her pulse weak and quickened; the temperature, defæcation, and micturition were normal, but the last menstruation was deficient.

Having obtained full permission to treat her as I thought best, and knowing how opposed all her relations and friends were to having her taken into an asylum, as well as her own opposition to taking anything *per os*, I determined upon treating her case solely *per rectum* and skin, till it became preferable *per viam naturalem*. Accordingly, I had her placed and held down upon the bed, while I administered a proportionately large dose of the hydrate of chloral, bromide of potassium, and aromatic spirit of ammonia, in milk; this was repeated night and morning, alternating the milk with strong essence of beef, for four or five days; and on or about the third day, I painted over nearly the whole of the dorso-lumbo-sacral regions with the ordinary blistering liquid of the *British Pharmacopæia*, keeping the surface irritable for some days by applying savine ointment. The vesication was perfect, the amount of serum abundant, and the subsequent counterirritation considerable. The daily dressings and enemata soon became distasteful to her in many ways; and on or about the fifth or sixth day, I found her quieter, more rational, and not offering much opposition to swallowing food and medicine. After this, she made rapid progress, took food naturally and willingly; the vesicated spinal surface was allowed to heal; and she was considered convalescent about the ninth or tenth day. Subsequently, she took walks daily, became courteous and affectionate towards those around her, was sent away on a visit to some relatives at a distance, returned home in about a month, and continued to be in even better health than before the attack.

Now the maxim to be deduced from this case, as representing a class, is just this: that whenever we are called upon to treat a patient who refuses to allow the remedies to be administered in the ordinary way, and that without reasonable cause or excuse, the practitioner should seek to devise an extraordinary way, provided it be likely to aid or accomplish early convalescence; and further that, when the patient is of the gentler sex, and between the periods of puberty and climacteric, and the symptoms are not clearly referable to any other disease, hysteria in some form should be always suspected and sought for.

REPORT ON THE ATTACK OF DIPHTHERIA IN THE GRAND DUCAL FAMILY OF HESSE-DARMSTADT.*

BY DR. EIGENBRODT,

Physician-in-Ordinary to the Grand Ducal Family, Darmstadt.

III.—CLINICAL RECORD.

PRINCESS VICTORIA, aged sixteen, consulted me for pain in the throat on the 6th of November, after I had not seen her for some time previously. I found the left tonsil and one lymphatic gland on the same side of the neck swollen. Suspicion as to the possibility of a diphtheritic process becoming developed arose only from a small whitish spot between the tonsil and the anterior arch of the palate. Its length was about one *centimètre*, its breadth about two *millimètres*. There was no fever at all at that time. The Princess was at once completely isolated from all the other members of the Grand Ducal family. On the same day, at 5 p.m., a rigor, and immediately afterwards high fever (104 deg. Fahr.) occurred. Then already *fætor ex ore* was to be remarked. Several whitish patches, about three *millimètres* in diameter, appeared on the tonsils. After a turbulent but not quite sleepless night, the temperature, on the morning of the 7th, was 100 deg. The whitish patches had a reddish and discoloured ecchymotic appearance. In the evening, the temperature rose to 103 deg.; and well-developed whitish diphtheritic membranes were to be seen all along the surfaces of both tonsils. The temperature on the morning of the 8th was 100 deg., in the evening, 103 deg.; on the morning of the 9th, 99 deg., in the evening, 100 deg.; on the morning of the 10th, 96.5 deg., in the evening, 99 deg.; in the evening of the 11th, 97 deg. On the evening of this day, the diphtheritic membranes were completely thrown off spontaneously. There was, however, still a large sore spot, about four *millimètres* in diameter, on the left tonsil, which did not heal entirely until the 18th of November.

I will, in the next place, describe the prophylactic measures, which were adopted immediately after Princess Victoria had fallen ill. They are in the main points identical with those ordered in all the subsequent cases. The immediate isolation of the patient was executed from the very first moment, in such a way, that not only the nursing, but also every other kind of assistance, was performed by persons only who came into no contact whatever with any of the other members of the

Grand Ducal family. The night-watches at Princess Victoria's bedside were undertaken by the nurses of the "Alice-Frauenverein für Krankenpflege" (Princess Alice's Ladies' Society for Nursing Patients). These nurses attended with excellent care and perseverance also all the other members of the Grand Ducal family. The entrance into the sick room was strictly interdicted to all persons, except those actually occupied in nursing. This direction was thoroughly attended to by all the members of the family during Princess Victoria's illness. The drawing-rooms on both sides of the sick room were not inhabited, and the windows in them remained open permanently during day and night. In all the subsequent cases, similar measures were adopted. I have always ordered a separate room to be provided for each patient, situated as far as possible from the other sick rooms, in order to avoid concentration of the contagium.

All the secretions and excretions of the patients were disinfected as quickly as possible. The pocket-handkerchiefs, especially, were changed very frequently, and each one, as soon as it was no longer used, was at once immersed in a jug filled with some disinfectant fluid, and standing close to the bed. Thus we tried to prevent mucus and pieces of membranes removed from becoming dry, and being dispersed in the form of dust into the air. The disinfectants used were carbolic acid, sulphate of zinc, and permanganate of potash.

The *prophylactic remedies* prescribed for the members of the Grand Ducal family, and for all persons nursing and personally attending the patients, were the following. Gargles, containing carbolic acid, borax, and permanganate of potash, were frequently used. Internally, I gave, as a prophylactic, benzoate of soda, which has been lately recommended by Professor Klebs. At first, the dose administered was too small, owing to the novelty of the drug. Having, however, been kindly informed by Dr. Klebs, in immediate reply to a letter from me, that as much as three drachms might be taken daily by an adult without harm, larger doses were prescribed. It might, perhaps, partially be attributed to the employment of the abovementioned prophylactic remedies and measures that, except the members of the Grand Ducal family, none of the nurses, and none of the sixty persons living within or having daily intercourse with the Palace, were attacked. The members of the Grand Ducal family, who fell ill between the 11th and 15th of November, were probably infected by Princess Victoria before she sought medical advice. As to the cause of the disease of the Grand Duchess, Lord Beaconsfield's explanation, given in the House of Lords, is most likely the correct one.

The *treatment* was, on the whole, the same in Princess Victoria's and in the subsequent cases. For many years past, it has become a conviction of mine, that the application of caustics and the mechanical removal of the diphtheritic membranes is not followed by very encouraging results. I therefore administered for a long time as local remedies only disinfectants, until I became aware, about three years ago, of another local remedy, by the perusal of Professor Oertel's paper on Epidemic Diphtheria in von Ziemssen's *Cyclopædia*. This is the methodical employment of the steam of hot water and of medicated sprays. I have seen cases of diphtheria cured under the adoption of this remedy which were of so grave a nature that, after the experience gained during the employment of former methods of treatment, I was compelled to give an unfavourable prognosis. It is true that the steam of hot water has been frequently adopted in the treatment of diphtheria, but nobody has shown the proper principles of its employment so decidedly and so urgently as Professor Oertel. It must be used as soon as distinct membranes have been formed, and must be continued with the greatest perseverance during day and night. I have learned to avoid the disadvantages which might result from frequent interruption of sleep, by the adoption of a modified apparatus, which can be used without troubling the patient's rest. This is a modification of Siegle's inhaler. This remedy was thus adopted in all the cases of the disease in the Grand Ducal family. Solutions of chlorate of potash ($2\frac{1}{2}$ to 100), and in the later cases weak solutions of salicylic acid and of lime-water, were used. The beneficial effect of moist warmth consists in the acceleration of the natural process of healing by the production of a layer of pus-corpuscles, which forms a line of demarcation between the diseased and the healthy structures. In the case of Princess Victoria, this remedy had not to be employed so long and so persistently as in the subsequent cases. Already, on the fourth day of the disease, it was possible to use it less frequently during the day, and to omit it at night. In addition, disinfectants were used with care and perseverance against the local morbid process. In the case of Princess Victoria, I principally employed diluted chlorine water, which I allowed to be swallowed in order to bring it into contact with all the parts of the pharynx. As the smell of the remedy is disagreeable, and as the chlorine gas becoming free might have an irritant effect and produce cough, I order it to be taken directly from the bottle. Patients

* Continued from page 112.

bear it very well, and no trouble of digestion is occasioned; on the contrary, it is a valuable remedy in some forms of gastric catarrh. Moreover, other disinfectant gargles (prepared with carbolic and salicylic acids) for the oral and pharyngeal cavities, were adopted in this and in the other cases. Against the fever, I administered salicylate of soda, and in one of the later cases, salicylic acid. Benzoate of soda was given in doses from a drachm and a half to three drachms daily. I have not seen any disagreeable effects follow its administration. Some of the patients who had received ten-grain doses three or four times daily as a prophylactic, observed that it improved their appetite, and that they became stronger under its use. They thought, therefore, that it acted as a tonic.

DIPHTHERIA AND MILK-SUPPLY.

By ARTHUR DOWNES, M.D., S.Sc.Cert.Camb.,
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IN a note in this JOURNAL on the papers of Mr. Power and Mr. Smee, it is very justly observed that, as far as the present evidence goes, "the whole theory is very much in the air as to the connection of the epidemic in North London with any other modes of pollution of milk than those by air and water", and one could not but contrast the scientific caution of the paragraph with the assertion of a contemporary that "the only possible conclusion was, that the milk derived its morbid potency from the animal itself".

That the probability of a causal connection between the milk-supply and the diffusion of infection in this epidemic is very great, is of course beyond cavil; but, admitting even the dissemination of diphtheria by milk to be a fact as incontrovertible as the propagation of enteric or scarlet fever by that medium, I contend that the milk-pail must be a rare and exceptional vehicle for diphtheria contagion.

Many years have gone by since the spread of scarlet and typhoid fevers in this way was pointed out by Dr. Taylor of Penrith; and, although diphtheria epidemics by the hundred have been investigated by competent observers, naturally on the *qui vive* for the discovery, there has not been recorded, so far as I am aware, until now, a single epidemic in which the infection of diphtheria has been spread by milk.

There is another strong *à priori* piece of evidence that the dairy is a very unusual focus of diphtheria. It is, that the incidence of diphtheria is not upon the milk-drinking portion of the juvenile population. Perhaps the best-established feature in the natural history of this disease is the fact that the localities chiefly invaded are purely rural; towns of all sorts enjoying a comparative but remarkable immunity. But it is in the towns that the milk-drinkers as a body are found. The bulk of the population in the agricultural districts, where diphtheria holds its strongest sway, are, as a rule, not milk-drinkers. Milk, brought to the door of the urban-dwelling artisan, is, to the agricultural labourer, an article of food rare and difficult to get. Moreover, in these self-same rural districts, the brunt of the epidemic falls on the non-milk-drinking children of the poor, but passes over the milk-drinking families of the well-to-do. Such, at least, has been my experience, both in my reading and in a score or more of widely diffused epidemics which I have personally observed. It is the parish school which spreads the infection, not the milk-supply.

I have made these remarks because I now find a tendency among the laity to rush to the conclusion that diphtheria is commonly, if not always, carried about in the milk-pail. The observations which I have next to offer refer to the, in my opinion, not less hasty assumption that the "only possible conclusion in the case of the North London epidemic is, that the milk derived its 'morbid potency' from the cow itself".

It is asserted, rather than by Mr. Power, whose paper is admirably cautious, that the possibility of contamination by infected air or water, well-established in the case of scarlet and enteric fevers, is disproved in the case of this diphtheria epidemic. But, considering the part which, as evidence from all sides shows, trivial and often unnoticed cases play in the spread of diphtheria, the difficulty of such disproof is enhanced a hundredfold. Nor does it follow that such contamination need be recent or repeated. There is circumstantial evidence, and some positive proof, that certain contagia are capable of self-propagation in suitable media, in a manner external to, and independent of, the animal body. Milk is a medium which, from its composition and from other considerations, might be expected to afford an excellent nidus for the multiplication of some disease-germs. It appears to me then, that, besides the theory of origin from the cow, there is this possibility to be considered in connection with the North London epidemic; namely, that an accidental inoculation, as, for example, by a light sputum from some slight case, never dreamed of as diphtheria, might,

long before the outburst of the disease, have supplied a germ which, multiplying in a congenial soil, infected the dairy plant and milk. I do not say that this is probable; I only put it forward as a suggestion to show how difficult a matter it may be to absolutely exclude the possibility of what I may call the ordinary sources of zymotic infection in milk. Whatever the cause of diphtheritic infectivity of milk, however, if it be some obscure and fortuitous inoculation such as I have suggested, it must be unusual; or, if it be that the virus is derived from some antecedent disease of the cow, then, for the reasons stated in the first part of this paper, that disease is probably uncommon, or has but seldom this imputed quality of transmitting a diphtheritic infection through the milk.

THE PROPAGATION OF DIPHTHERIA BY MILD CASES AND DISGUISED COMBINATIONS.

By E. HOLLAND, M.D., M.R.C.P.,
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THREE years ago, a suburban school had been broken up from alleged scarlatina, and two of its pupils, supposed to be in health, after a week at home, were received into a large school in St. John's Wood. All went well for a week, when a French pupil, who slept with the new pupils, failed with decided scarlatina, and we found that the two new pupils, though doing ordinary school duties, had a nasal discharge and labial excoriation (attributed to cold), and that they were pale, asthenic, and a little feverish. It was also ascertained that they were strumous and had habitual rhinorrhœa, and that the discharge was only a little increased, and had passed unheeded. During the second week, the pupils fell ill in rapid succession, to the number of twenty-four or twenty-five, and the school was broken up. The invalids presented every conceivable variety of diphtheria and of scarlatina with and without rash. A was a typical case of scarlatina, with the usual throat and skin manifestations and subsequent desquamation; B was similar, *plus* limited false membranes in the pharynx; C was equally typical of recognised diphtheria, with false membranes, albuminuria, sequential pallor, and paralysis, but with no discoverable rash; and these varieties presented such a progressive fusion in their protean combinations that I regarded the diseased states as modifications of one process, and the evolution of a similar germ in dissimilar pabulum.

Dr. A. considered that the cases were scarlatinal; Dr. B., that they were diphtheritic; and Dr. C., that they were only cases of the "sore-throat that was about". It was my lot to inspect all the cases, and to follow the day-pupils to their homes; and I know the infection was spread broadcast in St. John's Wood, and, from the mild phases having been improperly interpreted, many a sorrowing *cortège* went shrouded to the grave. Two of my children brought the infection home, where eight suffered. The eldest, who had previously had scarlatina, resisted well, and were not in bed a day; the youngest two had malignant diphtheria as bad as could be short of actual destruction; they had no rash, but false membranes through the pharynx, nose, and mouth, albuminuria, sequential pallor, paralysis, and quasi-idiocy; and three years of careful treatment has scarcely restored their pristine vigour.

Here, then, we have an illustration of children only a little unwell, able to do their school-duties, with no local disease sufficient to attract the attention of friends, having, in fact, a slight nasal discharge only, and that unheeded; visiting and kissing in happy innocence, and yet imparting to confiding friends one of the most disastrous and to be dreaded of communicable diseases. Surely, it cannot require much effort to conceive the possibility and probability of diphtheria being as easily conveyed to a palace, when in disguise, as into the dormitories of a well appointed school or into the circle of home, especially when children abound and affection abounds, as in the princely home of Darmstadt.

COMPLETE TRANSPOSITION OF THE VISCERA OF THORAX AND ABDOMEN.

By STEPHEN MACKENZIE, M.D.,
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ON April 1st, 1878, I saw, in consultation with Dr. Dixon of Victoria Park Road, a male child aged sixteen months, suffering from rickets and bronchopneumonia. On proceeding to examine the chest, which was fairly well formed, no cardiac pulsation was visible in the ordinary position; and, on laying the hand on the thorax, the heart could not be felt beating in its usual place. Further examination revealed the impulse of the heart to the right of the sternum, between the fifth and sixth