for the problem of those who, being feeble-minded, are by nature neither free nor equal. On the other hand, some form of socialism of the St. Simon type, or what may be termed state socialism, is the most practicable form to cope with this problem. Indeed the practical solution of these problems of feeble-mindedness and allied defects is fast leading us to something of the sort, whether we choose to call it socialism or not. Yet how many would-be socialists face the congenital or acquired inequalities of men with frankness and clear understanding?

UNDER WHAT CONDITIONS IS THE DIAGNOSIS OF "TUBERCULOSIS" IN CHILDREN JUSTIFIED?*

By JOHN B. HAWES, 2ND, M.D., BOSTON.

THE question raised in the title of this paper is an important and pertinent one. There are many who believe that the theory of childhood infection is being carried too far. However opinions may differ as to this, everyone will agree that the diagnosis and treatment of tuberculosis in childhood is one of the most important, if not the most important problem, not only in tuberculosis and its prevention, but in the entire field of preventive medicine. The children of today are the men and women of tomorrow; the weak and sickly children of this decade are the consumptives of the next, whether or not scientists still wrangle over the problem of the path and the exact time of infection. It is, therefore, urgently necessary that some definite standard be adopted and recognized by every one as to the exact signs and symptoms, or group of signs and symptoms on which it is just to make such a diagnosis. Of course I do not refer in this paper to children with advanced pulmonary tuberculosis, with or without a positive sputum.

It is indeed a step which demands the utmost consideration to stamp a young child as tuberculous and to cast on him and on the family the stigma, however slight this may be, that the name carries with it. Tuberculous infection is one thing,—tuberculous disease is another. Statistics, based on careful pathological investigation, as well as on the results of tuberculin tests, offer clear proof that a large proportion of children, 60% to 90%, according to different observers, are infected with tuberculosis by the time the fifteenth year is reached. This does not mean tuberculous disease, or what we generally term "clinical tuberculosis." Many of these children, indeed the great majority, are perfectly well and without symptoms. How to recognize and do justice to the comparatively small proportion in whom the disease is active and is causing symptoms, what should be their

treatment, and how radical steps should be taken in reporting and segregating these patients are most important and ever-present problems.

In Boston, and I presume elsewhere, there is at the present time a great diversity of opinion among doctors at the various clinics as to diagnosis and treatment of this class of children. It is perfectly possible for an anxious mother to take her small boy of ten to one large clinic and be told that he has consumption and must (and is made to) leave school; at the earliest opportunity she takes him to another clinic where the boy is again examined by equally skillful and conscientious physicians, who tell her that her boy has a cold, but certainly has not "consumption." Much relieved, but still anxious, she takes him to a third clinic, where an x-ray of the chest is taken. This discloses a few "bronchial glands and peribronchial thickening with a slight haziness at the right apex." The x-ray expert reports his diagnosis as "Bronchial Glands. Ph?" Exactly what this means may be, but usually is not, explained to the mother, and in any event, as can be readily imagined, fails to relieve her worry over her boy. And so the case drags on, the mother naturally (and quite properly) refusing to allow her son to be sent to a sanatorium or hospital for consumptives, and the physicians at one, at least, of the three clinics visited, still firm in the belief that here is a case of tuberculosis which needs radical treatment.

The following case is a striking example of this state of affairs:—

L. R., a little Armenian girl of 7, living in the thickly settled Armenian quarter, was sent to me for examination from one of the settlement houses of that district. There was a doubtful history of exposure from a grandmother, who had recently died of tuberculosis, and from a brother in whom such a diagnosis had been made, but later not substantiated. The exposure from the grandmother was also eliminated as a factor, to my satisfaction at least. The child had been examined on the morning of the day she was sent to me at a local tuberculosis clinic by two leading authorities in tuberculosis in this city, and pronounced tuberculous on the following evidence. Cough at night, morning temperature, night sweats, and history of exposure,—the last somewhat doubtful, as shown above. Examination at this clinic showed "a definite active process at the right apex, with a limited right basal expansion and well-marked signs of bronchial glands." The mother was told that her child had consumption, and that she must leave school. My examination in the afternoon showed a strong, well-developed and nourished, healthy-looking child. The tonsils were very much enlarged,—sufficiently so to account for any cough or fever which she might have at night or any other time. In the lungs aside from very slightly increased signs at the right apex, I could find nothing abnormal in any way. No râles were heard at any time.

* Read before the New England Pediatric Society, March 27, 1914.

The d'Espine sign was negative. There were no glands. One tooth was carious. I definitely committed myself in writing as being unable to find any evidence of active or clinical tuberculosis in this case, and that I could see no reason why she should not go to school.

A few days later the child was taken to the children's department of another large general hospital, where she was carefully examined by several leading pediatricians, and where I again went over her. Here, in the morning, she had a slight temperature of 99.2°. The lungs were pronounced negative. The d'Espine sign at this visit was negative. A careful skin tuberculin test, done at two separate occasions, was entirely negative each time. An x-ray was taken which was inconclusive, while a later one showed a few enlarged bronchial glands. At this later visit also the child had a cold, and the d'Espine sign became a positive one until the cold subsided, when it returned to normal limits.

The case was not considered one of clinical tuberculosis.

Later the child was taken to another dispensary and pronounced normal. The mother, naturally enough, has refused to take her to any more doctors, but is still greatly worried over the question as to whether or not her child has consumption.

This case represents an unfortunate state of affairs. Others similar to this are not uncommon, and are bound to increase as time goes on, unless some definite standard is reached and agreed upon by all. The physicians who saw this patient, whether they regarded her as a case of tuberculosis or not, were sincere in their desire to do what each thought was right; treatment advised was practically the same at the different clinics visited, except that one group of doctors thought that the child's condition warranted the use of the term "tuberculosis," while the other group did not. The two negative von Pirquet reactions in a child of seven are the only features which those who took the more radical stand must find it hard to satisfactorily explain.*

Everyone will agree that the diagnosis of early tuberculosis in children (advanced pulmonary disease offering no difficulties in diagnosis) must be based on:

(a) Bad family history or a history of exposure to tuberculosis.

(b) Constitutional signs and symptoms, such as fever, rapid pulse, loss of weight and strength, malnutrition, debility, undue fatigue, anemia, frequent protracted "colds," etc.

(c) Local signs and symptoms referred to the lungs, such as cough, often paroxysmal, dry, throaty or even brassy, usually without sputum, hoarseness, unequal pupils, slight substernal dullness with high-pitched intense expiration and whispered voice at the right apex, intense bronchial whispered voice over the spine lower

than the third or fourth dorsal vertebrae (d'Espine's sign) and rarely paravertebral interseapular dullness.

(d) Evidence of enlarged bronchial glands as shown by the x-ray.

(e) A positive tuberculin reaction.

Any child who has constitutional and local symptoms, a positive tuberculin test and confirmatory x-ray evidence, should quite justly be considered as a case of active clinical tuberculosis and be so designated and treated. This is easy enough. The great difficulty lies in the fact that "type" cases are rare, and that in 99% of such children the physician must base his diagnosis and treatment on much less than the above-mentioned symptom complex; he must "size up" and accord their value to the symptoms as they present, balancing in his mind what is lacking here against what is present elsewhere, and finally, he must base his decision on the picture he has so formed. His decision in each case should answer the following questions:

(a) Has the child tuberculosis?

(b) If so, is tuberculosis the cause of the present symptoms?

(c) Is the child a danger to the community?

(d) Does he need radical, aggressive treatment in a sanatorium, hospital or other institution for consumptive children?

(e) Should he be definitely considered as a case of tuberculosis, reported as such, and his parents or relatives informed of this fact?

(f) If not, how can he be kept under supervision and control, and should he be removed from school?

(g) If he is taken out of school, what do you offer in its place?

(h) If he has not tuberculosis, what is the matter with him, and what are you going to do about it?

What, then, is the relative value of the various points mentioned above, on which the diagnosis must rest? The first, a bad family history or exposure to tuberculosis, is an important factor, if present, but one whose absence need not interfere with a positive diagnosis. While it can be said that for all practical purposes, tuberculosis is not inherited, there is no doubt but that weak constitutions and a lessened resistance to tuberculosis may be and often are inherited. In regard to exposure to tuberculosis, the weight to be given this point depends on the length and intimacy of such exposure. These points should be carefully investigated in every case.

Next in order come the constitutional signs and symptoms. In my opinion, a diagnosis of early clinical tuberculosis in childhood is rarely justifiable, unless such constitutional signs and symptoms are present. Without these, except in very occasional instances, no matter what the x-ray may show, and what the signs in the lungs may indicate, I doubt if it is safe or just to stamp the case one of consumption. On the other hand, I have many times made such diag-

* It is interesting to note that a recent von Pirquet test gave a positive reaction. This may or may not mean that the patient was sensitized by the two former ones.—J. B. H.

noses and occasionally sent children to a sanatorium on constitutional signs alone. There is no field of evidence which better repays careful study than this.

Third in the symptom-complex, I have placed signs and symptoms referred to the lungs. Cough and sputum speak for themselves, and have many causes other than tuberculosis. Marked dullness, râles, etc., are easy enough to find, and require no special skill. The detection of finer shades of dullness, or rather diminished resonance, resistance under the finger, the significance of harsh or puerile breathing, prolonged high-pitched expiration, bronchial whispered voice, substernal and paravertebral dullness, require long experience, constant daily practice with such cases, and the greatest of skill to interpret properly. At present much weight is placed on a positive d'Espine sign. When we analyze what this sign really means, we find that it simply suggests that something is present which transmits the whispered voice and breath sounds from the trachea and larger bronchi through to the dorsal vertebrae at a lower level than is usually the case in normal healthy children. It has been taken for granted that this "something" is usually enlarged bronchial lymph nodes, and it has been further taken for granted that these enlarged lymph nodes are necessarily tuberculous, and further still, that they must be the cause of the child's symptoms. All these hypotheses are interesting if true. I do not think that we yet fully understand just what this phenomenon really does mean. It has been found present in perfectly normal individuals a sufficient number of times to show that, like a tuberculin reaction, while it may mean infection, does not always mean disease; again, it has been found present following various acute diseases, especially measles, often enough to show that it does not always mean tuberculosis. I am strongly of the opinion that further investigation must be made before we can attach much significance to a positive d'Espine sign alone as pointing to a tuberculous infection.

Coming to x-ray evidence, here again we are dealing with something which taken alone is not of great value, but which in conjunction with other features may be of grave significance. It must be remembered at all times that the x-ray picture is one of lights and shadows; that such evidence is dumb, and cannot tell us whether the shadows of the glands we see in the picture mean tuberculosis or not, and, if the former, whether the infection is old or recent, active or latent. Whenever possible the x-ray should be interpreted by an expert and by one who recognizes the limitations of his specialty. Such men do exist, but they are rare.

Finally, what does the tuberculin test offer us in such cases? To me the answer is clear and definite. A negative skin tuberculin test (the only one which should be used in children), in the absence of factors which might cause a negative reaction, if carefully performed and con-

firmed by a subsequent negative reaction, is as good evidence as there is that tuberculosis can be ruled out. A positive test is not so conclusive, but, like the x-ray, is only a small bit of confirmatory evidence to be taken in conjunction with other features of the case.

In conclusion, then, in answering the question asked in the title, "Under what conditions is the diagnosis of 'tuberculosis' in childhood justified?" I would state my opinion as follows:

1. Let it be clearly understood that by the term "tuberculosis" I mean clinical tuberculous disease which presents a definite picture and which requires definite treatment.

2. In the absence of advanced tuberculosis or a recent infection with some acute disease which might cause a negative reaction, a diagnosis of tuberculosis is rarely justified unless there is a positive skin tuberculin reaction.

3. Constitutional signs and symptoms are usually present and require careful study and investigation. If such symptoms are absent, a definite diagnosis is unwise, although this should not interfere with placing the child under proper treatment.

4. Signs referred to the chest and lungs are of interest and value, if present; if absent, their absence should not preclude a definite diagnosis. If present without constitutional disturbance, look out for chronic influenza and pneumococcus infections.

5. Positive x-ray evidence is of value in conjunction with other evidence. Diagnoses based on the x-ray alone are apt to be wrong, and are unjust to the patient.

THE CAUSES AND THEIR RELATION TO THE TREATMENT OF LATERAL CURVATURE OF THE SPINE.

By Z. B. ADAMS, M.D., BOSTON.

MANY will remember the work on numerical variations of the spine done by Dr. Max Böhm. He made the statement that the upper surface of the sacralizing vertebra might be tipped and thus cause scoliosis. This may rarely be true. Some three years ago in checking up this work of Dr. Böhm the conclusion was reached that so far as the cause of scoliosis is concerned, lesions of the articular processes were of far greater importance than asymmetrical sacralization.

The x-rays of any clinic show that asymmetrical sacralization is of frequent occurrence in cases radiographed for pain in the back, or loin, etc., where no scoliosis existed. The Dwight collection of spines bears this out for it contains many examples of asymmetrical sacralization, but few of scoliosis. In the few with scoliosis, a lesion of an articular process is present and the transverse processes are normal. There is one