alopecia were not uncommon, but at present, with a skilled operator, reliable apparatus and a technique which has been perfected, there is little reason to fear bad results. It has been abundantly demonstrated that there is nothing to fear as to possible injury to the brain or to the general health.

With the Coolidge tube now coming into use, far more accurate measurement of the rays is possible, and it seems as if there were no further excuse for us if we do not give our ringworm patients the benefit of x-ray treatment.

You may well ask whether ringworm is a disease common enough in America to demand the establishment of special means of treatment. It is exceedingly common in New York City,³ according to MacKee. In Boston, the average annual number of cases for the past ten years, in the Massachusetts General Hospital Skin Out-Patient Department, was 63; at the Boston City Hospital Skin Out-Patient Department, 40. This makes an average of 103 cases of ringworm of the scalp, each year, in these two hospitals alone, an ample number to justify the demand for modern treatment. During the past few years a beginning has been made at the Massachusetts General Hospital, and it is hoped that before long our larger hospitals, at least, will be equipped to treat all patients referred to them for treatment of ringworm of the scalp. As far as I am aware, no other hospital in New England has as yet adopted the x-ray treatment of this intractable disease.

SUMMARY AND CONCLUSIONS.

1. Ringworm of the scalp is a highly contagious disease.
2. The older methods of treating ringworm of the scalp are inefficient.
3. The treatment of this disease with x-rays, placed upon a practical basis by Sabouraud and Noiré, has proved to be highly efficient. In Paris it has shortened the course of the disease from two years to three months.
4. The objection to the use of x-rays in ringworm, on account of the possibility of producing permanent baldness, owing to inability to measure the rays properly, seems to be answered by the introduction of the Coolidge tube, with which the amount of rays absorbed can be measured with great accuracy.
5. Radiologists as well as dermatologists, in the United States, have been slow to grasp the importance of the x-ray treatment of this disease, but it is to be hoped that, before long, all cases will be treated by this method, which, while it probably will never eradicate the disease, should make it much less frequent in the future than in the past.

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RESULTS OF OPEN-AIR TREATMENT OF PNEUMONIA IN CHILDREN.*

AN ANALYSIS OF 1500 CASES OF LOBAR PNEUMONIA FROM THE RECORDS OF THE CHILDREN'S HOSPITAL, BOSTON.

BY A. R. CUNNINGHAM, M.D., BOSTON.

FOLLOWING the suggestion of Dr. J. L. Morse an endeavor has been made in this article to analyze a large series of cases of lobar pneumonia, and to compare the results of treatment of lobar pneumonia in infants and children before and after the introduction of the open-air method. In doing this we had at our disposal, in the records of the Children's Hospital, Boston, over 1500 cases beginning in November, 1870, and ending in July, 1915, the diagnoses being all made by competent men on the visiting staff. As nearly as we could determine, the open-air treatment at this hospital was begun in the latter part of 1905. At the old hospital, where all but about 200 cases were treated, the open-air treatment was given in a room made over from a small dining-room, where there was one very large window reaching to the floor and opening by sashes sliding up and down. There was a transom in the door, and the room accommodated two beds. There was a good deal of sunlight as the window faced southeast, and in the winter months, when most of the cases occurred, the air was apt to be pretty cold during some part of the treatment. When there were more than two such patients they were kept in the large ward with their beds arranged beside an open window, but previous to 1906, when pneumonias were kept in the large ward, there was always a great deal of air space. In the new hospital, lobar pneumonia patients have been out doors practically all the time until after the febrile period.

The treatment in the old series prior to 1906 was apparently very similar to what it is today, except for the addition of free ventilation; brandy and strychnine were the favorite stimulants, baths and sponges were frequently mentioned and morphine and heroin were used as sedatives. In one or two instances patients were put in cotton jackets, swathes were used when the pain was severe, no poultices or such applications were mentioned as being used.

Coolidge and Townsend,¹ in their analysis of one thousand cases at the Massachusetts General Hospital, published in 1889, wrote a very interesting paper and criticism of the use of hospital records for statistics without further analysis of cases, and in this report we have endeavored to avoid, as far as possible, the influence of such factors as might lead to false impressions. The brief notes written on some of the earlier cases made it harder to avoid these factors. Tempera-

* Read at a meeting of the New England Pediatric Society, January 7, 1916.

ture charts began to be included with the records at about 1884, and records of pulse and respiration were regularly entered about one year later. The difference in mortality in the first three to four years was so marked in this series that the mortality had to be calculated for each age, thus partly nullifying the advantage of large blocks of cases.

TABLE I.

Age.	PREVIOUS TO 1906.			AFTER 1906.		
	Cases.	Deaths.	%	Cases.	Deaths.	%
0-1	34	11	32.3	66	20	30.3
1-2	98	19	19.3	130	26	20
2-3	151	10	6.6	115	5	4.3
3-4	123	6	4.8	98	15	15.3
4-5	75	4	5.3	66	4	6
5-6	78	2	2.5	57	1	1.7
6-13	315	4	1.2	134	7	5.2
Total	874	56		666	82	

Table I includes deaths from all causes which were secondary to the pneumonia, and shows a considerably higher death rate since 1906. The records of the fatal cases were again looked over and certain ones thrown out. It was found in this examination that several cases in both series were in a moribund condition at entrance; these and all that were obviously much undernourished or that were handicapped by some previous exhausting condition were the bulk of those excluded from Table II.

TABLE II.

Age.	PREVIOUS TO 1906.			AFTER 1906.		
	Cases.	Deaths.	%	Cases.	Deaths.	%
0-1	29	6	20.6	57	11	19.3
1-2	91	12	13.1	121	17	14
2-3	147	6	4	112	2	1.7
3-4	123	6	4.8	98	10	10.7
4-5	75	4	5.3	63	1	1.6
5-6	77	1	1.3	56	0	0
6-13	313	2	0.6	131	4	3.0

Table II is not so unfavorable to the later period as Table I, and seems to us to represent more nearly true comparisons. In a series of 118 cases seen at the Infants' Hospital from 1895 to 1904 Morse² found a total mortality of 26.3% or a mortality during the first year of 36% and during the second year 19% without excluding any cases. These figures are very close to our figures in Table I. Townsend³ collected ten series from various writers, including himself, and totaling 1130 cases in children, in which the mortality was 2.4%, considerably below our mortality of all the cases of two years up (3.0% at best). His figures also probably included some infants (below 2 years) and were published in 1889; they were, however, mostly taken from reports of private practitioners in England. He remarks that "The prognosis in uncomplicated lobar pneumonia in children and infants, with the exception of those under two to three months, or in those who are debilitated, is always favorable."

No improvement in the mortality is shown since the institution of open-air treatment.

Hoping to show a reduction in the percentage of empyema, the cases having that complication were gone over and Table III was made up excluding those in which there was probably fluid present at entrance.

TABLE III.

Age.	PREVIOUS TO 1906.			AFTER 1906.		
	Cases.	Deaths.	%	Cases.	Deaths.	%
0-1	34	1	2.9	64	3	4.7
1-2	94	3	3.1	129	4	3.1
2-3	147	2	1.4	113	5	4.4
3-4	121	5	4.1	97	3	3
4-5	75	1	1.3	65	2	3
5-6	78	1	1.3	57	2	3.5
6-7	70	0	0	49	2	4
7-8	64	0	0	31	1	3.2
8-9	54	0	0	21	0	0
9-10	49	1	2	14	1	7.1
10-13	77	4	5.1	19	1	5.2

This shows percentages almost uniformly less satisfactory since the institution of open-air treatment. It was interesting to note in this connection that in the earlier cases patients with signs of fluid following pneumonia were held much longer on the medical side than at present, and thoracentesis was done very tardily. One child was in very weak condition and was found to have a bilateral empyema. In this case it was unsuccessfully attempted to drain the pus by repeated thoracentesis on account of her general condition. Another was cured simply by removing a small quantity of pus once by thoracentesis. There can be no doubt from these statistics that the results of open-air treatment as practiced in the last ten years have not come up to the expectations and it seems reasonable to believe that they are worse than those of the preceding ten years. It is to be remembered that the older cases were receiving a very good grade of air, although warm, and most of those since received fresh and sometimes very cold air, the difference in treatment being one of temperature. We conclude, therefore, that the air used by pneumonia patients should not be very cold.

The comparison of the febrile periods, as they averaged for cases in each year of life, showed a longer period during the first two years, this figure being a fraction over eleven days. Morse's² figures for this age showed a period of 8.1 days. The average duration of fever for all ages before 1906 was 9.1 days, while since then it has been 8.7 days. The onset, as mentioned in 1148 cases, was sudden in 785 or 68.4%. The most constant and marked symptom was vomiting, which occurred in a very large percentage (60%) of the cases. Cough was commonly present, abdominal pain was mentioned in 14.6% of the cases, meningeal symptoms in 8% (either convulsions or lesser disturbances, such as rigidity and tenderness on

motion of the neck, strabismus, etc.) and herpes of the lip or face occurred in 130 cases, or 8.7%, affecting the tongue in one instance and occurring as Zoster once. No case younger than 19 months showed this efflorescence.

The temperature, pulse and respiration fell by crisis in 72.4% of the cases. There were several instances of apparent reinfection (1.6%) and many of delayed resolution (4.1%). The most noticeable relation of pulse and respiration was that respiration plus 100 equaled pulse rate. This occurred in 45.5%. Next most commonly the respiration was one-third of the pulse-rate. Together these ratios made up 63.1% and the frequency of their occurrence was striking.

Mild renal irritation was shown in 364 cases out of 897 where urinary examinations were recorded (40.7%). The irritation was marked in 3.3% of these and an acute nephritis with edema and blood in the urine occurred in .7%. None of these cases became chronic, all running a very short course. In our series acute endocarditis occurred only four times, and acute pericarditis only three times. All but one were fatal cases. In the large series of 949 cases analyzed at the Boston City Hospital by Sears and Larrabee,⁴ pericarditis was diagnosed in 19 cases, of whom 11 died; in these it seemed to be only an "incident in a general pneumococcus septice-mia." It was found 8 times in 72 autopsied.⁶ Acute endocarditis was present in only a few cases; a murmur was often heard but rarely persisted, it was shown in 9 of the 72 cases autopsied, and was mostly aortic (*ibid.*). Osler⁵ found it in 16 out of 100 cases; simple in 5, and ulcerative in 11. Of 209 cases of malignant endocarditis he found that 54 occurred in pneumonia. Holt⁶ says that endocarditis is extremely rare; it was not observed in any of his cases. Purulent otitis media occurred in 13.1%. No catarrhal cases were considered. Various other complications occurred, none in more than .5%, except tonsillitis, which occurred with an exudate in 3%; conjunctivitis in 5%, and rhinitis in 11%.

The left lower lobe was involved in	565 cases
The right " " " " "	500 "
The right upper " " " "	440 "
The left " " " " "	220 "
The right middle lobe was involved	
in	60 plus
Two lobes were involved in.....	195 cases
Three " " " "	65 "
Four " " " "	8 "
Five " " " successively	1 case

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THE PROBLEM OF TUBERCULOUS INFECTION IN CHILDREN.

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At the present time a large and an increasing effort is constantly being made toward preventing latent tuberculous infection in children from developing into an active tuberculosis. If we admit, as is generally claimed by experts, that 90% of all children who reach the age of 14 or 15 years, have a tuberculous "infection" as distinct from tuberculous disease: if we agree with the idea that most if not all tuberculosis of later life is acquired during childhood: then the problem would appear to be a very large and a very difficult one. The fact that post-mortem examination shows signs of an earlier (healed) tuberculous focus somewhere in the body, in the vast majority of all cases, and that these "healed" cases added to the active cases make a total of about 90 to 95% of all autopsies showing evidence of past or present tuberculosis, would seem to bear out the truth of the above claims. We are also told that one of the most promising means of combating tuberculosis lies (1) in the effort to prevent the infection of children with tuberculosis, and, (2) in the effort to prevent the production of an active tuberculosis from such infection after it has already occurred.

The discussion would seem to group itself into three parts:

1. What should we like to do if we could?
2. What are we able to do?
3. How can we go about it?

1. Passing over the obvious answer that we should like to abolish all disease, we might hope, (a) to reduce the percentage of tuberculous infection, and, (b) to prevent the conversion of this latent tuberculosis into a frank tuberculosis.

2. Of the things that are possible to do: we can probably abolish that part of the infection with tuberculosis which is acquired through the use of milk as a food; we can diminish the contact between children and active cases of tuberculosis; we can follow up any child exposed by association with any known case of tuberculosis; we can, to a greater or less extent, pick out those children who have become infected; and we can watch these infected cases to prevent them from becoming active cases, treating those whose general condition fails to improve, by more energetic measures.

In August, 1914, the trustees of the State Hospitals for Consumptives sent out to many of the physicians of the state, a circular letter dealing with the question of tuberculous infection. Apparently this letter met with but little response, since but few such cases were reported to the State Board of Health, as was requested in the letter. As was stated in this circular,