THE OPEN-AIR TREATMENT OF PNEUMONIA.*

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For more than eleven years I have been treating pneumonia patients in cool fresh air, gradually placing their beds nearer and nearer the open window. Last winter I put them out on the roof. It is not always practicable to make use of a roof, but what I have to say about the beneficial effects of open-air treatment is founded mainly on last year's experience at the Presbyterian Hospital, New York City. It comprises experience in all months of the winter.

Our systematic practice was to put all pneumonia patients during the day, for six hours, on the roof, in the open air, in all weather in which harsh high winds, rain and snow did not prohibit. Indeed, the patients were not always brought in for little sprinkling rains or trivial snowfalls, and many times were out when high snow banks formed a corral about the space in which the beds were grouped. A permanent wind-break formed by the sun room on the west and a built-up screen on the north protected them somewhat. Much of the time, however, the wind was in the south, and more often in the east. In this case a very inefficient canvass awning partially screened the patients, until one night in December high winds wrecked the canvas.

The practice of placing severely sick pneumonia patients in the open air in midwinter was not adopted without much observation and some self-education. Gradually, after most careful precautions and constant watching, it became the firm conviction of all observers that such patients were decidedly benefited thereby. At last it was decided on as a routine treatment.

No one is convinced by others' experience or by statistics. I am not going into figures, for the cases are too limited in number. I am not going to convince any one that they should adopt the routine treatment. I am only attempting to get some few to try it for themselves. If it seems to them to give a very sick patient the best chance for life, the method will survive criticism and be adopted. If it does not, it will deservedly fail.

Primary pneumonia in previously healthy infants and young children allows of good prognosis in over 90 per cent. of cases under any and all treatment. Even the worst treatment seldom kills them. They can survive constricting poultices, hot unventilated rooms, and coal tar antipyretics. It is the remaining percentage which we wish to save. We wish to support the patient in the fight, to give the blood, the organs and the body cells every aid in our power to counteract the deleterious effects of the infecting agent. I would not underestimate drugs, I would only magnify the therapeutic value of hygienic measures, especially water and fresh air. I would say that the two most important aids are plenty of water inside and outside and fresh air everywhere. The latter, as the title indicates, is the therapeutic agent here under discussion.

CASE SUMMARIES.

By way of illustrating, a few cases will be briefly outlined. In these cases, which everyone present will probably admit were serious cases, the body cells would seem to have been materially aided by open-air (on the roof) treatment.

CASE 1.—A little girl, aged 3, came into the Presbyterian Hospital with frank lobar pneumonia. One large lower lobe was solid.

From examining the mouth the house physician suspected the possibility of developing measles. For this reason the child was moved temporarily into a small room adjoining the ward, and a screen bent around the bed. I happened in shortly after and found the child climbing about the crib, whining and worrying. The fever was high, the face dusky, the child evidently delirious.

On the arrival of the house physician he was amazed at the change in the child. While in the ward, where the air was fairly fresh and cool, the child was quiet and sleeping. It seemed that simply putting it into the small room behind the screen (and the air was not particularly warm or stale), had developed this duskiess and delirium. The child proved not to be developing measles, and was sent at once to join the others on the roof. It was wheeled to the elevator and thence into the open air. Shortly after its arrival there the mother came to pay it a visit. We may well imagine her state of mind, knowing our diagnosis. She was making known her feelings on the subject when I arrived for my second observation on the child during the same morning. The mother was standing beside the crib, scantily wrapped, and was nearly frozen. The crib was exposed to the full flood of east wind, though it was not 20 feet to carry the crib to place it behind an angle of the sun-room. I said to the mother in an interval between her remarks: "How does the child seem to you?" This took her unawares, and she ended by admitting that though she herself was rapidly chilling and beginning to shiver, the child seemed much better. It had fallen into a quiet sleep, its color was normal, its face wore a tranquil look such as it had not before shown. The mother and I parted friends, and we are still such.

This case is mentioned in detail to show how even the mother approved when once she saw the demonstration of the favorable effects. The child might possibly have recovered under any treatment, but the quieting effect of the December open air was most favorably shown.

A second case was one in which there is doubt whether the patient would have recovered if treated continuously in the ward.

CASE 2.—A boy, aged 6, after operation for foreign body in the esophagus, developed double septic bronchopneumonia and recovered. The foreign body had been in the esophagus 13 days, had rendered feeding for that time almost impossible, one-half to one pint of milk a day being all the food that he could pass into his stomach. He was under observation for another week, in which time x-ray photographs were taken. At the operation the surgeon remarked that in most cases of late operation on the esophagus, whether the wound be closed or left open, the patients develop sepsis and die.

In this case there were extensive sloughs, the wound was left open, feeding without vomiting was fairly successful. For four weeks then the nourishment had been very imperfect, and the child was much reduced. At this juncture the temperature mounted and double bronchopneumonia developed. The child appeared to be in a most critical condition; its color was metallic and sallow, it sank in relaxation deep down in the bed, its respirations were rapid and shallow. It seldom opened its eyes.

The surgeon asked me whether I would recommend that this patient go on the roof. Thus far it seemed too much of a journey for so prostrated a child, and it had remained in the ward. Our judgment was that whatever was done for the child, it would not live three days. The house surgeon took the matter in his own hands, superintending the transportation, and put the patient on the roof for six hours a day. I heard the patient had not died, but forgot about it later.

On a chance visit to the surgical cases, the nurse, in a most cheerful voice, asked me if I was coming to the birthday party. I said of course I was, but asked whose party it was. "Theodore's party," she replied. After explanation I realized that the boy who had had double septic bronchopneumonia, who

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had been operated on for foreign body of the esophagus, was celebrating his birthday with the other convalescents. The cake bore six candles.

Truly, I do not believe this patient would have recovered under old ward conditions and constant rest in the same air and environment. I could cite a few more cases in which the determining factor toward recovery was the cold, bracing, open winter air on the roof.

As I said at the outset, I expect no one to be convinced by this paper. I only hope some will be induced to try the treatment. Begin with a case so bad you believe it has no chance for life, one that is delirious, husky, restless, gasping for breath, respirations shallow and rapid, temperature high, the poisoning so profound that delirium alternates with that dull, sodden mental state so well named "dopey." I only ask you to observe whether or not every superficial symptom is improved by it. Note, first of all, whether patients are quieted, are of better color, take their food better, have cleaner tongues, better assimilation. If they show no improvement when entirely surrounded with cold streaming fresh air, then I have nothing to say. Do not take another's word for it, try it.

SUMMARY.

1. The cases most favorably affected by open-air treatment are those with severe poisoning, with delirium, partial cyanosis or deep stupor ("dopey"). In my experience all cases fare better in cool fresh air. Open air may be secured by screening off the bed and a portion of the room next the window.

2. In my experience no cases of pneumonia have been injured, and a few have been much aided, possibly saved, by the cold fresh air treatment.

3. If pneumonia, due to an infecting agent, is benefited by the treatment, one may be easily led to try it for other infectious diseases. As a matter of fact, I have tried it for many others, including typhoid with severe bronchitis, whooping cough with bronchitis and convulsions, with excellent results. It seems to me the ideal treatment for all forms of "septic fever."

4. The only regulation is to make the patients comfortable, keeping their feet warm especially. The ears, nose and hands may get cold without harm.

Finally, the Presbyterian Hospital is so convinced of the permanent usefulness of open-air treatment for all infectious fevers that it has built a roof garden for the children's ward and is about to build on the main roof of the medical side of the hospital a colossal roof garden. One-half of this has a "horse shed" structure, the shed open to the south, and a liberal space in front is enclosed, like a paddock, for a roof garden. In bad weather the beds of the fever patients are to be wheeled back into the depths of the shed. In good weather they will be advanced more and more to the opening or even out into the garden. They will remain there, night and day, so long as their fever is high. It is to be an open-air ward.

DISCUSSION.

DR. JOHN LOVETT MORSE, Boston, said he claimed to be a humble disciple of Dr. Northrup in the matter of fresh air. In the last two years he had been treating all his pneumonia patients both in private and hospital practice, with the windows wide open without regard to the temperature of the air outside. As far as possible he kept them by the window. In no case had he seen any harm done, and in many cases there was a great deal of benefit. He had not been able, at any rate in hospital practice, to get the percentage of recoveries from pneumonia which Dr. Northrup gave.

DR. ISAAC A. ABT, Chicago, said he did not exactly agree with Dr. Northrup's view, but he believed that Dr. Northrup's position in regard to the treatment of pneumonia among children will bear valuable fruit. It will awaken the entire profession to the importance of securing fresh air and well ventilated rooms for the little patients ill with pneumonia. Dr. Abt would hesitate to expose pneumonia patients to the extreme cold of the winter until further proof is brought forth. So little is known about the physiology of the heat regulating apparatus of the infant. It has been taught that premature and delicate infants can only survive if they are kept warm. Surgeons declare that children stand operations much better if the operating table is kept warm. Now, it is proposed, to go to the other extreme and treat our pneumonia patients out-of-doors in the extreme cold weather. It will require a larger experience, careful clinical study of the cases thus treated and some physiologic observations before this plan of treatment should be commended for universal adoption.

DR. EDWIN E. GRAHAM, Philadelphia, narrated his experience with this treatment during the first three months of this year in Philadelphia. He went on duty in the Children's Hospital and in the Philadelphia Hospital and found possibly forty or fifty children under the age of one year. Nearly all were foundlings and most of them were feeding. The treatment of these cases in his hands was most unsatisfactory. He first started three years ago to put them on the fire-escapes. The cribs would be more or less covered with towels and the babies bundled in blankets and it did them good. Two years ago he dispensed with the towels over the cribs, simply rolling them in the blankets. This year he obtained the cooperation of the resident physicians and nurses, and from almost the very first day these children, bundled up in blankets as if they were bags of meal, with nothing but their heads outside, and these covered with very warm caps, were taken out to the porch, which was covered with glass and open at the front and sides. The results have been surprising. Those cases which had been almost worrying the life out of the resident physician and giving him much anxiety during previous years almost invariably began to improve. The records cover a great many children, some of them only for a period of a few weeks and others for a period of three months. Unless the children were ill with some condition like tuberculosis in which improvement was almost impossible they stopped losing weight and gradually gained. The results of these three months have convinced him that even in hospital work where formerly he was not able to get satisfactory results these results have been quite possible.

DR. C. F. WAHRER, Fort Madison, Iowa, said that less than ten years ago it was advised to treat pneumonia cases by opening all the windows and letting the cold air blow on them. None of the men who have advocated this treatment have given the rationale of their procedure. Dr. Northrup says "Try it." This is somewhat in the nature of empiricism. In view of the fact that we all consider pneumonia an entirely infectious disease, Dr. Wahrer would like to know what is the *modus operandi* on the bacillus of pneumonia. Dr. Northrup's method is the very opposite of the popular method so long followed by the profession; namely, to keep the patient warm, use of warm poultices, affusions and other warm and even hot applications still recommended by many of our most recent text-books. On the whole it is rather a sad comment on the treatment of pneumonia, to flounder from some of the most active opposite methods; to the most nihilistic *laissez-faire* or the let-the-patient-get-well-system.

DR. W. C. BREWER, Columbus, Miss., approved of Dr. Northrup's paper, having treated a number of cases of pneumonia by the open-air method and finds it gives excellent results. In the last five years he had not kept as careful statistics as he might, but he believes the treatment is a good one for pneumonia. The worst thing in pneumonia, especially in children, is over medication; the best thing is plenty of fresh air.

Dr. Abt seems to think that there is some great difference in the temperature of the air. Dr. Brewer thinks that the temperature of the air is of great consequence; what is desired in these cases is oxygen. In his cases the heart and kid-

neys seemed to do their work with less strain or effort, depression after the crisis was not so marked, and the recovery was more rapid.

DR. F. S. CHURCHILL, Chicago, said he did not see how any one who has ever tried the method can doubt its value, he having treated pneumonia in this way for several years. A patient is well exposed to the fresh air and the effect is very refreshing and beneficial. If any one would but give it a trial for a few of his cases he would continue to use it and expose his patients to plenty of good fresh air.

DR. H. McCLANAHAN, Omaha, Neb., said that the paper will be of great and decided benefit to all of us in giving us more courage in insisting on thorough ventilation of our patients' rooms. He had always been confronted with that fear of mothers that fresh air might be injurious to a sick child. For a number of years he adopted the treatment in pneumonia of having two rooms, if necessary utilizing the dining room, to secure entire change of air, and he has so taught his classes. He would like to know how Dr. Northrup keeps his patients warm with the temperature approaching zero and what instructions he gives the nurse about observing the body temperature. In view of Dr. Northrup's statement that the hands and ears might become cold, Dr. McClanahan wondered whether driving of the blood from the large surface capillaries might not be injurious. He would like to know more definitely of the technic of the method.

DR. GEORGE N. ACKER, Washington, D. C., said that one point overlooked was in reference to the advisability of leaving off the pneumonia jackets, which he thinks do more harm than good. He believes also that too much medicine is given in pneumonia. Strychnia at the end of the disease is indicated.

DR. D. E. ENGLISH, Mill Burn, N. J. asked Dr. Northrup whether he gets good nursing under these low temperatures, whether he can get nurses to give proper care to the children when they are cold themselves.

DR. H. C. WORTHINGTON, Oak Park, Ill., said he had saved several lives by the treatment and with profound gratitude that he accepted Dr. Northrup's views.

DR. R. B. GILBERT, Louisville, Ky., asked Dr. Northrup whether he gives any other treatment. Is nothing else done except to put the patients out of doors? Dr. Gilbert believes in the oxygen treatment.

DR. B. B. SIMMS, Talladega, Ala., said he believed in the treatment. Last winter he had a child two years of age with bronchopneumonia in which the crisis appeared in about five days. The child did not improve after the crisis and seemed to have some chronic trouble, but not tuberculosis. It went home but did not improve. After awhile he felt satisfied that it would die if the mother did not allow him to put it out on the porch. Consent was given and improvement was noticed in the first twenty-four hours. Some six years ago he noticed Dr. Seibert treating cases of pneumonia in children in a carriage out on the sidewalk.

DR. W. P. NORTHRUP, New York City, said that by explaining the treatment its acceptance is made possible. He makes but limited use of drugs in pneumonia, not having much use for them since he adopted this treatment. In regard to nursing, he insists that the baby's feet must be kept warm. Very great care is to be taken of the digestive tract in order to prevent flatus which would make breathing difficult. He can not explain how the treatment gives the good results. The cold fresh air acts in a certain beneficial way. Some say it is oxygen and not the cold. But the cold is important; the colder the day, the better the patients do. It does something toward quieting them. A German physician has adopted this plan and has published his views that are quite in accord with those of Dr. Northrup and quite as radical. The plan is not anybody's method; it is a hygienic method. He does not think it is quite the element of oxygen alone that does the good; there is something about the coldness and freshness of the air that braces people up. In the spring, a little change in the temperature and moisture causes people to say they have the "Spring fever;" the wind changes and they are all braced up. About the traditions too much had better not be said, for some have been pretty bad. A child entirely outdoors is absolutely safe. Dr. Northrup has never

known one threatening thing to happen to such a child, well wrapped up. They should be made comfortable and hot water bottles, if necessary, put to their feet. If the air comes only on the face it is not so favorable, but if the child is wholly bathed in the cold air there is no danger. He could give many instances of benefit. In one child with a temperature of 106, and dopey, improvement promptly followed removal to the air. From the outdoor treatment of tuberculosis it has been learned that infectious fevers with temperature should have the benefit of the open air. If the time is ripe to try the plan, try it. Do not call it anybody's method. Fresh air was not discovered to-day, yesterday or the day before. The method is radical, but it works.

ACUTE NON-SUPPURATIVE ENCEPHALITIS IN CHILDREN.*

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CHICAGO.

Acute non-suppurative encephalitis is neither a rare nor new disease among children. Striking cases, however, are of interest. Attention was first called to this class of cases by Strümpell¹ in 1884:

Cerebral palsies in children depend on inflammation of the gray substance of the motor cortex. There is, therefore, an acute polioencephalitis analogous to acute poliomyelitis. Both depend on the same infection which sometimes becomes localized in the brain, sometimes in the cord.

Strümpell's publication aroused much interest and subsequent investigations were made by Bernhardt, Wollenberg, Krast and Möbius in Germany; Marie in France; Ross, Abercrombie, Gowers and Ashby in England; Sachs, Peterson and Osler in the United States.

With the evolution of the subject, it became evident that Strümpell was not entirely correct in the assumption that cerebral palsy in children was due to a single process, but several pathologic changes, such as cerebral hemorrhage, embolism, and thrombosis, with sclerosis, cyst formation or porencephaly. Hence polioencephalitis was responsible for the cerebral palsies in only a proportion of the cases. Sachs states that the disease, polioencephalitis, is open to question. He doubts the existence of such a morbid entity. During the last few years, however, many contributions have been made to the subject, and there remains no doubt that Strümpell's position was essentially correct, that acute encephalitis is responsible for a proportion of the cases of hemiplegia in young life, Freud² estimates that one-third of all the cases of hemiplegia in children are infectious in origin.

In looking over a large number of histories of this disease one cannot fail to be impressed with the fact that it has several clinical types. Batten³ believes that acute poliomyelitis and encephalitis are often associated and suggests as a classification: 1. Acute polioencephalitis superior, including those cases of paralysis in which the frontal, motor and occipital regions of the cortex are affected. 2. Acute polioencephalitis inferior, in which the nuclei of the cranial nerves are involved. 3. Acute poliomyelitis anterior, in which the gray matter of the anterior horns below the medulla is affected. It is thought that the cord and the brain may be affected at the same time, thus constituting a polioencephalo-

* Read in the Section on Diseases of Children of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

1. Strümpell: "Lehrbuch für Speciellen Pathologies und Therapie," 1893.

2. Freud: "Infantile Cerebrale Lähmungen," 1897.

3. Batten: The Lancet, Dec. 20, 1902.