of definite classification, and that their production is apparently under definite laws, and a detailed study of individual abnormalities will, I believe, be found to bear out strongly the general principles herein enunciated.

ART. VII.—*Five Hundred Cases of Re-Vaccination.* By RICHARD J. HALTON, L.K. & Q.C.P.I., L.R.C.P.E., L.R.C.S.I., Physician to the Dispensary, and Medical Officer of Health to Kells.

WHEN the alarm, caused in Ireland last spring by the fearful mortality of the small-pox epidemic in England, was at its height, and it was feared by many amongst us with what has unfortunately proved a well-grounded fear, that we would not escape a visit from the disease, the majority of the cases with which this paper deals presented themselves at the dispensary for re-vaccination.

At that time re-vaccination was held to be a tolerably efficient protection against the small-pox.

Having heard that this opinion has now been abandoned in several quarters where the highest professional eminence has given great authority to that abandonment, I deem it the duty of every one who has had any experience of the question to give the results of that experience.

This I will endeavour to do for my part, as shortly and succinctly as possible, premising that my experience has not been confined to the number of cases heading this paper, but I take them as they were for the most part observed with scrupulous care, and the results, where possible, accurately noted.

As each case presented itself, the state of the arm was noted in reference to vaccination marks, and the result was that 179 had scars that were mostly circular, and did not seem to go deeper than the true skin. 106 had scars so slight that they had often to be carefully looked for, amounting in many cases to a mere puckering, and 66 had deep scars that were mostly irregular in shape, and seemed to penetrate through the skin into the cellular tissue beneath.

In 24 of the cases no scar was to be found, though they stated themselves to have been vaccinated in infancy.

Out of the whole number 50 stated that they had never been vaccinated, and of these 8 were born since 1864.^a

I have excluded 75 cases from the above enumeration, as the state of the arm was not recorded with sufficient accuracy.

The cases were all vaccinated in the usual way, from healthy infants with well-formed vaccine vesicles, and they were requested to present

^a When the Registration first made compulsory vaccination possible.

themselves for examination on that day week. The great majority complied, but 143 of the cases presented themselves at irregular times, that is on other days than the eighth, and some few of the number failed to present themselves at all, and have been consequently excluded.

The results may now be briefly detailed. Of 179 who had, when re-vaccinated, circular scars going to the depth of the true skin, 10 presented perfect vaccine vesicles, pearly in colour, inclining to the circular in shape, depressed in centre, filled with clear lymph, and without, or with very little areola. Their ages varied from 7 to 15.

All the others of that class presented the imperfect vesicle in its various forms, sometimes white like a blister, sometimes filled with yellow serum, sometimes a pustule, once a tubercle, and often a scab. There was usually considerable inflammatory redness, stretching down the arm, sometimes to the elbow; but beyond a little itching and an occasional feeling of tightness, no distress was experienced.

Of the 106 who presented slight puckered marks, 9 had, on the eighth day after vaccination, perfect vaccine vesicles. The remainder presented irregular vesicles as above.

Of the 66 cases who had deep scars, 6 showed the perfect vaccine vesicle. Their ages ranged from 7 to 15. The remainder showed imperfect vesicles.

Of the 24 cases who stated themselves to have been vaccinated in childhood, but who had no scars, 16 presented the perfect vaccine vesicle; 2 the imperfect vesicle, and the remaining 6 failed to present themselves on the eighth day. There were some in each class who so failed, but whom I saw at other times.

Eighteen of all the cases failed to take on the first occasion of being vaccinated, or at least did not show any evidence of action on the eighth day. On the operation being repeated, it was, in nearly all the cases, successful. The vaccine matter was introduced by making several parallel scratches with a blunt lancet, so that the blood appeared at the bottom of the scratch, but did not flow. The lymph in the greater number of the cases was then taken carefully as it flowed out from the *summit* of the vesicle on the arm of the child who supplied the infection, and rubbed into the scratch with the flat of the lancet. Great care was taken that no blood was mixed with the lymph.

In some cases it happened, in spite of the greatest care, that, in opening the vesicle, a drop or two of blood escaped along with the lymph. By leaving the vesicle untouched, however, for a minute or two, the blood coagulated, and then the lymph could be taken, without any admixture, flowing out clear and pure beside it. The operation caused no pain, and in the whole number of cases, and in many more that do not come within the scope of this paper, there did not occur a single instance of its being followed by any unpleasant complication, as swelled glands, abscess, &c.

The arms now and then *looked* very sore and angry; but the patients assured me that, beyond the tightness and itching, mentioned above, they suffered nothing.

The constitutional disturbance, if any, was so slight that it passed without notice.

I may here mention one incident, though it does not belong to re-vaccination, which is of value in showing the care that is required in performing this little operation.

Most of the cases here recorded being done on two or three several days, there was consequently a great pressure of work at the dispensary, and I was obliged to procure assistance in vaccinating them. On the first day I observed one of my assistants, in vaccinating a baby, pressing the flat part of the lancet on a vesicle, already exhausted by previous vaccinations, to try and squeeze some matter from its base. I remonstrated with him, but not soon enough to prevent the mischief, as he had the operation just completed. I, however, took particular note of the child, a fine healthy infant, just six months old. It was brought to me some days after, covered with a moist eruption, with brown scabbing, and suffering from a good deal of constitutional disturbance. Not one of the other children who were vaccinated along with it from the very same infant, while the lymph was freely exuding, showed the slightest sign of eruption. When I have heard since of cases where re-vaccination produced considerable inconvenience, swelled glands, &c., &c., it struck me forcibly that it might be owing to some similar carelessness on the part of the operator.

Having now detailed our precautionary measures, I will proceed to state the results, up to this time, on the public health of the town. Situated as we are in Kells, in constant railway communication with Dublin and Belfast, we could scarcely hope to escape altogether while the small-pox was so prevalent in both places.

In effect, we have had two cases of small-pox imported, one from either city, who were at once removed to hospital, on their arrival here; but, except in one instance, the disease was not communicated. In that one case the subject was a boy, about twelve years of age, who lived opposite the hospital where the small-pox patient was conveyed.

He was the only member of his family except the baby (three months old) who was unprotected by vaccination; but by some neglect it was omitted in his infancy; and though his father repeatedly urged him to present himself at the dispensary, when the re-vaccinations were in progress, a boyish fear of the supposed pain of the operation prevented him. He paid dearly for his folly. He had been out playing in the neighbourhood of the hospital one day, and he came home in the evening sick, with a severe pain in his back. It was supposed, at first, that he had hurt himself leaping, and consequently I heard nothing of

the case for two days. I saw him on the evening of the third day, and had him at once removed to hospital. The next morning the eruption of small-pox appeared.

I at once re-vaccinated all his family, and vaccinated the baby. I also vaccinated and re-vaccinated the people in the neighbouring cabins, and took the sanitary measures that appeared necessary; had the houses lime-washed inside and out; ground and sewers flushed with carbolic acid solution, &c., &c. Not another case appeared; and, as three months have now elapsed, we may be considered to have escaped that centre of infection. The poor boy himself has recovered from a bad attack of confluent small-pox, deeply pitted and scarred, and with the loss of an eye.

When it is considered that the whole family live in a wretched single-roomed cabin, and slept altogether in one bed with him for those two nights, father, mother, and four other children, their escape will appear very remarkable.

There is one curious circumstance about the baby, however, which is not without interest. It will be remembered that it was nearly three days in almost actual contact with the sick boy before it was vaccinated.

The vaccine ran the usual course, showing a perfect vesicle; but, a fortnight after, the mother brought the child to me to show me two pustules, exactly resembling the pustules of small-pox, one situated on the upper lip and the other at the junction of the *alæ nasi* with the cheek on the right side. They have since healed, but have left two marks behind them.

I may shortly mention another case which, if less striking, is not devoid of interest.

A lady, who lived some miles from this, had a near relative in Dublin ill with the small-pox. She went up to bring the invalid home to breathe the pure air of the country during convalescence, and, as a precautionary measure, all the family and servants were re-vaccinated. But this poor lady, from some prejudice she had conceived against the operation, withstood the most urgent entreaties of her family and medical attendant (from whom I have the case) to allow herself to be thus protected.

Two days after her return she sickened, and in five days was dead from a very malignant form of small-pox.

Not a single member of the family, and not one of the servants, though inhabiting the house, attending the sick room, &c., &c., took the disease.

Before I conclude, I may mention that I always insisted on perfect repose of the re-vaccinated arm, as far as that was possible, and enjoined, in the case of adults, abstinence from stimulants.

I may also say that I could not in any case succeed in producing any

approach to a perfect vesicle in a vaccinated child under seven years old, indeed in those cases the lymph seemed to excite very little action of any sort.^a

I think that from the foregoing facts the following conclusions may be justly drawn:—

First,—That a large proportion of the population are utterly unprotected by vaccination.

Second,—That vaccination scars, no matter how deep, are no guarantee that the possessor is protected by vaccination.

Third,—That in some constitutions the vaccine influence wears out, as is clearly shown on re-vaccination, when a perfect vesicle will be produced.

Fourth,—That the operation of vaccination, when properly performed with lymph, taken from the *summit* of a vaccine vesicle, without areola, on the eighth day, from a healthy child is entirely unattended with danger, and in the majority of cases with very slight inconvenience.

Fifth,—That there are reasonable grounds for believing that re-vaccination is, to a considerable extent at least, an efficient protection against small-pox.

ART. VIII.—*Observations Illustrative of the Use of Dieulefoy's Pneumatic Aspirator.* By DR. LAFFAN, Physician to the Union Hospital, Cashel.

THE following case is offered as a contribution towards determining how far the above instrument supplies a long felt want in the diagnosis and treatment of deep-seated collections of fluid. The means hitherto at our disposal for their diagnosis and treatment have been so little exact, or attended with so much risk, as to require our most careful attention for any invention which promises to make them more perfect. Previous to using M. Dieulefoy's instrument on the living subject, I carefully investigated its powers of *aspiring* fluids of different densities outside the body. The results were such as to convince me of the capacity of its finest trochars to aspire fluids of a density equal to that of ordinary abscess contents.

J. B., aged 35, was admitted into the Cashel Hospital 25th of March, 1871. His complexion was dark, his appearance spent, and he was just convalescing from fever. His pulse was 92, respiration 28. There was fulness and diffused tenderness in the hepatic region, with some bronchial râles confined to the right side, and rusty purulent sputa.

^a When performing vaccination, I always wear a large soft handkerchief at the button hole, as when using the laryngoscope. In this, after each operation, I carefully wipe the lancet, after having dipped it in water, as recommended by Dr. Labbatt.