The front door opened into the sick-room, but was not used.



Ground floor of Jolliffe's house.

Ground floor of Thornton's house

John Higgs was notified on Nov: 30th and William Shepherd four days later on Dec: 4th, the day of the eruption in each case. There can be little doubt that Higgs gave the disease to Shepherd, but where he got it from himself is not at all plain. He worked as groom or stable-help on the same estate as that on which Shayne was gardener, and Shepherd's father coachman. The two were great friends in spite of the disparity in their ages, spending a large part of the day in one another's company. Higgs lived with his parents almost opposite the stables being one of a large family, many of whose members were quite young. I attended a little girl in this house about this time for another complaint, and can be fairly certain, that there was no scarlet fever there until the son went down with it. This with the selection of a lad of nineteen as the first victim make it probable, that he picked it up somewhere outside, rather than that the

infection was brought into the house, as by milk for instance. Shayne, who had now completed his fourth week was the nearest sufferer from the same complaint, but no communication could be traced between them, and the Shaynes were of a class superior to that of Higgs' people. Shayne was moreover a careful man not likely to endanger anyone else on the estate, the owners of which were excessively nervous in this respect. It is true he was beginning to get about at this time, and the stables were only about a hundred yards from his cottage. The gas house intervening, but in going towards them he would also be going near the big house, and this he would be sure to avoid at so early a period of his convalescence. The only other possible source, I know of, is the public house, which Higgs frequented every evening, as the coachman informed me, and at which he may have taken it from Jolley or Thornton, both men of ill repute. Both these

are very problematical sources, and I am afraid neither can be admitted as evidence.

Higgs and Shepherd were both removed to the fever hospital at East Grinstead and apparently with great benefit, as with the exception of a very doubtful attack in one of the former's sisters, who was also removed some time afterwards, there was no extension from either case.

Mrs Gunn is the last patient on the list in connection with this epidemic. She was not regularly under my care, but I paid her a few visits instead of my principal, when she was getting better. Dec: 7th was the date of her rash, but she had been already confined to bed for several days under medical direction with a diphtheritic throat. Her little girl was also in bed with her, suffering from a similar throat, but no rash appeared on her, although watch was kept for one. They lived rather out of the way of the other cases,

Gunn himself being head gardener to a gentleman, whose property lay on the East Grinstead side of Ashurst Wood, while the Haynes's lived on quite the opposite side. Their house was really suitable for a gentleman, and stood in its own garden, away from the neighbouring dwellings. They must have been well aware of which were the infected houses, and would take care to avoid them. The only explanation, they could offer after reflection was that the diocese might have been conveyed in a sofa, they had lately bought from a second hand dealer in East Grinstead. This under the circumstances hardly strikes one as sufficient. There was one other child in the house, and a maid-servant, but neither took the complaint. There had been no visitors to the house, and the milk came from a source devoid of suspicion, being supplied to numerous customers.

There was only one other case in this epidemic as far as I am aware. It occurred in the beginning of 1894 after my connection with the practice had ceased, but both being in the neighbourhood at the time, and happening to return to it for a few weeks later in the year, I heard of it, and learnt, that no fresh ones had occurred. The patient in this case was the daughter of a gentleman living in Ashurst Wood and her age may have been 8 or 9 years. As to the origin of this case I know nothing, but it recalled to mind, that this same gentleman one day towards the end of the preceding year, had been rather alarmed at the occurrence of illness in the family of one of his men. In consequence I paid an exploratory visit and reported the circumstances to him. The man lived in a cottage not far from

Ellis' house, being in fact within the same boundaries, but possessing a separate approach - and it was this, which caused suspicion. The man, his wife, and two children lived in the cottage, and of these the children alone were at all out of health. At the time of my visit, they both exhibited slightly enlarged tonsils, & complained of soreness in the throat; one child also presented an elevation of a degree in her temperature. These were practically all the symptoms. There was no membranous exudation in the throat; and no trace of a rash or of desquamation could be discovered on the body or limbs of either. The parents also denied the existence of a rash at any time, but they were people upon whom I should place very little reliance - All precautions were advised, as though there were undoubted infection, but the attendance comprised one visit only.

Outbreak at Forest Row Nov: 1893.

We must now go back in point of time to consider an outbreak of scarlet fever in Forest Row, which was concurrent with that at Ashurst Wood. Though nothing definite was discovered as to its origin, I believe it to have been quite distinct from the other. No connection could be traced between them, although the probability of such was constantly borne in mind. The chain of evidence throughout its progress was weak, and baffled me at every turn. In spite of this it possessed much interest, and this lay not in itself so much as in its association with other forms of sore throat, from which scarlatinal phenomena were absent. Whether their co-existence was ~~due~~ simply a co-incidence, or whether some of them had a scarlatinal basis,

disguised under their aberrant forms, or whether the existence of one in any way assisted the co-existence of the other, are matters which our present state of knowledge seems unable to decide. However it may be, I have departed in this instance from the line hitherto followed, and have included some consideration of these, with that of the genuine cases of scarlet fever, entering moreover into some details of one, which at the time rather fascinated me. It should be mentioned, that there were a few other throat affections in the neighbourhood including one or two cases of diphtheria, but there was apparently no connection between any of them and the cases noticed in the following pages.

Forest Row Outbreak.

43.	Mrs Seccombe	Nov. 2nd 1893.	Herpes	Schoolmistress.
44.	(Baby) Seccombe	" 5th	Erysipelas	
45	Miss Harmsen	" 5th	Tonsilitis	School teacher.
46	Miss Broom	" 7th	Scarlet f.	School teacher.
47.	Stewart Broom	" 10th	Scarlet f.	
48.	Mrs Henry Broom Jr.	" 10th	Tonsilitis	
49.	Winifred Seccombe	" 13th	Scarlet f.	Schoolmistress' child
50.	Gerard Seccombe	" 19th	Scarlet f.	" " "
51.	Mary Mallet	" 24th	Scarlet f.	
52.	Louisa Mallet	" 24th	Scarlet f.	
53.	Winifred Stubbs	" 28th	Scarlet f.	School child
54.	Florence Stubbs	" 28th	Scarlet f.	" "
55.	Henry Broom Jr.	Dec. 9th	Tonsilitis	
56.	Agnes Taylor	—	Patches on tonsils	Servant at school house
57.	Mrs Alfred Taylor	—	Patches on tonsils	

The dates of the scarlet fever cases are those of notification, of the others those, on which medical attendance commenced.

Mrs Seccombe, head mistress of Forest Row national school, sent for medical aid in a great hurry on the evening of Nov: 2nd 1893, on account of a "sore throat" from which she had been suffering from some days. She was already known to me as an intelligent and fairly strong but neurotic woman, somewhat pulled down by her confinement in July of the same year, which was preceded by a good deal of haemorrhage. Her age was probably about thirty eight. I found her on the evening of Nov: 2nd in a good deal of distress from the pain and stiffness in her throat, with a flushed face and hot skin. Her pulse rate was 120, and her temperature 103° F. On examination both tonsils were found to be much swollen and congested, the right more so than the left, and the former also exhibited several small vesicles scattered over its surface. The lips were dry, the lower one being cracked. Careful search was made for a rash not only at the time, but on each of the next

two or three days, but no trace of such could be discovered.

During the next four days gradual improvement took place, and the temperature fell to 99°, at which point it remained. The vesicles on the right tonsil vanished, and small white patches appeared on each tonsil, though no vesicles had been observed as yet on the left. There were no patches on the palate or pharynx, the affection in the throat being confined to the tonsils.

On Nov: 5th a line of large vesicles appeared along the margin of the upper lip, with a group at the corner of the left nostril. They caused severe smarting and soreness, similar sensations being complained of up each nostril. For two days they remained causing a great deal of pain, and were then replaced by scabs, first on the margin of the lip and then at the corner of the nostril. The former had disappeared by Nov: 12th, leaving the lip rather thickened.

At the same time the throat symptoms gradually

became ameliorated, the patches disappearing and the tonsils becoming smaller until Nov. 4th, when a change took place, and the patient complained of a feeling of tension in the left tonsil. This became aggravated during the following day, and the left tonsil enlarged and presented a red glazed appearance. The patient had worried a good deal throughout, not only on account of the pain and discomfort, but because of her children, her housework & school work, and moreover it had been necessary for her to remain in bed all this time. On the evening of the 11th, she quite broke down and her condition was then pitiable. She suffered from severe pain in the throat with stiffness and tenderness along each side of the neck, feelings much aggravated by swallowing, although only beef tea and milk were taken. Her voice was reduced to a whisper, and there was some difficulty in getting her breath. On ~~[illegible]~~ examining the neck a hard, tender gland could be felt at each angle of the lower jaw.

The patient could not open her mouth very wide, but managed to open it just sufficiently to allow one a good view of the throat. It was then seen, that the right tonsil was only slightly enlarged, but with a ~~cretta~~ pitted or ragged surface, which bore no vesicles or patches. The left was red, shining and much swollen bulging into the pharynx, so as to offer considerable obstruction to the passage of air or liquids. On its innermost aspect was a projection surmounted by a corona of clear vesicles, some of which looked the size of a split pea. Their regular arrangement and bright shining appearance figuring against the intense redness of the tonsil, was most striking and recalled to mind the pictures I had seen of anthrax in other parts of the body (with allowance for vesicles instead of pustules only) the resemblance being so realistic, that for a long time it was difficult to banish it from one's memory. It was necessary however to do something to relieve the patient, and vesicles and tonsil were accordingly freely punctured with a

darning needle previously rendered antiseptic with permanganate of potassium solution. A good deal of blood and mucus came away, but no pus was observed, and the discharge was encouraged by means of a warm gargle. The patient afterwards felt very sick. On the next morning she informed me that she had remained in a state of great distress until two a.m. the discharge continuing in small quantities, and difficulty in breathing persisting - She then dropped off to sleep, and when I saw her, she was much easier, cheerful, and able to talk comfortably. The left tonsil was rather smaller, and a little opaque white material was all that represented the vesicles. The pulse was quiet, and the temperature subnormal - From this time steady and uninterrupted progress ensued. No desquamation took place, but the patient remained in a weakly state for some time to come.

The notes on this case, though scanty, are sufficient

to exonerate it from any suspicion of a scarlatinal basis. It was evidently a case of severe herpetic tonsilitis following the distribution of some of the terminal twigs of the fifth nerve, and one might almost imagine, that it implied some disturbance in Meckel's ganglion on each side. Of course it might have been started by some unknown virus inoculated during deglutition or respiration. However that may be there was no known cause for it, but it ran a very definite course, affecting first one tonsil and then the other. It was not scarlet fever, and it was not diphtheria. Was it by any possibility ~~diphtheria~~ erysipelas?

(It should be noted, that Mrs Seccombe never remembered having had scarlet fever at any time.)

The question of erysipelas comes in very opportunely, because on Nov: 5th the baby developed that disease, and at the risk of being led too far astray from our subject, it has been included in the list.

Mrs Seccombe's Baby was just over three months old, when its mother first laid up with a sore throat. It was a well-formed, healthy looking child, and up to this time had been nourished from the breast. On Nov: 5th three days after attendance commenced on the mother its right ear was red, swollen and oedematous, the temperature was high and all the signs denoted an attack of erysipelas, which had come on in the preceding night. The child had been kept in a cradle by its mother's bed-side since the commencement of her illness, being tended during the day by its father or the maid-servant, who sometimes carried it downstairs for a short time. The disease ran a fairly typical course leaving the ear as it extended to first the right cheek and then across the forehead and part of the scalp to the left. It assumed rather a dusky hue at first, but gradually became brighter, and seemed to centre round the right cheek,

which was the part most affected, albeit there were streaks of healthy skin, and my attention was drawn by my principal to the fact, that the disease appeared to follow the distribution of the facial nerve in this part of the face.
The temperature, which was 103°F at the onset, remained up for several days.
By Nov. 8th three days after the commencement several vesicles had appeared on the right cheek and it was this, which seemed to require this case to be mentioned, as although they were smaller and less regular, than those on the mother, they made one suspicious of some connection between the two maladies. It should be noted also, that on the first day of the baby's illness a small abrasion was observed on the upper part of the ear at about the spot, from which it seemed probable the disease had started. It was covered by a fibrinous slough, and resulted. The mother assured me, from a pimple, which appeared a few days head

previously and come to a head.
What is the exact form assumed by erysipelas is,
when it attacks the throat. I am unaware from
my own experience, so cannot say how far
the state of the mother's throat co-incided with
this supposition. But as the mother's illness began
a few days before Nov: 2nd, and the child's on
the night of Nov: 4th, there would have been
about a week for inoculation from one to the
other to have occurred, supposing the cases to
have been thus connected; presumably a
sufficient time. In 1892 we had a patient,
who contracted erysipelas from some pigs
suffering from swine fever, in whom the
period of incubation was undoubtedly
less than 10 days.
Perfect recovery ultimately took place without
any more evidence as to the origin of the
attack, which retained the symptoms of
erysipelas throughout.

On Nov: 5th attendance was required upon Miss Harman one of the school teachers, who suffered from a sore throat, which prevented at the time and throughout its course the features of an ordinary tonsillitis. The patient, who was about 30 years of age, had never had scarlet fever. She lived with her parents a mile out of the village, and came into the school every morning, returning home towards the latter part of the afternoon. Her mid day meal was taken with her married sister, who dwelt in the village. The patient's mother presided over a large private laundry, and the people, whose washing was done there, hearing about the daughter's sore throat and being aware of the scarlatinal cases, which existed in Ashurst Wood at this time, became alarmed and wished every precaution to be taken. No rash had been discovered although carefully sought for,

nor was there any other indication of scarlet fever, but it was considered advisable to recommend her removal from the laundry until good health was re-established, and accordingly she was taken to her married sister's house in the village. Careful disinfection at her own home was insisted upon, and the use of disinfectants at her sister's. She recovered completely in a fortnight, but was kept under observation, with the result that no desquamation was discovered.

This attack then to all appearances was a simple tonsilitis, but had she already had an attack of scarlet fever, there was nothing about it inconsistent with the scarlatinal sore throat of a protected person, supposing her to have been lately exposed to infection. Up to this time there had been two cases of sore throat amongst the school mistresses, apparently unconnected with each other or with scarlet fever.

But it happened on Nov: 7th, that another school mistress Miss Moon fell ill with a sore throat and on the evening of that day the commencement of a rash was apparent, which by the 8th had developed into a thick scarlatinal eruption. The patient lived with her parents in the last house on the north side of the village, being the terminal house of a terrace possessed by her relations. She had only about a quarter of a mile to go before reaching the school, so was able to return home in the middle of the day for her dinner. Thus her duties formed a regular routine, and kept her in the neighbourhood. She could give no idea of the means by which the fever reached her. The other occupants of the house were the parents and her brother. As the last named went daily to work at East Grinstead it seemed at first probable that he might have brought the infection home to his sister,

but his own failure two days later brought discredit upon this supposition, and moreover none of his fellow workmen had been down with this complaint. The father, a blacksmith, worked at the smithy close by, and spent little time elsewhere. Of course one was at first suspicious of infection having been brought from Ashurst Wood, but on making particular enquiries from the moors on this head, I could hear of nothing to justify it.

The brother, Stewart Moon, a lad 19 years of age was notified on Nov: 10th, when the rash was beginning to come out on him. As he and his sister were at work in different places all day, and there was no source of infection at home, they can scarcely have been exposed simultaneously to infection, consequently the great probability is, that Stewart took it from his sister. If we suppose the rash to have commenced its appearance just

after the completion of the first 24 hours of the disease, and we suppose the active period in his sister's case to have commenced on the morning of the sixth, we get a period of from the morning of the sixth to mid-day on the ninth (Stewart was first seen at midday on the tenth) a just over three days for incubation. This is interesting because it is so seldom possible to ascertain the exact length of this period, and here although there are possible fallacies, it is fairly certain that the latent period did not exceed three and a half days.

The case of ~~Evans~~ Matthews at Ashurst Wood would have formed a capital gauge of this period, but it was not quite certain on which day Ellis visited her; but according to the parents it was 3 or 4 days before the appearance of the rash.

Winifred and Gerard Seccombe aged about 9 and 6 years respectively now failed with

scarlet fever and were notified, the former on Nov: 13th, the latter on Nov: 19th, the day of the rash in each case. This turned one's attention to the school-house again, the children being part of the family of the head school-mistress. It became now a question as to whether the teacher (Miss Moon) took the disease from a source common to the children and herself, or whether the children took it from the teacher. Miss Moon had not been to school since Nov: 7th, while Winnie's active period began on Nov: 12th, allowing five days for the latent period, supposing the disease to have been imparted on the occasion of Miss Moon's last visit to the school. This, though longer than we have found in the other cases, being well within the bounds of probability. In fact in the next instance, i.e. the interval between the failures of the two children, a period of six days elapsed, but to this it may be objected that although

Winnie was kept in a separate room from the time of her eruption onwards, the father, who acted as nurse, was constantly in amongst the other children. What exact connection had existed between these children and Miss Moon it is difficult to say. They were too advanced to be in her class, (or certainly the girl was) which consisted of infants only. Whether during Mrs Seccombe's illness Miss Moon may have helped in some of the housework in addition to her usual duties, is a point, on which I have no information - She certainly did not mention, that she had - and one is unable to push enquiries too far on many such points, on which fuller knowledge would be desirable. I should not think it probable, that she did much in that way, or I should have heard of it, or have seen her, when visiting there. The school-house and the school-master's residence were parts of the

same building, the latter occupying the central portion separating the boys' part from the girls', which respectively formed the wings.

The school was closed by order of the Medical Officer of Health, as soon as one of the Seccombes was known to have scarlet fever, so that the possibilities of extension amongst the school children were minimised. But the fact that one of the teachers, and two of the children in the school house went down with the disease, while the school children from outside escaped, decidedly points to a source in the school house itself, and this being so, it is readily understood that a teacher would be more likely to enter the apartments of the master and mistress, than one of the school children, who had their own entrance at either end of the building, whereas the head master and mistress had a private

doorway leading from their own portion of the school house. The residents in this part at the time of the outbreak consisted of Mr & Mrs Seccombe five children (I think, but certainly four) varying in age from ~~twelve~~ nine years downwards; the maid of all work, and the woman who was living there temporarily to nurse Mrs Seccombe. None of these the family themselves may be eliminated because it is wished to ascertain, by what means the fever was brought to them, and because it seemed very unlikely that they had picked it up outside. I say this not only from want of evidence pointing to such an occurrence. But because they were very quiet retiring people who seldom went far from home, or even visited their neighbours much, and who were in addition chained to the house for the greater part of every day by the routine of school work. Another significant point is, that the father and young

Seccombes were going amongst the school-children every day / Mrs Seccombe it will be remembered was prevented at this time from doing so by her throat affection / and consequently cases would probably have sprung up amongst these, had the Seccombes brought infection from without, instead of amongst the teachers, the more so, when one reflects, that the children were presumably far more susceptible. The gist of this is, that we should rather turn to the nurse and servant girl as more probable media of infection, especially as no suspicion could be grounded any where else, as on the milk-supply, or any visitor or article introduced.

The nurse was that Mrs Dewdney, whom we met before in connection with Grimes, at whose house she had taken permanent residence except when on duty. The outbreak

(Sept 19th 1892)

at Grimes' was now too old a story to be appealed to for any light upon the present cases. were it not, that every now and then we hear of some such wonderful recurrence of the disease from dormant germs. However even this possibility was almost stultified by the fact of her being a professional midwife and of the number of cases she had since attended without any misadventure. As a matter of fact she was employed by Mrs Seccombe herself during her confinement in July 1894. It may also be remarked that she was not known to have been in an infectious house since.

The servant girl had not been long in her present situation, though I am not sure how long, but probably a few weeks would form the outside of the period; nor had she been in service before. She was the eldest child of Alfred Taylor, who lived

opposite the school, and whose children had all suffered from scarlet fever in May of the same year - six months previously - the house having been disinfected in July. This leaves a considerable gap to be bridged over, but I think, that on reflection it will be agreed that there is a fair probability of infection having been conveyed thus. Perhaps this is the most opportune place also to refer to the sore throats with which this girl and her mother (Agnes Taylor, and Mrs Alfred Taylor) are credited at the foot of our list. They occurred towards the latter part of the Summer, the mother's first and then the daughter's, and quite possibly had nothing to do with the other sore throats noted, but the daughter having thus been brought into the connection, and our knowledge of the exact nature and degree of infection of certain affections of the throat being

undefined, it seemed advisable just to mention their occurrence. The tonsils alone in each instance presented membranous patches of a diphtheritic appearance, but not so persistent as and with a higher temperature, and more acute symptoms, than, in a typical case of diphtheria. They were accordingly diagnosed as herpetic tonsilitis. Each patient complained of weakness for a considerable period afterwards & showed a tendency to anaemia. But even these symptoms were present also in Mrs Seccombe's case, which surely was herpetic if any case ever is. It is just possible they were scarlatinal. Will to return to the fever at the school-house, it is evident that Agnes Taylor would not herself be infectious at this remote period, unless contagion were conveyed by direct inoculation from the blood in accordance with the idea previously mooted in connection with the illnesses of Scott and Farnell (vide ante)

cond of this, even if it be possible. There is no history in this instance. For more probably she would convey the contagium in her clothing, and all things considered, there seems little reason why this should not have occurred. Disinfection in the Taylors' case would mean the burning of a few sulphur candles by the Sanitary Officer (an unbrained man) a little advice, and official excommunication of the germ. However conscientiously these steps may be performed, it is notorious that even under most favourable conditions total eradication of the specific agent is far from certain. What then must it be in an old tumble-down cottage, indifferently lighted, stuffy and containing a large quantity of worm-eaten wood work, and whose occupants moreover had no innate abhorrence of dirt? That nothing useful would be destroyed by such people out of regard to the community goes

without saying, and when the girl got a situation an effort would be made to fit her up, garments of every sort, including perhaps some which had not been in use for a time, would be bundled over to the school house opposite, articles of clothing being requisitioned from all members of the family, so that, if a fever lurked anywhere, it would stand a fair chance of being conveyed to the new abode.

Why Ship Street should have been the first to fail, and why one child (apart from the baby) if not another, should have shewn no sign of the disease are matters, on which we can expect little light from this explanation.

As regards the child there is of course the possibility of a previous or contemporaneous unrecognised attack. While we have already had instances of children escaping for a long time, or altogether in spite of being constantly exposed to infection. Again it is difficult

to understand, why the children did not take the disease directly the girl came to the house, unless by any chance the infectious garment were brought in later; but it is quite in accordance with what is known of this disease, and with our own observation in several preceding cases, for a person to associate with the contagium for some time before the latter seems able to exert its influence. Moreover, but here we are getting into deep water, it is possible that a partial though not effectual toleration is established on behalf of such persons, which would account for the Seccombes being slower to take the disease, than Mrs Broom, who was only occasionally exposed to its influence.

One more point may be noted before leaving this matter. These cases occurred at a time, when scarlet fever was very prevalent throughout the Kingdom. This would mean that the germs, which had been dormant at Taylor's

all the Summer, were removed to fresh quarters at a period very favourable for their new development.

Mrs. Henry Broom Junr. was the elder brother of Mrs Broom & Stewart-Broom, than whom he was 4 or 5 years older. He lived in a terrace just opposite his parents' house, and there was consequently a good deal of intercourse between the two establishments. His wife was confined for the first time in the middle of October 1893, and though this had been got through very comfortably, she was slow to regain her usual health and strength. This was no doubt largely due to her being of a slightly neurotic temperament.

On Nov: 10th the day on which Stewart-Broom was notified Mrs Henry Broom called me in on account of her throat being sore. I was naturally prepared for a new case of scarlet fever, and with this in view watched her

very closely but in the end there could be no doubt, that it was not of this nature. When first I saw the throat, it was difficult to find anything wrong with it, beyond a little pallor, which accorded with the woman's anaemic condition. There were certainly no patches visible on this or any other occasion, nor was there any appearance of inflammatory mischief. The temperature was elevated by a degree, and there was a trifling, short, dry cough, with a little hoarseness of the voice, but no trace of an eruption, then or later, nor was there ever any sign of desquamation. The pain in the throat, which appeared to be a combination of soreness and dryness, was referred to the tonsilar region, and remained for about three weeks. During the greater part of this time the temperature varied between 99° & 100°, but the appearance of the throat remained unaltered.

The breath was foul, and the lower lip became dry and cracked a little. There was no syphilitic or tubercular taint discoverable in either husband or wife. The symptoms gradually ameliorated until recovery might be said to have taken place. The baby was closely watched throughout, but it presented no appearance of ill health or of unusual peevishness. It was largely dependent upon the bottle, the mother's milk being scanty.

About a month later Henry Thaxton Jr. himself passed through a similar illness, but unassociated with any rise of temperature. He also complained of soreness and dryness of the throat, without any visible cause, his breath was foul, and his voice decidedly husky. Recovery in his case occupied rather over a fortnight.

In neither case was a laryngoscopic examination made, and the probable diagnosis would be laryngitis dependent upon some hygienic

defect, to the evil results of which husband and wife were exposed in common. One watched each case however carefully for signs of scarlet fever or diphtheria. The part to which the pain was referred, and the persistent malodour of the breath, for which there was no other local cause, and which was unaffected by mild purgation, and unassociated with purulent expectoration, were features which one does not expect in mild cases of laryngitis, and which would make one suspicious of a more virulent agent acting under circumstances unfavourable to its development. The only justification however for their inclusion here lies in the near relationship and intimacy between the patients and those of the same name suffering from scarlet fever during the same period. It may be mentioned that the young couple

were comfortably off for their position, and lived in a superior cottage, which was always in a spick and span condition. There was no obvious sanitary defect. Beyond a tendency to open the windows as seldom as possible. This was combated in the sick room with a small amount of success, and a fire was kept burning with in part the same object. The sick room was utilised as such for some time. The confinement having previously taken place in it, and when not at work the husband spent a considerable portion of his time there so that the atmosphere was not always as wholesome as it might have been, a point not to be overlooked in view of the nature of the illnesses.

Henry and Louisa Mallet, aged 18 and 20 years respectively, servant girls living at home with their mother were notified together on Nov: 24th. They assisted their mother, who was a washerwoman, with her work, and one of them had acted by

day as nurse-maid to a woman in the village, having the charge of the latter's only child, a baby. There had been no scarlet fever there however, and the girls were unable to explain by what means they had taken the disease nor could any communication be traced with any of the other invalids. The Hallets were very poor and lived in a tumble down cottage in one of the byeways of the village, semi-detached, with a small garden-plot between it and the road, and a large field behind. In addition to the girls and their parents, there was a child 12 years of age resident in the house. This last though unprotected showed no sign of the disease throughout. It was of course kept away from the sick-room, which was a small upstair room, & very stuffy, while desquamation was free. The elders also remained exempt. It would thus appear, that the two big girls were simultaneously

exposed to infection, (apart possibly from the youngest child). The most probable means by which such an occurrence might take place would consist in dirty clothing coming to be washed from an infectious house. Washerwomen were scarce in the village, and it is quite likely, that this surmise is correct, although no proof was obtained. I know from whom a good deal of the regular washing came, but not all, and did not push the investigation as far as might have been done. At any rate no definite clue could be obtained otherwise, unless the youngest child's going to the school constitute such. Even this would be a less probable means than the other, in the event of other children not having failed, and the school having now been closed for some time (10 days or so). The milk supply was obtained from a dairy patronised by many of the villagers, so can scarcely be suspected as

leaving anything to do with these two cases.
The last names on our list Winifred and
Florence Stubbs belonged to two little girls, who
were notified on Nov: 28th. They also lived in the
village, and the nature of their illnesses
was assumed from the history to be scarlatinal,
rather than proved. I saw them on Nov: 28th
and found slight enlargement of the tonsils
in each, with a little elevation of temperature
in one. They were said each to have had a rash
some time previously, but no trace of it could
be seen, nor was any desquamation discernable.
The patients were quite well in a few days without
fresh symptoms appearing. There were no other children
in the house, and beyond their being school-children
no connection was traceable with any other
cases either as cause or sequence, and the
time which had elapsed since their failure
was rather a barrier to accurate details
being obtained.

	1892			1893			1893
Emma Dawdney	Sep: 19th	20. Mary Burstow		July 9th	40. John Hyps		Nov: 30th
John Grimes	" 28th	21. Henry Irish		June 15th	41. Wm. Shepherd		Dec: 4th
Kate Hosp	Oct: 31st	22. Fanny Pollock		May 20th	42. Mrs Gunn		" 7th
Mary Miller	Nov: 27th	23. Isaac Whitely		July 4th	43. Mrs Seccombe		Nov 2nd
Emily Miller	" 27th	24. Jack Whitely		" 7th	44. (Baby) Seccombe		" 5th
Emily Scott	1893 Jan: 24th	25. Ernest Whitely		" 11th	45. Miss Harman		" 5th
Mildred Darrel	" 26th	26. Doctor Whitely		May: 18th	46 Miss Moon		" 7th
Harold Darrel	Feb: 19th	27. Joseph Whitely		" 24th	47. Stewart Moon		" 10th
Maud Darrel	Mar: 13th	28. Ada Pott		Oct: 31st	48. Mrs Hy. Moon Jr.		" 10th
Mary E. Withers	June 15th	29. Mrs Pott		Nov: 11th	49. Winifred Seccombe		" 13th
Ernest Taylor	May 25th	30. Mrs Shayne		" 3rd	50. Gerard Seccombe		" 19th
Ethel Taylor	" 25th	31. Mary E. Matthews		" 3rd	51. Mary Mallet		" 24th
Agnes Taylor	" 25th	32. Reevie Ellis		" 22nd	52. Louisa Mallet		" 24th
Frederick Taylor	" 26th	33 Ellen Marton		" 22nd	53 Winifred Stubbs		" 26th
(Baby) Wans	" 26th	34. Fannie Marton		" 22nd	54. Florence Stubbs		" 26th
Lucy Taylor	" 28th	35. Chas. G. Marton		" 25th	55. Hy. Moon Jr.		Dec: 9th
Mrs Chas. Taylor	June 29th	36 William Marton		Dec: 15th	56. Agnes Taylor		—
Caleb Cudd	May 28th	37. Alfred Joller		Nov: 23rd	57. Mrs Alf. Taylor		—
Mrs Thos. Cudd	June 29th	38. John Joller		" 23rd			
		39. William Joller		" 29th			

Having treated of the cases, which occurred in the neighbourhood during these two years, from a public health standpoint, it may not be inappropriate to glance briefly at the means we possess of combating scarlet fever as a whole, and their application in general practice. We may thus gain a clearer idea of their utility, and form some estimate of the power of those weapons, by which we hope ultimately to rid ourselves entirely of this disease, whether or no we may be assisted by others yet undiscovered, or only foreshadowed. (I allude here to such measures as vaccination for small-pox, and inoculation of antitoxin for diphtheria, which with other like discoveries have opened up a new field in preventive medicine.) It is obvious, that investigations into the potentiality of these agents, are more likely to yield a good result under such circumstances, as those attached to the foregoing cases, than when conducted amongst

thickly crowded districts, where the channels of infection are inextricably mixed, and little or no clue exists as to the origin of each case. Scarlet fever is regarded as a highly infectious complaint, especially amongst children. The contagium being transmitted directly from person to person, and indirectly for greater or less distances by means of any substance to which it can adhere, clothing and milk being the commonest of these. It is moreover probable, that an animal may suffer from this disease, and may impart it to a human being, the cow being held to impart disease thus in milk. Scarlet fever in animals however presents different symptoms from what it does in human beings, and is thus the more apt to be overlooked. Could we trace them, we might expect to find cases, derived thus at first, varying in severity from those, imparted later directly from patient to patient.

and perhaps the severity of some cases might be thus accounted for, though difficult to estimate, owing the various degrees in which it is modified by the individuality of the persons attacked. Not only does the contagium thus bridge over great distances, but having found a suitable nidus it is able to lie dormant for years. By this means it preserves its kind, even when not actively employed in propagating it. Perhaps it may sometimes light upon some substance outside animal beings, upon which it is able to multiply itself also, but this is no doubt exceptional, or at any rate a very small factor in its extension, compared with the rapid manner in which it develops in the human being. Hence our attention should be mainly concentrated upon these two important properties with which it has been endowed by Nature. That of lying

dormant until it meets a being, whose tissues are unable to resist its onset, and often multiplying itself infinitely and rapidly. At first sight this would seem to imply, that every house in which scarlatinal patients have been treated, must be regarded for years afterwards as a hot bed of infection. Experience however has taught us, that this is not the case, and we thus realise, that certain conditions are necessary, apart from which the contagium is unable to exercise this privilege of retaining its vitality, whilst not actively engaged in any process of life. The most noticeable of these are the exclusion of air and light, so much so indeed, that a fresh outbreak in a house months after a previous attack is, apart from a new introduction, usually attributed to the employment of clothing, which has been

in disuse for a time, this and similar material fulfilling these requisites in the highest degree. Nature thus treats the virus of Scarlet fever as she treats all her creatures, gifting it with one hand with the means of perpetuating itself, while with the other she raises barriers to its excessive development. Within these limits it prospers, but at the confines its days of adversity commence. We then in the first place must obey her, but as we have no divided interest in it, our endeavours will all be directed towards approximating these barriers and limiting its area as much as possible. Thus not only do we let in as much light and air as the wellbeing of the patient will allow, but we isolate him from those of his fellow beings, whom we regard as susceptible to the disease.

Isolation is by far the most potent factor in

preventing extension. Without it all our endeavours would be of no avail, and an epidemic might as well be allowed to run its course, without any attempt at opposition on our part. It is well, that we should realise this, as it will render us the more inclined to apply this agent as thoroughly as we can in each instance, and will instil into us the fact, that our other measures are only accessories to this, and valuable in direct proportion to its efficiency. The materies morbi revels in its possession of an individual and emanates from him in all directions eager to renew its activity in any being it can bring under its influence. It permeates the atmosphere of the sick room, penetrating every crevice and alighting upon every form of matter present, as dew might or a thick cloud of dust. From some of these it is fairly removable, as dust from a polished surface, but from others such as blankets and woollen clothing no physical

process is likely to effect this. But if isolation is being efficiently carried out, it meets with no fit subject for new development, and only very few of the articles most suited for its concealment and shelter during a dormant epoch. Under the most sanitary circumstances, these will be constituted by the bed-clothing and garments of the nurses alone; and even these may be rendered less habitable for the germ by judicious selection of material.

The rest of the specific agent escapes by some outlet from the room, chiefly through windows to the open air or into the chimney. In either case it will be placed in hostile circumstances and will not survive long. Some passes through the doorway in spite of an obstructing sheet, but it soon becomes much diluted, and care is taken that it meets with no object in which it can lurk, but finds ready access to the open air.

We have then only to deal with what is left

in the room, and since we have been unable to prevent its formation, to rid ourselves of it, as best we can. That this may be rendered as easy as possible, our first measure has left the emanation on convenient surfaces. Air and light would exhaust its vitality if flooded freely into every nook and corner repeatedly. But this would be a difficult, lengthy & uncertain process. More powerful agents have been discovered, whose contact with the contagium deprives the latter of all its power, kills it in fact, as it is now recognised to possess vital properties. These agents are termed disinfectants, and the process of applying them disinfection, which constitutes the second great measure in our warfare with the cause of the disease. Disinfectants vary in power, and consequently in the length of time they require to effect their object. To thoroughly eradicate the infection some portion of the disinfectant must be in actual contact with every particle of the

contagium, and must correspondingly be made to penetrate, wherever the latter has. Were we able to immerse the patient entirely in a strong disinfectant solution, receiving all his breath and excretions in a similar medium, and retaining them there for a considerable period, this treatment being continued without a break from beginning to end of the whole period, during which the sufferer gave off infectious matter, we might regard disinfection as complete and the only requisite measure. By this method alone could we ensure the trapping and killing of all the contagium. As however this is impossible, a certain portion of it must always escape, and had no attempt at isolation been made, this portion might be quite sufficient to neutralise all the good gained by abundant use of disinfectants, and to enable the specific agent to elude us. By previously isolating the patient we have rendered such elusion of no effect. There

is abundant contagium present in the sick-room with great potentiality, but without the means of resuming its activity. It is so far innocuous, but remains a source of possible danger, in the event of some future opportunity of development being presented to it, when vigilance has relaxed. It is then important, that we should do our best to destroy it by means of disinfectants. The major portion of it may be readily dealt with being accessible to liquid disinfectants utilised as washes for the ceiling, walls and floor, and for the immersion of the few necessary articles of furniture, which are all, that have been retained in the room. We can even go a step beyond this, and keep the exterior of the invalid's body in a partially disinfected state through the employment of disinfectant baths and unguents. The atmosphere may also be made less tenable of the contagium, by exposing volatile disinfectants in various

parts of the room, while the doorway, the outlet through which an escape is most likely to have evil effect, is covered over by a sheet soaked in a similar liquid preparation, to serve as a filter for the air, and fatal trap for the germs. Every person, who enters the room, and of course there should be as few as possible, though himself protected, must be regarded as an object presenting surfaces for the germ to alight on, and these surfaces should be as far as possible similarly disinfected. These people are mostly themselves isolated, but where this is impossible, it is usually found that exposure to fresh air for half an hour or so, is sufficient in addition to washing and sprinkling with disinfectants, to rid them of infectiousness. Should such a person however ~~being~~ going into close proximity with highly susceptible people, it is necessary that in addition to the free application of disinfectants to their bodies, they should remove every article

of clothing they wore into the sick-room, and have it thoroughly disinfected, using in the meantime garments which have never been in the neighbourhood of infection.

This is a brief outline of the method upon which fever hospitals are conducted, the result being highly satisfactory as far as the treatment after removal to the hospital is concerned. In private practice such radical application of our measures is impossible, but it should be our aim to approach these lines as nearly as possible. Though we cannot hope to attain our object to quite the same extent, there can be no doubt, that we may offer a serious obstacle to the extension of the disease. The cases described afford some illustrations of this, and they may be looked upon as fairly typical instances of scarlet fever patients treated in general practice. Certainly it was always attempted to make the best use of isolation and disinfection that circumstances

would allow; but not only have these to be taken into consideration, the intelligence and perseverance of the patient's relations regulate in a high degree the efficiency of one's precautions. In such cases as Whiteley's and Marlow's isolation from the rest of the family could not be said to exist, indeed in the latter instance it was not attempted, while at Farrell's affairs were very similar. Higgs and Shepherd however were removed to a hospital the houses being at once disinfected, and though young children lived in each, the disease did not spread, if we except the one doubtful case in the former's family. The greater number of scarlatinal patients are isolated to the extent of being confined to an upstair room, which is barred to all unprotected children. This is regarded as a little hospital and is rendered like one, as far as internal arrangements can be made to do this. Certainly in the case

of Moss with very good results. Shayne's illness may also be cited in this connexion. It was probably the case in which these arrangements were most thoroughly enforced of all in the district. A trained nurse was put in charge, the sick-room was denuded as much as possible, and disinfectants were freely supplied and used. His daughter, who was not allowed to enter the room, but advised to spend most of her time in the open air, shewed no sign of the disease, and was not known to have previously suffered from it. Of course one must not attach too much importance to a solitary instance, such as this. There is always the possibility of the girl having sustained an unrecognised attack. At the Darrels' although a downstairs room was used for the invalids, it seemed probable, that this partial separation from the rest of the family was sufficient, there being additional exposure before each of the other children failed (vide p 56)

As a rule, where treatment has to be effected in a down-stair room, one scarcely expects the other unprotected members to escape, and though one would still exercise every precaution, it is rather on account of the neighbours, than of the rest of the family. If the house stands apart, isolation will for some time be very effective. The neighbours will shun it, and there will be little fear of the disease being conveyed through the air, or by one of the relations, who will hardly meet anyone, except in the open air, or after a walk out of doors, and then only people, who are not very susceptible. They will not enter houses except places of business, and though by chance a case may arise thus occasionally, this is quite exceptional. Where however the infected house is one of a row, a favourable result is less certain. We go to work in the same way, but Nature's great agents can expense of air and light, gives us less assistance. It is all the more important

here, that an upstair room should be utilised for the invalids. The probability is that infection will have been imparted before the doctor is called in, and presumably this is what occurred in the only instance we have had, that of the Taylors and Cudels (vide p 62) This is not quite correct though because the Moons lived in a terrace. This was composed of houses rather better than the ordinary Labourer's cottage, and there was not that running in and out of one another's dwellings, that occurs in many instances. The house was at one end of a terrace of four dwellings, each of which had an iron railing in front with a gateway, and another railing between it and the next house. It is highly probable that Mrs Moon did not enter any of these, from the time the active period began until medical attendance commenced. These considerations lead us to the conclusion, that in country and village practice extension of scarlet fever may be checked, not all at once, but within

moderate bounds provided all sources of infection in the district are known, and kept under supervision. There will always be a few cases, which originated before the doctor was called in to treat that from which they sprang, or after vigilance was relaxed. In this latter way especially cases may drag on for some time, but a wide spread epidemic is avoided. I believe that my two years' experience at Forest Row comprised three or four outbreaks of scarlet fever, quite unconnected with one another, but it is absolutely certain there were two such, that at Ashurst Wood being quite distinct from all the rest. Whether or no the other outbreaks had quite separate origins, or whether they were connected in a chain, the other links of which were hidden, being represented by undiscoverable conveyances of the specific agent in a dormant state. This is certain, that they were kept well in hand all the time, and ultimately ceased altogether without any general outbreak. This I repeat,

is characteristic of village practice, and such results are largely due to natural causes, though there can be no doubt they are clinched by human means. These latter are of course instigated chiefly by the medical practitioner and are carried out under his supervision. In the greater number of cases the medical man may be relied upon to enforce them as efficiently as possible. As long as his only ability to do this rests upon moral suasion, different families will follow his directions with very varying degrees of thoroughness. When particularly busy he may be unable to observe the exact extent, to which attention is paid to these, or he may be aware, that they are much neglected, and yet be unable to be constantly repeating them. It must also be remembered, that he is not a perfectly free agent. In mild cases he cannot be repeatedly visiting the patient, without giving rise to misconception, and often conveying the impression, that he wishes to run up a big bill. This is a

point more evident to the medical man, than to the public, and however conscientious the former may be, he will not utterly ignore his own interests, and probably after all without attaining the desired end. The patient dismisses him for a less scrupulous and more accomodating doctor. It would be outrageous, that a man should be continually called upon to sacrifice his own interests without any chance of recompense. The general practitioner will often imperil them in particular instances and sometimes lose patients through his zeal, this much is necessary to the dignity of his office, and no practitioner should flinch from it. It is the duty of the public to relieve him of additional burden in this respect, and this leads us to the consideration of our third great measure notification. The value of notification is a much vexed matter, largely I believe, from misapprehension of its true objects. An impression seems to have prevailed with some people, that cases on being notified were to be charmed away without

more to do. How it was to do this, was not their business; but if it failed to act in such wholesale manner, it must be useless. Notification was a remedy in itself, the more so as it has to be paid for; and possessed of some peculiar virtue. This of course from a lay point of view. By its professional advocates, it was certainly expected to considerably reduce the annual number of cases throughout the kingdom, not by any virtue of its own, but by bringing every case under the supervision of a Legal Authority. The checking of outbreaks was then to rest with this. Let us try to understand, what practical effects may be expected from this measure, and where they are most likely to be realised. In what does notification consist? In this, that every case of scarlet fever as soon as recognised (a limited period being allowed for convenience) is to be reported both by the medical attendant and by some responsible person connected with

the site of the outbreak, to a central board - the Sanitary Authority - in which are vested certain legal powers in this connection. The whole kingdom is divided into districts - rural and urban - and each of these has its own Sanitary Authority. This is composed principally and often entirely of men unconnected with the medical profession, and its duties are two-fold. In the first place it is required by means of its officers to apply the existing laws relating to infectious disease throughout the district, it supervises; in the second it is bound to report all cases occuring in its district and its own proceedings to a higher Authority - the Local Government Board. To the former of these duties considerable expense is attached, which is met in every district by the rate payers of that district. The amount of this varies in different districts according to the breadth or narrowness of the views and recognitions of the different Authorities

should it adopt the Act: which is optional, but which has been almost universally adopted

The duties and expenses of the Sanitary Authority of course range far beyond the limits of Scarlet fever in its district, but it is in this connection only we are considering it here. This expense is in part comprised by the salaries of its Officers, its purchases of disinfectants and the fee paid to the medical man who notifies the case. This last is fixed by law as 2/6 for each private case and 1/- for each parish case, and is the same everywhere. Its total amount in any given year depends of course upon the number of cases that have occurred during that year. The medical attendant is called in by the family (in a private case) and is paid by it for his services in curing the patient. They will often be willing to pay him also for advice as to the subdual of infection, when there are susceptible people in the house. These although separate matters would in reality go together, no extra fee being charged. Both the medical attendant

and the infectious family will wish to prevent any extension of the disease outside the house. But probably neither will go to any great expense in this connection. (In the case of the medical man there is of course no incumbency of such outlay, except that involved in his own disinfection.) As a rule each will be willing to take some trouble for the public good. But beyond this they consider their duty ends, and from that point the public must take care of itself. The public in its anxiety to do this compels the medical attendant under a penalty to inform their local Sanitary Authority of the case, but it at the same time recognises, that in giving this information he is doing it a service, quite apart from his duty to his patient, and one which though trifling in itself, is the outcome of professional skill, and in the aggregate the source of some labour. It accordingly remunerates him on the

aforementioned scale. The medical man thus derives a double benefit, he obtains a fee, and the responsibility is largely removed from his shoulders. The Sanitary Authority relies upon its own medical officer (i.e. the Medical Officer of Health) to do all that can be done to prevent extension of the disease. In him is vested a good deal of power, and his directions are consequently likely to be attended to. The medical man in charge of the case is working on the same lines, and is able to speak more forcibly for the moral support he thus receives.

One benefit the local public receives from is the stricter enforcement of salutary measures. This is complemented by the supply of disinfectants allowed by the Sanitary Authority to the infected family. The quantity allowed is wholly inadequate, but inasmuch as in many cases none would be purchased at all, were it left to the parents, and in many other cases it is supplemented from private sources, it must be looked upon as of considerable value. It is customary to send two bottles of disinfectant,

usually dissimilar preparations of carbolic, at the commencement of the illness, with instructions to employ one in washing the hands & faces of the inmates of the house, and the other for mixing with excreta and sprinkling on the floor of the sick-room. A cake of carbolic soap is often supplied at the same time. The subsequent supply depends much upon the Sanitary Officer, but usually consists only of some sulphur candles to be burnt, when the disease has passed off, and the house is to be disinfected. These were the means applied in the Forest-Row district, and in conjunction with the natural facilities for isolation, we may regard the result as eminently satisfactory. In a district with a population exceeding two thousand, there were three or four or more outbreaks of scarlet fever (according to the view we accept) within two years, resulting in less than fifty cases, and the infection of twenty-two houses. These numbers moreover would have been far less

had not the case of Ellis at Ashurst Wood remained concealed for so long. Also the two big schools of the district both became infected, and took an active part in spreading the disease. Their closure had a manifest effect in checking it. The Medical Officer of Health for the district lived thirty miles away, and was consequently unable to exercise constant supervision over the Sanitary Officer. The whole management thus fell largely upon us, and we acted quite in harmony with the views of the M. O. H. The total expense incurred by this method is not very great. It might even allow of a little extension by increasing the supply of disinfectants in each individual case. This might be done the more advantageously, as there is always perfect readiness to use them on the part of the people, provided they can get them. They might be purchased wholesale, instead of from a local chemist as is often done, or even a company for their manufacture might be

formed by combination amongst various Sanitary Boards, there being an annual demand for large quantities, while any excess in a given year would be utilised during an epidemic, or met by diminished output during the next year. It is also required, that the man selected should be zealous and energetic. These characteristics are not always to be met with, ~~by fee~~ when wanted, but they might often be stimulated by a larger salary, and the requisition of more thorough reports. It is advisable also, that the man appointed should have had some training. This though perhaps at first difficult might be overcome by admitting no one to the candidature, who had not passed some examination on the subject, (such for instance as that held by County Council or University Extension lecturers), and who had in addition served as apprentice for a certain period with a Sanitary Officer. This in itself would raise the salary of the latter, and make the appointment sought after

by a superior class of man. It should then be enforced stringently, that every case must be supplied with disinfectants within twenty-four hours of notification, (which is not always done), with a printed copy of directions for their use. Then, when disinfection was to take place, the Sanitary Officer or his apprentice should always be present, instead of only in parish cases, or, when requested, as now happens.

But there is another and more efficient method open to the Sanitary Authority, and that is the construction of a hospital for infectious diseases, and the removal of as many cases as possible to it. The need for this in thickly populated districts is imperative, while in the country it is still of great service. Every town can afford to erect and sustain such a building with all its requirements, but in very countried places this would imply often an excessive rate, whereas it is not quite so necessary. That it fulfils

the requirements in the highest degree we have already seen. Infection is stamped out as far as possible by isolating the patient, and immediately disinfecting the house from which he was removed. In addition such a hospital should have a steam disinfection chamber in connection with it, and this could be utilised for blankets and such-like material difficult to sterilise in the patient's own house. The benefit to be derived from a hospital of this kind is now largely recognised by the public, and we may expect to find them far more numerous in a few years, than at present. Such a plan was projected in the neighbourhood of Forest Row and may yet be realised. There are at present only the workhouse infirmary and a benevolent institution temporarily converted into a hospital available for the treatment of infectious cases. The outlay although reduced to a minimum would imply a heavy additional rate, and it would be necessary to make such a hospital the centre for a large

portion of the county. This would rather bear the removal of some of the more distant cases, and it would remove patients from the hands of the local practitioners, but would nevertheless be beneficial to the community, and in years to come supplementary hospitals might be erected.
Another but less useful object of notification is to furnish information concerning the prevalence and periodicity of scarlet fever throughout the kingdom. This is a point of much interest, though its practical bearing is probably no greater than that of the recorded experiences of individual medical men. In the case of diseases which are not notified, we are dependent altogether upon such records.
In conjunction with isolation the subject of quarantine is to be considered, and the effect exercised on it by notification. Theoretically compulsory isolation of at least a week should be enjoined on the relations of a scarlatinal patient from the time the latter was removed to the hospital.

Practically this is impossible, in the case of scarlet fever; nor is it necessary in country districts. Where houses are few and scattered knowledge of an infectious case becomes universal almost at once, and people will of their own accord shun the patient's relations for several days. Of course the house should be disinfected at once in a most radical manner, despite the possibility of others being on the point of failure, and all the customary precautions against intercourse of any kind with children or with the neighbours, more than is absolutely necessary, should be insisted upon, and it would be well that a visit should be made at the end of a week, the foreknowledge of which would lend force to these, while it would afford an opportunity of inspecting the family to see that no case had been overlooked. In my experience at Forest Row such measures would have been sufficient, and it would be ridiculous to insist

upon the necessity for a quarantine place, when there is often so much difficulty in providing isolation for the patients. It would have prevented extension from Grimes', and perhaps from Taylor's supposing our surmises of offshoots from these outbreaks to have been correct, but proper disinfection and supervision at home would probably have met like success, and in no other case did there appear to be need for further steps, than were taken. Margaret Withers probably failed owing to inefficient disinfection, which will always prevail to considerable extent, when left for performance to the people themselves, especially when the house contains much smart furniture. For love of justice it should be mentioned on the other hand, that one occasionally meets with people, who take great trouble, and carry out the directions very thoroughly.

In selecting scarlet fever as the subject of a thesis I have been obliged to fall back upon notes taken some time ago. it having happened that nearly all the cases occurred during the earlier portion of my time in practice. During the past four years I have been occupied in a parish some miles from Forest Row, separated from it by an extensive area of uncultivated land and forest, and with a still scantier and more scattered population. There has been no epidemic of Scarlet fever since my arrival here, and in the whole period I have had only four cases of that disease. To make the record more complete a brief description is appended of the circumstances under which these occurred.

1. Alice Cherrymore — notified on — Feb. 11th 1898.
2. Ellen Stevenson — " " — Sep: 8th 1899.
3. Fanny Stevenson — " " — Sep: 13th 1899.
4. Miss Jones — " " — Sep: 25th 1899.

1. Alice Cherrymore . Aged 11 years . the child of a cottager at Birch Grove .

This case was quite distinct from the other three being separated from them by an interval of time extending over eighteen months and by a distance of several miles .

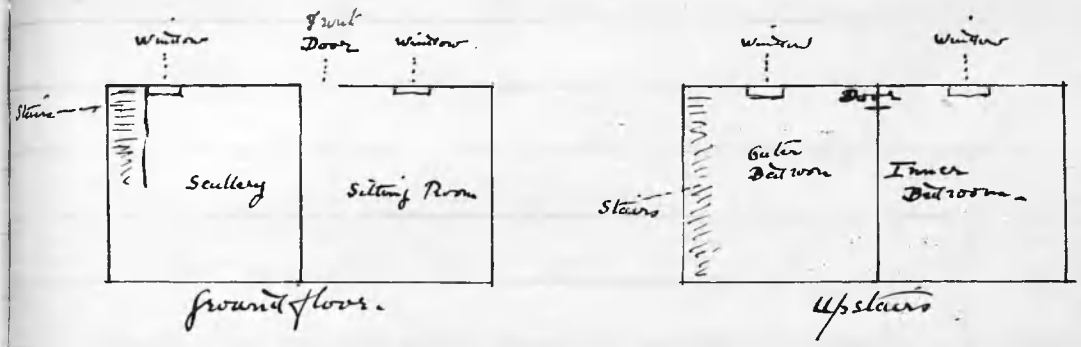
She was the daughter of a woman who walked round the country hawking buttons and laces, and she herself attended the national school at Birch Grove .

The household consisted of the father . mother mother's mother . Alice & a brother a year or two younger than Alice An elder sister lived in service in a farm house, three quarters of a mile away . She had not been home lately . The father worked all day in a neighbouring wood and neither he nor any other member of the family admitted having been any distance from home , or having been in communication with anyone else suffering from scarlet fever .

The mother and the elder sister were said to have had the disease some years previously. Alice had not been out of the neighbourhood, and she had attended the local school regularly up Feb: 6th inclusive. It was on the afternoon of that day that she was first noticed to be ill, and in consequence she did not return to school in the afternoon. She was reported to have appeared then, to have a "slight cold", this being speedily followed by soreness of the throat and vomiting. When first visited on Feb: 11th the rash was well developed over the whole of the body, and both tonsils were swollen and presented patches of exudation.

There was no one in the neighbourhood known to have scarlet fever at this time, and she could tell me of no schoolfellow who had been ill or who had had a sore throat. Her place in school was between her brother and a girl from my own neighbourhood. The brother was examined, but shewed no shewed

no symptoms of illness and no sign of desquamation. I could learn of no illness in the family of the girl sitting next her. The milk supply was derived from the farm at which the sister worked, and there had been no illness there, although there were two or three young children. The mother could tell me of no cases of sore throat amongst the neighbours, and said they had had no strangers in the house. The few surrounding houses were practically under my observation, there being no other medical man within many miles.
The cottage is a thatched one. It is small and close, and was condemned by the Sanitary Authority after this illness. It is detached and stands in a small garden. There are a few scattered cottages within two or three hundred yards of it, but it is self contained.
The following diagram gives an idea of its structure.



The patient was first put into the outer bed room, but was removed to the other, a disinfectant sheet being hung over the intervening doorway. The parents slept in the outer room, and the grandmother and brother downstairs throughout the duration of the illness. The last was kept out of the room altogether, being enjoined to stay out of doors as much as possible. The patient was confined strictly to her bedroom until all signs of desquamation had ceased. In the meantime disinfectants were used freely. No other case occurred, the brother although presumably susceptible escaping. The source was never ascertained, the surmise being that infection had been communicated by some of the numerous passing caravan dwellers who often stayed a few days in the neighbourhood, to which class the mother belonged.

2. Ellen Stevenson - Sep: 13th 1899
3. Fanny Stevenson - " 25th 1899.

These were two Sisters - school children - living in the village of Chiltley. The village is a small one and the house they lived in was a small and ill ventilated just off the one Street, and at the back of the blacksmith's shop, from which it is rather less than a hundred yards distant. The parents were of a very low class and gave me no information as to the origin. It was eventually discovered however, that a cousin who had just recovered from Scarlet fever had been sent from a town hospital for change of air, and had been staying in the village coffee hall. During his visit he had mixed with the Stevensons. He stayed only for a few days, and the children of the people who had charge of the coffee hall did not take the disease. It is however

probable, that they did not come into immediate contact with him, as they would be restricted to the private apartments in the house, to which he had no access. The Stevensons themselves would scarcely admit any knowledge of his having had an infectious complaint, but it was made certain by reference to the Medical Officer of Health of the town from which he came. This again illustrates the difficulty in tracing infection caused by the reluctance to acknowledge communication with an infectious person. Needless to say the cousin had made no mention of his recent illness to the office-house people.

In this instance there were no other young children in the house, the other occupants comprising the parents and a grown up sister. These were all kept under observation, but showed no symptoms of the disease.

The plan of the house was exactly similar

to that in which Alice Cherryman lived at Berch grove, with the exception that the main room into which the front door opened was on the right hand side instead of on the left. As in her case restriction to the bed room was enforced until the end of desquamation, this being the only means of rendering isolation certain in these two instances

4. Miss Jones Sept: 25th 1899.

The patient was a lady staying with her sister at a gentleman's house in Surrey. She had been there five days when she sickened with Scarlet fever. Her home was in London, and she had no knowledge of having been near anyone suffering from Scarlet fever or of having been in any way exposed to the infection of that disease. After most careful enquiry, the only suspicious fact,

I could elicit, was that three days previous to her failure, she had taken her bicycle to the blacksmith's for a repair, and had waited in the neighbourhood for half an hour, while the defect was being remedied. It will be remembered that the blacksmith's shop was within a hundred yards of the cottage, in which the Stevensons - who were the only scarlatinal subjects in the parish - were at that time laid up with the disease. It is difficult to explain why she should have failed with only so doubtful an exposure to account for it, while many other people must have been at least as much exposed to infection without harm. We are led to fall back upon a supposition of extreme susceptibility on her part, and there is one fact which to some extent countenances this. In the preceding year she and her sister had

been staying elsewhere with friends in the country, and during their visit had each been laid up consecutively with mumps and chicken-pox (I forget which of the diseases was contracted first) without as far as could be ascertained any exposure to either of these complaints. This apparently implies a readiness to acquire disease from very casual exposure to infection. In the present instance however, the sister escaped Scarlet fever. She was fully exposed for at least one day during which she attended her sister, but after that a trained nurse was obtained, and she (i.e. the sister who did not take the disease) returned home. Every possible precaution was taken to prevent extension of the disease, and no other case occurred.

It may be mentioned that all four of these cases were quite typical and admitted no doubt as to their diagnosis.

In reflecting upon these cases with the idea of relegating any of them to the "fourth disease" described by Dr. Clement Dukes rather than to scarlet fever, I can only think of one set of cases which could possibly lend itself to such a view. This would be the outbreak in Miller's family described from page 23 onwards. In this instance each patient was said to have had scarlet fever previously. The cases were very mild and might have almost passed unnoticed, and there was a history of diarrhoea running through the family during the preceding week. Which is not usually a precursor of scarlatina. In addition no history of infection could be discovered, a point which though far from negativing a diagnosis, would perhaps lean rather in favour of the milder disease as being less likely to attract attention or to occasion medical attendance. Throughout

her illness the mother, who was attended by a trained nurse, refused to believe that she was suffering from Scarlet fever. And I remember being pleased at being able to draw her attention to the subsequent desquamation, which in her case was particularly free, the legs especially being covered with large and abundant flakes for some time.

Unfortunately I have no notes as to the minutiæ of the cases, the little time available for note taking having been devoted to the recording of cases from a public health standpoint, rather than with the idea of depicting the actual symptoms of the individual patients.