the quadrupeds or in the bodies of the molluscs themselves, the cercariæ pass into a pupa state, rolling themselves into a ball, and emitting a quantity of mucus, which hardens into a shell-like covering. (Cobbold, *Intellectual Observer*, 1st vol. Simmonds, quoted in *Medical Times and Gazette*, 1862.) Lastly, they find their way into the duct of the liver, cast off their tails, and develop into perfect flukes, producing enlargement and thickening of the hepatic duct, and all the train of symptoms occasioned by impoverished and watery blood, as shown by the general emaciation, the watery eye, pale gums, serous effusions, falling of the wool, etc. (Dr. Edwards Crisp, the *Times*, April 1880).

To resume: From the fluke come, 1. The eggs; 2. The ciliated embryo, which enters a mollusc; 3. The spore-cyst; 4. Cercariæ; 5. The pupa, and then the fluke again. The pupa stage is regarded as the penultimate stage in the series of transformations which result in the development of the perfect fluke; and it appears probable that it is only when entering the organism of vertebrate animals in the pupa stage, that the entozoon will be fully developed. Professor Simmonds administered a large quantity of ova to a sheep, but, on killing the animal six months afterwards, not a single fluke was found. The cercariæ have been administered with like results.

That sheep are especially the subject of the disease is probably explained by their feeding close to the ground, cropping the short grass where the pupæ or mollusc abound. A curious confirmatory fact is related by Cleeve in an essay on Diseases of Sheep. In a Devonshire parish, all the sheep depastured in the marshes were attacked with "rot" and died, with the exception of four. These four were all "hog-mouthed", that is, the lower jaw was shorter than the upper; they consequently could not bite near the ground. And it was stated that sheep may be fluked in two hours by turning them into certain wet meadows, where they get the baby-fluke (*Medical Times and Gazette*, 1862).

Dr. Budd quotes the following striking instance: "A sheep belonging to a lot of twenty, was lamed in consequence of a broken leg, in getting out of Burgh Fair in Lincolnshire. The nineteen were suffered to range on a common at the end of the town, until a cart could be procured to carry the maimed sheep home. The nineteen all died rotten, while the sheep with the lame leg continued perfectly free from the disease."

Besides sheep, flukes are found in hares, rabbits, oxen, the deer, and the pig, and occasionally in man, but the instances are not numerous. In man, they are generally found in the duodenum, the hepatic ducts, or the gall-bladder.

Lastly, we see some difficulty in the acceptance of the doctrine that the fluke passes up the ductus communis into the liver.

Taking the liver of a sheep just killed, and cutting the edge of the liver where no bile-ducts were visible to the naked eye, scraping a little of the juice on the point of a penknife, Dr. Humble found, under the microscope, over one hundred eggs. Now, how did they get there? If laid by the flukes, surely these flukes must have been so far mature, as not to be able to occupy capillary tubes; and then how did the eggs get into these minute ducts (if indeed they were in the ducts) against the current and without cilia? This experiment was several times repeated, with the same results, in different livers. And Dr. Budd relates an authentic case, where M. Duval of Rennes found flukes in the portal vein, and asks how the flukes got into the vein. There were no flukes in the gall-ducts, nor any signs of them. And suppose they grew in the vein, how did their eggs or larvæ, which are so much larger than the blood-corpuscles, get there?

Now, might the parasite enter the liver through the blood, and find its way down through the common ducts into the intestine? as the embryo of the tenia are said to penetrate a mesenteric vein; and, being swept onwards by the course of the blood to the portal vein, pass into the minute ramifications of the portal system, and find a resting-place in the liver, and then develop into cysticercæ (Aitken, *Science and Practice of Medicine*, vol. ii, 2nd edition, p. 186).

The remedies which seem to offer the most hope of success are the sulphocarbolates, carried to such an extent as to keep the system saturated with carbollic acid, which may be done with perfect safety; or perhaps the alkaline or earthy sulphites.

BRITISH NATIONAL VETERINARY CONGRESS.—It has been decided that the sittings will take place on Wednesday, July 20th, and Thursday, July 21st; and (at the discretion of the constituents) the Congress may extend over July 22nd. The meeting will take place in the Society of Arts' Rooms, John Street, Adelphi. Among the subjects to be discussed will be: Questions of Soundness and Unsoundness of Domesticated Animals; Influence of Diseases of the Lower Animals on the Health of Man; Cruelty to Animals from a Veterinary point of view; Effective Legislation against Contagious Diseases of Animals.

RÖTHELN: ITS SYMPTOMS AND NOSOLOGICAL POSITION.*

By JOHN W. BYERS, M.A., M.D., M.R.C.S.E.,

Physician to the Belfast Hospital for Sick Children.

On May 13th, I was asked to see an intelligent boy, aged 9, about whom I learned the following particulars. On the previous morning, he had been perfectly well; but he told me that, soon after going to school, he felt "very tired" and sick, and had a severe headache. He did not shiver, and there had been no tendency to vomit. On returning home in the afternoon, he still continued unwell, and, during the evening, his friends noticed that he was "hot and feverish". He passed a restless night, getting little continuous sleep. I ascertained that, when an infant, he had suffered from an attack of measles, but he had never had scarlatina.

When I first saw him, at 10 A.M. on the morning of May 13th, his condition was as follows. He was lying in bed, with a dry hot skin; temperature 104° Fahr.; pulse 130, full and strong. The conjunctivæ of both eyes were injected, but this was not accompanied by any lachrymation. He had no cough, no tendency to sneeze, and there was no running from the nose. The tongue was fairly clean, except for a slight furring along the centre. The posterior part of the soft palate, including the uvula and tonsils, was bright red, the congestion being uniform, and not punctated. An examination of the chest and abdomen revealed nothing abnormal in these cavities.

On the forehead, cheeks, neck, and upper part of the chest, there was an eruption, which had been first observed on the face shortly before my visit. On the face, this eruption was in the form of a series of small isolated rose-coloured papules, which, on running the finger over the skin, were felt to be slightly raised. On the chest, the spots were larger, and resembled the eruption of measles, except that there was none of the crescentic outline often seen in that disease. There was no enlargement of the lymphatic glands, except those at the back of the sterno-mastoid (in the same position as in porrigo); but these, the lad explained, had been in that condition for some time before the attack. Although the throat was markedly hyperæmic, he did not complain much about it. At 8 A.M., he had taken a dose of castor-oil. He was now ordered a diaphoretic mixture. 3 P.M. The bowels had acted freely since the morning, and he was in a profuse perspiration. The temperature had not fallen, being still 104°; and the pulse 140. The rash was now all over the chest, abdomen, and back. 5 P.M. He was now wandering and delirious, and did not know me when I was at his bedside. At 10 P.M., the temperature had fallen to 99° Fahr., and the pulse to 100. He seemed markedly better, and was talking quite sensibly. The rash was now at its maximum, and covered the greater part of the trunk and extremities. On the body, as I have stated, it resembled the rash of measles; but, on the arms and legs, from the spots having become confluent, and from the colour being brighter, it assumed more the appearance of scarlatina.

May 14th. He had a good night, and slept well. He took a lightly boiled egg for breakfast. The temperature was normal night and morning. The rash had disappeared from the face and neck, but was still present on the trunk and extremities.

May 15th. The temperature was again normal. The rash was quite gone from the abdomen and front of the chest, but was present on the back and on the limbs.

May 16th. Temperature was again normal. The rash was only to be seen on the gluteal region and in the cleft between the hips, where it was very like the rash of scarlatina.

May 17th. The rash was now quite gone; and, on the 18th, he was convalescent.

The eruption was not at any time accompanied by itching, and was not followed by desquamation. The urine which I examined during the attack was acid, of specific gravity 1020, and did not contain any albumen.

On the third day of the boy's illness, I was informed for the first time that there had been a case of "German measles" in an adjoining house, and that there had been communication between the inmates of the two houses a few days before the beginning of the boy's illness. I mention this, but do not rely on it as the source of the infection, as it would make the period of incubation very short; and, as there was an epidemic of röteln prevailing in the neighbourhood, the contagion was more probably derived from quite another source.

* Read at the Annual Meeting of the North of Ireland Branch.

REMARKS.—It will, I think, be generally admitted that the above case, the clinical features of which I have endeavoured to describe, was röteln. The following points in connection with the case are noteworthy.

1. *The Severe Character of the Eruption during the Stage that the Rash was developing.*—During this period, the quick pulse and high temperature, taken along with the constitutional symptoms, made me apprehensive that a much more formidable disease was being ushered in.

2. *The Character of the Fever.*—The temperature remained steadily at 104° Fahr. during the greater part of the second day; while, in the evening, coincident with the maximum development of the eruption, there was a very sudden defervescence, the thermometer registering 99° Fahr. at 10 P.M. With this marked crisis, there was also a lowering of the pulse, and a decided improvement in the condition of the patient. The next morning, the temperature was normal, and did not rise again.

In looking over the literature of röteln, one meets with contradictory statements as to the character of the fever that accompanies the disease. For example, Wunderlich, in his classical book on *Medical Thermometry*, in speaking of rubeola (röteln), says: "It does not necessarily entail any fever at all, or only a slight transient attack before or during the eruption. The elevations of temperature are generally subfebrile, or, at the worst, moderately febrile. And although, in isolated cases, more considerable elevations of temperature may be met with, they depend, no doubt, either on complications or on the peculiar mobility of temperature which is characteristic of very young children." (*Medical Thermometry*, New Sydenham Society, p. 351.) Vogel, in writing of this disease, says: "In most instances, it appeared and ran its course without the least catarrhal symptoms, and without fever." (*Diseases of Children*, p. 495.) On the other hand, Dr. Edward Long Fox states, from what he has seen of this disease, that "the rule certainly is that, on the first two days of the disease, whilst the eruption is coming out and advancing to its maximum, the temperature is rather high". He gives the thermograph of one case in which the temperature rose above 104° Fahr., but adds that this was a higher point than usual, and that more frequently the highest point is 103° Fahr. (Clinical Observations on the Temperature of Disease, *Medical Times and Gazette*, April 2nd, 1870, p. 360.) Very full statistics relating to the temperature of röteln are given by Dr. Lewis Smith of New York, in his book on the *Diseases of Infancy and Childhood*; and his conclusions are as follows. "The observations, therefore, of Dr. Reid in the Foundling Asylum, and my own in private practice, show that the febrile movement is constantly mild in most cases of uncomplicated röteln, but that certain patients have temporary exacerbations of fever, in which the temperature is as elevated as in scarlet fever or severe measles." (*Diseases of Infancy and Childhood*, by Lewis Smith, M.D., 4th edition, p. 195.) Thomas, in his monograph on Röteln in Ziemssen's *Cyclopaedia* (vol. ii, p. 145), while he holds that in the majority of cases there is no fever, states "that the course of the temperature during rubeola (röteln) is a very varying one; for there occur cases with normal temperature throughout; cases with fever during the whole eruption, with a rapid initial increase, and a defervescence with crisis or lysis; and, finally, cases with an initial fever, and a defervescence concluded before the expiration of the eruption."

In the case of which I have given the notes, the temperature seems to have run unusually high for röteln, and there were no complications present to account for it.

3. *The Eruption.*—This came out on the second day; appeared first on the face on May 13th; spread thence over the body and extremities, and had quite disappeared on May 17th. In character, it resembled measles on the face and trunk; on the extremities and in the cleft between the hips, it was scarlatiniform. As I have stated, it was not attended by itching, and was not followed by desquamation.

"There is scarcely another disease upon which the views of authors differ so vastly as upon rubeola" (röteln). So wrote Vogel; and although, since the time these words were penned, very great advances have been made in our knowledge of this disease, its exact nature and position among the exanthemata do not seem to be absolutely determined, as is evidenced by the fact that, in the section devoted to diseases of children at the forthcoming International Medical Congress, one of the subjects that the committee have selected for discussion is the real position of röteln, and its relation to scarlatina and measles.

Nothing has caused more confusion than the number of names under which this disease has been described. Thus it has been called rubeola, German measles, scarlatina morbillosa, hybrid measles, epidemic roseola, rose-rash, röteln, etc.

Is röteln merely a mild form of measles, or of scarlatina, or a combination of both (a sort of hybrid)? or is it a disease *sui generis*?

In the *Dictionnaire Encyclopédique des Sciences Médicales*, it is described under the head *Roséole*; and the writers of the article think that those cases which have been published as cases of röteln are to be regarded either as measles or abnormal forms of scarlatina, or as combinations which they term rubeolo-scarlatinas (*rubeolo-scarlatines*). These writers state that cases of röteln are exceptional in private practice, and occur only in the course of certain epidemics; and that they are but little observed except in children's hospitals, where, from the crowding together of patients suffering from the different exanthemata in different stages of their development, hybrid products arise, which are deviations from the normal type of the fevers—in fact, pathological monstrosities (*monstrosités pathologiques*).

I think there can be no doubt that many cases of röteln are diagnosed as mild or abnormal varieties of measles or scarlatina, especially when epidemics of these fevers are prevailing. Many so-called second attacks of these diseases are probably also cases of röteln. That, however, röteln is a specific disease quite distinct from either measles or scarlatina, and having definite features of its own, has long been held in Germany; and this view has been steadily gaining ground in England, where it has been supported, among others, by Aitken, Murchison, Bristowe, Liveing, Duckworth, etc. That it is quite distinct from measles and scarlatina seems to be established, apart altogether from its own peculiarities, by the fact that a previous attack of measles or scarlatina does not give immunity from röteln (and this was exemplified in my case), and that having had röteln does not prevent one from taking measles or scarlatina.

It is only by the careful observation and reporting of cases that our knowledge of röteln can be rendered complete; and, when this is done, it is probable that röteln will occupy a position as distinct as measles or scarlatina. These were for many years regarded merely as varieties of one and the same disease, and were only finally separated about the middle of the eighteenth century.

CLINICAL NOTE AND REMARKS ON A DISEASE OF THE EYES PECULIAR TO COLLIERS.*

By WILLIAM SYKES, M.R.C.S., L.R.C.P., Mexborough.

THE reasons which induce me to bring the paper I am about to read to your notice are these. 1. The observations it contains are entirely original; for though, since preparing it, I have been informed that the disease in question has been previously described, I have never met with any work bearing upon it. 2. It is not even mentioned in any of the text-books devoted to diseases of the eye which I have consulted (Carter, Walton, Macnamara, Lawson, etc.); neither is it given in those other works devoted to the diseases caused by unhealthy trades which I have read. 3. A large number of colliers (at least one-half or quarter per cent.) are affected by the complaint. The case which first drew my attention to the question was the following.

E. N., a collier, aged 29, consulted me for the first time in August, 1877. His eyes were in the following state: the left pupil was widely dilated, and perfectly insensible to the stimulus of light; the right one was also dilated, but to a less extent, and was slightly sensible to light. Nystagmus to a marked degree was present, both eyes oscillating, or, as the patient's wife described it, "flickering", at a tremendous rate. With the left eye, he could only distinguish light from darkness, but could not discern objects at all; with the right eye, he could distinguish my features, but could not read the largest-sized print. The patient said that he first noticed any failure in his sight when he observed, as he used to walk homewards at night the previous January, that the gas-lights in the streets looked dim, and jumped and flickered about—(and I may here remark that, in all, or nearly all, of the cases I have since examined, this failure of sight at dusk, as the first symptom of the disease, has been present). He had been to a local infirmary, and the surgeons there had discharged him as incurable—telling him that there was cerebral disease, and he would ultimately become quite blind. He had also attended a school for the blind, and the physician to that institution had told him he would not recover. I diagnosed the case as one of atrophy of the retina, and told the man he would surely never be any better. I prescribed tincture of perchloride of iron, with liquor strychniæ, as a medicine, without either perceiving, or indeed expecting, any improvement during its administration. The poor fellow collected sufficient money to purchase a horse and cart, for he hoped, with assistance of his little boy, that he could still manage to get about sufficiently well to gain a livelihood by selling coals, etc. His eyes, he said, however, were deteriorating very fast during the last few months, and he feared that before long he would be entirely blind.

* Read before the Yorkshire Branch.