which is frequently a warning of heart complication, a condition which is explained when we remember the intimate connection between the nerve supply of the heart and the stomach by the motor fibres of the vagus nerve. Accompanying signs of cardiac complication are, an irregular or galloping "tic tac" rhythm of the heart, a murmur, usually systolic, reduplicated sounds, a low tension pulse, accompanied by a restless sighing condition of the patient, cold limbs, increasing prostration, pallor and dyspnoea. Such cases are very often fatal, despite all treatment, which usually resolves itself into the giving of strychnine hypodermically, and keeping up the action by further injections, and giving by the mouth, in combination with strophanthus, also oxygen inhalation, hot saline solution per rectum, and rectal feeding, with warm applications to the limb.

3. *Medicinal*.—Little or no medicine is required in an ordinary case of diphtheria, though in the early stages some citrate of potash or ammonia may be of some service in helping the elimination of waste products. Plenty of water to drink may, however, be quite as useful at this period. I do not recommend the giving of iron owing to the discomfort in the mouth and the anorexia which it induces. It has no influence on the disease in the acute stage, but during convalescence, in combination with arsenic and strychnia, it is of service. Stimulants are beneficial in many asthenic cases, in the form of champagne or good brandy, in the early stages, and old port wine, with or without bark, during convalescence. On the first sign of cardiac complication, small doses of strychnia and strophanthus should be given.

III. LOCAL TREATMENT.—If a sufficient dose of antitoxin has been given in the early stage of the disease, very little local treatment is required, beyond frequent flushing of the mouth and throat with a simple warm alkaline douche or spray, the best of which I think are either a solution of borax and bicarbonate of soda in water and glycerine, or glycothymoline, to which a little more soda has been added. Either of these may be applied to the nostrils if desired. A weak spray of permanganate of potash may be used for the throat, and for adults listerine makes an excellent mouth wash and gargle. Alkaline solutions keep the mouth moist and comfortable and help to loosen the membrane. Strong or caustic applications should be avoided. I have never found any of them tend to arrest the disease, and they always cause discomfort or pain, and are dreaded by children. In the later stages of the disease, the ordinary astringent paints and gargles may be used with advantage.

THE CONTROL OF RINGWORM IN SCHOOL CHILDREN.

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(From the Annual Report on the Health of Croydon, 1907).

THE following table shows the number of cases of ringworm supervised by the Public Health Department during 1907:—

Total number outstanding				
January 7th., 1907	Scalp	41		
	Body	21	63	
Total number reported during 1907	Scalp	310		
	Body	176	486	549
Total number freed during 1907	Scalp	245		
	Body	177	422	422
Total number outstanding				
January 6th., 1908	Scalp	106		
	Body	21	127	127

It will be noted that the number of cases outstanding at the end of 1907 was in excess of the cases under treatment at the beginning of the year. This was to be expected, as one of the first results of municipal treatment was to increase the number of cases reported from the schools. It is very probable that there may be a further increase during the current year as a result of the recently-adopted scheme for the medical supervision of all school children.

I have received so many inquiries from other districts and from medical practitioners in the town as to the exact procedure adopted in Croydon, that at the risk of repetition I have incorporated the following summary of the work in this report:—

(1) Children suffering from ringworm are reported to the medical officer by the teachers and attendance officers.

(2) These and any other cases coming to the knowledge of the medical officer are excluded from school until released by him.

(3) The notification is sent to the health visitor for the district, who visits the home and informs the parents that the child must either be treated by their own doctor or be brought to the town hall at certain fixed times, where free treatment can be obtained. At the same time, the health visitor obtains specimens of the diseased hair in order that the diagnosis may be verified at the laboratory if necessary.

(4) Parents who elect private treatment are thereupon notified to the attendance officers,

who keep the children under observation until they are said to be free from infection. When this point is reached a medical certificate must be sent to the medical officer, or the child brought to the town hall for inspection. In either case the child is freed from quarantine and allowed to resume school. It is, however, wise, subsequently, to examine these children in school as relapses sometimes occur, and there is some haziness as to what constitutes freedom from infection. Here the assistance of the laboratory is invaluable.

My own practice is to regard a case of ringworm treated by drugs as infectious until the diseased patch is covered with hair of normal texture and "set," and until the scalp is free from scales and no diseased stumps can be detected after careful examination with a hand lens.

Children treated by X-rays are regarded as free from infection and allowed to return to school as soon as the affected area is absolutely bald and the last diseased stump has been extracted. This is often a somewhat tedious process as the hairs have a way of breaking off close to the surface of the scalp. Children sent back to school at this early stage should invariably be kept under supervision in order to guard against the danger of relapse.

(5) Should the parents select municipal treatment, the child attends at the town hall, where either drugs or X-ray treatment is prescribed. In either case it is kept under observation by the health visitor for the district and not allowed to return to school until medically examined.

Treatment.—This is not the place to discuss therapeutics and the account need only be brief. In the selection of drugs safety as well as efficiency must be respected. Ringworm of the body is, of course, always treated by drugs. A cure can easily be effected within seven days if the parents will take the requisite pains and carry out instructions. The children are frequently in school again at the end of a week or ten days. The average time is, however, from various causes, about two-and-a-half weeks. For ringworm of the scalp, the choice between X-rays and drugs is guided by the following considerations:—

Indications for X-ray Treatment.—(1) Chronic places with more than one patch.

(2) Children whose parents are too busy or too neglectful to carry out drug treatment efficiently.

(3) Children in the higher standards whose time is valuable, and who are working for scholarship examinations. Older children are often slow in responding to drug treatment, and therefore the X-rays offer the more rapid cure.

Indications for Drug Treatment.—(1) All recent cases.—About two-thirds of all recent cases can be successfully cured by drug treatment within three months, often in much less than this. Even though about one-third of the cases are stubborn and slow in responding, it is well to begin by drugs, as their use will usually check further spread, except in very virulent cases, and therefore the area for the application of X-rays can be more accurately defined. The primary application of X-rays to recent and rapidly-spreading cases (as was attempted at first) frequently led to the necessity of a second application of the rays, owing to the appearance of fresh patches, and consequently to considerable loss of time.

(2) Children under five years of age.—Young children usually respond readily to drugs unless they have been long neglected. Also it is difficult for little children to sit still long enough for the application of X-rays.

(3) Where the parents object to X-rays.—The success of the drug method very largely depends on the energy with which the treatment is pursued. The patients should be seen frequently by the doctor, and the parents require constant keeping up to the mark. For this reason a very great deal of supervision is necessary if the treatment is to be rapidly successful. Really energetic parents can often get their children well in a month or six weeks.

A small proportion of children appear to relapse. This is particularly so in old-standing cases which have apparently yielded to treatment. For this reason it is desirable to keep them under observation for three months after the cure is apparently complete.

We cannot enter into the matter in further detail, but it is important to indicate the probable time required for scalp cases.

During the last twelve months the average time taken in X-ray cases from the first exposure to the complete cure has been eight weeks, the shortest time being three weeks and the longest thirteen weeks. The time varies according to the number of exposures necessary. In addition to the time taken by

the actual treatment there is usually time lost before the sittings can be arranged, and often, also, through the dilatoriness of the mothers who do not bring the children up to the town hall when they are asked to do so. From these causes the shortest time any child has been absent from school has been nine weeks in the X-ray cases.

In the drug cases the total average time has been thirteen-and-a-quarter weeks, the shortest time any child has been absent from school being three weeks, and the longest thirty-seven weeks. The latter case was one which was more suited to the X-rays than to drugs, but the child lived at a considerable distance from the town hall, and could not be brought up for treatment.

It must be remembered that these two series of cases are not really comparable. Most of those for whom the X-ray treatment is advised are patients whom it would take months to cure by other means, and therefore the saving of time for school children is enormous.

Comparing our results from drug treatment with the results got by private practitioners attending the elementary school children in Croydon, it is found that children treated at the town hall take about half as long to cure as those treated privately. This is due to one or two causes. Firstly, the town hall cases are carefully selected, and no attempt is made to cure old-standing and chronic cases with drugs. These are passed on at once to the X-ray specialist. Secondly, when the cases attend the town hall, more pressure can be exerted on the parents by means of visits from the health visitors, and it is the medical officer and not the parents who judge how often a case requires to be seen by the doctor.

Possibility of Stamping Out Ringworm.—The difficulty of stamping out ringworm in the schools is due to the fact that teachers report only the more obvious cases which are easily diagnosed.

In every school there are a number of cases which are passed over or considered to be "only scurf," but which act as centres for the spread of infection to other scholars.

During the course of this year this fact has been demonstrated in several schools inspected by the health visitors who have excluded many children from school who were thought by teachers and parents to be free from disease. This course ought to be pursued in all the

schools in Croydon, but with the staff available in 1907 was impracticable. This defect has now been remedied, and it is to be hoped that we shall now be able to exercise a more complete supervision over these troublesome cases.

TREATMENT OF FAVUS.—Favus is a disease of the scalp, which in many respects resembles ringworm, but it is even more intractable and apt to resist treatment. The scalps of affected children are often covered by offensive scabs, so that sufferers are objectionable to others, even if the disease were not communicable from child to child. Fortunately it is rarely met with in this part of the country, though not uncommon in certain parts of Scotland and in the East End of London. Three patients (all members of one family) were under observation during the year. The eldest child was a boy of thirteen-and-a-half years, who appears to have contracted the complaint when a few months old from some elder children, who have since outgrown the disease. Owing to his condition he has never attended school regularly. He was first brought under my notice about two or three years ago, when favus was diagnosed, and treatment recommended. At that time I was unable to undertake the treatment myself, and, as a matter of fact, practically nothing was done. During 1907, however, it was decided to try the effect of X-rays, which Dr. Critchley applied on October 1st, 29th, and November 26th. By December 30th this had the expected result of removing all the hair from the scalp with the exception of a little at the back of the neck. When the hair grew again it was found that the favus fungus had not been entirely eliminated, but was still present in a few isolated spots on the scalp. These were treated by the local application of drugs, with the satisfactory result that the boy could be pronounced cured on March 8th, 1908.

The second patient was a sister of the first, a little girl aged six, who contracted the disease when a few weeks old, and has never been able to attend school in consequence. She also was treated by X-rays on the same days as her brother, and subsequently by the local application of drugs. A cure resulted in this instance also, and the child is now at school.

The third child was another boy of three, who is still under treatment. As he is under five, it has not been thought wise to use the X-rays in this instance.