Clinical Lecture ON WHOOPIING-COUGH.

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(Concluded from page 661.)

I CANNOT discover any published narratives describing the precise mode in which whooping-cough spreads, not as an epidemic, but when imported from a distance by the introduction into a healthy locality of an infected child. The popular belief (by no means to be neglected) would seem to be, as I have said, that its contagion is far-reaching and irresistible. This is so common an opinion that, although mothers do not underrate the dangers of whooping-cough, isolation is seldom attempted. Medical men who believe most stedfastly in the conveyance of the affection by a material agent are often equally positive in asserting that no precautions, such as its material nature would suggest, are practically efficient to ward it off. Accurate observations on this point on a sufficiently large scale are sorely needed. The experience of the Hospital for Sick Children,* such as it is, tends to show that the spreading is not from bed to bed, but from one spot to another. It does not travel in steps in a given direction, but hops about hither and thither, so that within a certain area, *ceteris paribus*, all the individuals included are equally liable to it. The child in the next cot to whooping-cough is not more dangerously situated than the child furthest removed, or even than a child in the neighbouring ward.

In this, as in other respects, therefore, whooping-cough seems out of the rule of those diseases which it partially resembles. No single category can compass it. In its nervous relations it is consistent and uniform; but, looking further, it becomes anomalous and surprising in that property of contagion which, to some extent, it seems to share with diseases of a totally different character. We must either accept this position, and make a special place for whooping-cough, or we must adopt some view of its contagion and of its single occurrence which shall be exclusive of any theory of specific poison, and in conformity with its nervous associations.

What can be made out of whooping-cough on this latter hypothesis? May it not be infectious, not like scarlatina or measles, but like fear or pity or discontent? It would, at least, be difficult to say how far contagion in that sense enters into the history of nervous affections, and quite misleading arbitrarily to limit the operation of that principle by calling it imitation, conscious or unconscious. Imitation is an attempt to resemble: "unconscious attempt" is a confusion of words. Let us consider the phenomena themselves, rather than reduce their significance by inadequate expression. How cough is contagious, so that in a multitude, however absorbed, the coughing of one will impress the rest, no one who goes to church need be told. It is the same with yawning and with laughter. Similarly, nervous diseases are not imitated merely; they are conveyed. The girl in presence of hysteria does not imitate it; she gets it. The child in the same ward with chorea does not attempt to resemble choreal movements; she gets the disease chorea. There are some notable instances where epilepsy has been caught in the same way. "Catching a habit" is a proverbial expression, and applies in a special manner to early childhood; but the full force of the principle which it illustrates in its further application to disease is hardly sufficiently admitted.

Some facts of whooping-cough which tend to bring it within the operation of this law have been already incidentally mentioned. The disease spreads, not by contact,

or absolute propinquity, but to the children about and within hearing. You cannot isolate it. Mere infants, liable enough to whooping-cough, and with a conformation admirably adapted for its reception, are yet irreceptive of it from others. Thus, the baby will either escape the family complaint altogether, or take it late, when by long persistence the impression it makes has forced itself upon its dull perceptions. Meanwhile, the elder children will have the disease strictly in company. The whooping of one will be a signal for the rest, and the whole will cough in chorus.

It would be fanciful and absurd to ascribe the wide dissemination of whooping-cough mainly to the operation of this principle of conveyed nervous impression, but it is neither the one nor the other to suppose that this influence co-operates with others to impart to whooping-cough a seeming likeness to zymotic diseases. An affection to which all young children are liable under any circumstances, and which, like the catarrh so intimately associated with it, is very apt to be epidemic, needs no more than this property of nervous contagion to earn the character which whooping-cough has maintained since the days of Cullen. On the other hand, if whooping-cough is quite independent of this form of contagion, it is the only disease of the kind that is so. There is no affection with a voluntary element about it, whether chorea, or hysteria, or the act of yawning, that does not spread, more or less, by involuntary repetition. Considering the impressibility of the female sex, and the strong "imitative" instinct of young children, we should be led to believe that in a nervous disease proper to childhood, and commonest with girls, the influence of nervous contagion should be not absent but conspicuous. I might add that those who would reject this view, preferring that of a specific poison, will yet maintain, with Dr. Babington, that when this poison is spent "mere habit will perpetuate what first originated in disease." If the whooping-cough spasm can thus be reduced to a habit, it is probable that, like other habits, it may be originally excited in a predisposed person by involuntary imitation (so to call it) of another.

But there is a further difficulty. Whooping-cough, like measles and scarlatina, happens but once. It is here, you may say, dissimilar alike to nervous and to respiratory diseases. Both of these are apt to become chronic, and easily acquire the habit of recurrence. We must observe, however, that there is no intimate likeness between the non-recurrence of certain zymotic diseases and the non-recurrence of whooping-cough. Strictly speaking, whooping-cough is very apt to recur. Every nurse will tell you that this is the great trouble and worry of the complaint. The whoop will appear and disappear. So long as bronchial catarrh endures no interval of freedom will make its return improbable. You are never sure that you have done with it until the lungs are quite free, and the cough is gone. This is not like scarlatina or measles—it is strikingly unlike them. There is no such thing as the repetition of the distinctive features of a specific fever within a very short period from the first attack. The protection conferred is, for the time, absolute. In its habit of receding and advancing whooping-cough is true to the pattern of nervous diseases; it is quite inconsistent with the orderly course and progress of all infectious fevers whatsoever.

But why should children, although they may whoop on and off indefinitely during a single catarrhal attack, have in their lives but a single bout, so to speak, of whooping-cough? Why should whooping with the catarrh of this year secure the patient against whooping with the precisely similar catarrh of next year? Here, too, I believe that the nervous hypothesis is competent to explain the facts, and that whooping-cough does but illustrate the common law in relation to this class of affections. Recurrence is the rule of all nervous disease, but the recurrence is not by way of exact repetition. We do not cease to suffer from the cradle to the grave, only the manner changes. As the child grows he becomes exposed in turn to all the phases of nervous disorder. There is a fixed time and duration for each—a duration which, inasmuch as it corresponds with certain epochs of life, will be longer or shorter accordingly. Thus the period of dormant infancy is followed by that of dentition, a short and tumultuous time, covering some twenty months, of most active development, and subject to peculiar incidents. To this succeeds an interval of about ten years of comparative calm, interrupted only by the approach of

* The new hospital in Great Ormond-street contains a ward specially devoted to whooping-cough. We are thus, for the first time, provided with a means of studying this obscure disease accurately and continuously.

puberty. Nervous lesions correspond accurately with these transitions: each has its turn and its proper duration accordingly. That chorea should recur and whooping-cough not is not really anomalous. Recurrence is common to both, but the period allotted for the one is longer than for the other. The human subject continues prone to whooping-cough hardly more than two years. "More than half the cases," says my distinguished colleague, Dr. West, "occur before three years." He continues prone to chorea for five times that period. There is nothing that whooping-cough confers which prevents its return in the future, only when that future arrives the child has outgrown its proclivity; it has discharged its obligation in this respect, or rather it has changed the nature of its liabilities. On the other hand, the longer period allotted to chorea (commencing accurately at the time of life when whooping-cough begins to decline, and becoming more intractable as puberty is reached) admits of the exhibition of that quality of recurrence which is one of its marked characteristics.

But observe, further, that this liability or proneness to whooping-cough, which, when the whole race is considered, is comprehended within a very short period, must be still further limited for each individual. When it is said, for instance, that, for all children whatever, a special liability to whooping-cough is compassed between two years old and six, it is implied that the individual liability falls somewhere between these extremes. Varying with the rate of development, one child, or one group of children, will encounter the liability at two, another at three, and so on. Hence the fact of a child getting whooping-cough but once will be due to the fact that this single attack covers, or nearly covers, the whole period of its special liability in this respect.*

Why, then, you will say, does the disease, once introduced, run through the whole family, attacking children at various ages indifferently in the absence of any epidemic or other common cause? I would answer that it is not the common rule of whooping-cough to behave so. It usually spares, not only the elder children, but one or two of the younger ones also, both those that have suffered before and one or two besides. It spares, that is to say (or rather, it is likely to spare), both those with whom the period of special liability is overpast, whether they have discharged the debt or escaped it, and those, too, who have not yet reached it. The fact that a child has had whooping-cough is the best evidence that it has passed its liable time. For the others we may not arbitrarily fix this period. It will vary within due limits with the rate of development, as the period of dentition and the advent of puberty vary.

But I may not pursue the subject further to-day, nor should I have been justified in detaining you so long but for the plea that the pathology of whooping-cough is admittedly a vexed question. The many practical issues involved will easily suggest themselves to your own minds. If, for instance, whooping-cough has at all the relations I would claim for it, not only would certain obvious precautions suffice in the absence of a common cause to prevent its spread, but that method of treatment by change of habit and residence and associations, so admirably described by the late Dr. Salter in his work upon Asthma, and epitomised by the French phrase "profondly modifying the situation," should be as effectual in whooping-cough as in the disease so intimately allied with it.

The conclusions to be deduced from what has been said would be something as follows:—

1. Whooping-cough is a nervous disease of immature life, due immediately, like nervous asthma, to a morbid exaltation of sensibility of the bronchial mucous membrane. Although possible in a modified form at all ages, it has its period of special liability and full development simultaneously with that time of life when the nervous system is irritable and the mechanism of respiration diaphragmatic. A child of the proper age with catarrh and cough is thus on the very brink of whooping-cough. A large proportion of such children will develop the disease for themselves upon casual provocation, all contagion and all epidemic influence apart.

2. The whoop of whooping-cough is due to a spasmodic contraction of the diaphragm which follows its extreme relaxation with the emptying of the lungs by spasmodic cough, the force of the inrush of air being met by a conservative spasm on the part of the glottis.

3. The natural history and relations of whooping-cough—its uneven course, indeterminate duration, method of recovery and cure, frequent absence of pyrexia, and seasons of prevalence—are in striking contrast with diseases of the zymotic class. Admitting the fact of its contagion, the great commonness of the disease and its association with epidemic catarrh, coupled with the popular belief that its source of infection may be indefinitely remote, are circumstances which must combine to render whooping-cough more contagious in appearance than it is in fact.

4. In its character as a purely nervous disease whooping-cough may very well be contagious like other nervous affections of a quasi-voluntary kind. The assumption of a specific morbid poison is both hypothetical and gratuitous, or so nearly gratuitous that the facts it seems to explain are insufficient to counterbalance its inherent improbability.

5. The non-recurrence of whooping-cough is not, in strictness, analogous to the non-recurrence of contagious fevers, nor out of real harmony with the pattern of nervous disease. It is the rule that affections of this class alter their shape with the successive epochs of life, so that each will appear either solitary or recurrent, according as the time allotted for it is shorter or longer. The after-infancy period to which whooping-cough attaches is one of brief duration and special liabilities. The features of the disease are in strict correspondence with the characteristics of its time of life.

6. The specific remedies for whooping-cough (which have their season and may be said now to include all drugs whatever of any potency) have all of them a certain testimony in their favour. They agree in a single point: whether by their nauseousness, the grievous method of their application, or the disturbance they bring to the child's habits and surroundings, the best vaunted remedies—emetics, sponging of the larynx, ill-flavoured inhalation, change of scene, beating with the rod,—all are calculated to impress the patient, and find their use accordingly.

ON GELSEMINUM SEMPERVIRENS.

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(Continued from p. 663.)

INFLUENCE ON THE EYES.

In one of our experiments we noticed that the eyes of a rabbit became very prominent after poisoning with the liquid extract of gelseminum. On another occasion we dropped into the eye of a rabbit a solution of the alkaloid prepared by Mr. Gerrard, containing one grain in twenty minims of water, when, to our surprise, the animal died of asphyxia, from absorption of the poison. In this animal, too, the eyes became very prominent, especially the one into which the poison had been dropped. We six times verified this last experiment.

We then dropped the alkaloid solution into the eye of a cat, repeating the application five times in an hour and a half. But though we caused the pupil to dilate widely, still we produced no general effects, whence it appears either that the conjunctiva of cats absorbs less actively than that of rabbits, or that the drug affects rabbits more easily than cats. We believe that rabbits are more susceptible than cats, for we put a large quantity into a cat's eye, causing a free discharge from the eyes and nose, which no doubt washed away much of the alkaloid, though enough remained to dilate the pupil widely. Moreover the cat licked its lips, and must thus have swallowed the washed-away alkaloid; yet, in spite of this, the animal remained

* It would have been out of place in this lecture to allude to Dr. Living's admirable remarks on Nerve-storms, yet his views seem strictly applicable here. The notion of accumulation and discharge may be fitly applied to explain that period of immunity which follows whooping-cough, and, for the time, "protects" the child, so to speak, from a second attack.—See Dr. E. Living on Megrin, chap. v.