

**SIGNS OF HEALTH IN SCHOOL CHILDREN  
THAT A TEACHER SHOULD KNOW**

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## CREED OF EDUCATION

"To have and to keep a sane healthy soul  
in a sound healthy body; to think straight, to  
appreciate beauty in nature, in the fine arts,  
and in the deeds of men; to act nobly; to work  
skilfully with the hands as well as with the  
head; to realize that there is work to do in  
the world; above all--to be consumed with a  
burning desire to do a full share of the world's  
work--these are the marks of a completely edu-  
cated man or woman."

---Francis M. Stalker

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## I. INTRODUCTION

When an aviator starts on a flight, he examines his plane carefully. Before a liner sails it is looked over to see that all the machinery is in perfect condition. Automobiles are overhauled to catch a weakness that might not show until miles have been traveled. The human engine should be looked over, for it is as important to know about bodily mechanism as it is for an engineer to know his engine. It has to take the child through the world, and if it breaks down his work is impaired, his life darkened, and expenses for repair pile up into a veritable mountain.

The following pages are intended to present some health information which will enable the teacher to recognize the signs of health, both good and bad, mental and physical. This thesis does not pretend to exhaust the intricate treatment of disease, for this should be left entirely to the care of a physician. Its primary purpose is to present only the actual and necessary information which will enable the teacher to help students to develop sound mind in sound bodies.



## II. SOURCE OF DATA

The material for this study was gathered from two distinct sources, which were book material and results secured from a questionnaire that was given to teachers.

### A. Book Material

The existing publications pertaining to the subject were collected and classified under one of the following main headings: physical health, physical ill health, mental health, and mental ill health. Each of these main headings was used to form a division of the body of the thesis. The material was read, and the signs of health stated as clearly and concisely as possible. The aim of this study, which is to present health information a teacher should know, was always kept in mind.

### B. Questionnaire

1. Purpose. The purpose of the questionnaire was to determine the extent of the teacher's knowledge concerning the common diseases and defects of childhood. In order to obtain this information a questionnaire was constructed and given to 73 teachers. These teachers were selected at random from the public schools of Illinois and were interviewed personally. All questionnaires were filled out in the presence of the writer.

2. Construction. The questionnaire was constructed by using the common factors of material presented by, Emerson<sup>1</sup>, New York Course of Study<sup>2</sup>, and Holt<sup>3</sup>. There was no attempt made in the selection of the diseases and defects to determine the relative importance nor the frequency of their occurrence. The findings previously mentioned determined the diseases and defects that make up this questionnaire.

3. Tabulation. The results were checked and the number of correct answers recorded for each disease and defect. In some cases, such as the source of infection of kyphosis, there is no answer, therefore, the blank was left unmarked.

#### A. Tabulation of Diseases and Defects

	C	I	T	C	Inc.	Q	S
	1	2	3	4	5	6	7
1. Adenoids	11						73
2. Anemia	4						31
3. Athlete's Foot	0	3	10	6	0	10	20
4. Boils	0	19	12	12	0	37	61
5. Common Cold	7	33	26	6	3	73	73

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<sup>1</sup> W. R. P. Emerson, The Diagnosis of Health (New York: D. Appleton and Co., 1930), p. 5.

<sup>2</sup> New York City, New York Course of Study 1930, P.12.

<sup>3</sup> L. E. Holt, The Diseases of Infancy and Childhood (New York: D. Appleton, 1922), pp. 267-1110.

	C	I	T	C	Inc.	Q	S
	1	2	3	4	5	6	7
6. Constipation	61						42
7. Deafness	73						73
8. Dental Caries	3	3	3	0	0	3	3
9. Diphtheria	15	11	15	9	2	17	17
10. Earache	69						73
11. Flat Feet	43						73
12. Goitre	29						52
13. Hyperopia (Farsightedness)	64						71
14. Influenza	7	2	9	23	0	32	42
15. Indigestion	72						73
16. Itch (Scabies)	0	5	17	31	0	38	46
17. Kyphosis	13						18
18. Lordosis	17						19
19. Measles	9	13	11	6	17	69	24
20. Mumps	10	6	21	37	23	7	73
21. Myopia	39						73
22. Pneumonia	8	3	27	16	8	58	40
23. Pyorrhea	4	17	29	15	0	36	54
24. Rickets	38						62
25. Scarlet Fever	14	6	8	4	12	35	41
26. Scoliosis	15						49
27. Scurvey	24						39
28. St. Vitus Dance	7						68
29. Tonsillitis	14	19	27	13	9	68	73
30. Trachoma	6	25	21	51	3	45	64

	1	2	3	4	5	6	7
31. Tuberculosis	13	11	53	47	3	54	61
33. Typhoid Fever	9	18	36	31	22	33	44
33. Whooping Cough	14	27	59	35	41	37	73

Explanation of Tabulation. The numbers at the heading of each column of figures are explained in the following:

1.....numbers below this show the number knowing the correct answers as the cause or causative agent.

2.....number knowing the source of infection.

3.....number knowing mode of transmission.

4.....number knowing the period of communicability.

5.....number knowing the period of incubation.

6.....number knowing the period of quarantine.

7.....number knowing the symptoms.

Findings. A study of the tabulation of the results of the questionnaire revealed the following facts:

Of the 73 questioned none were able to correctly fill in all of the blanks.

The median number knowing the correct answer was 13 for cause or causative agent, 17 for source of infection, 21, for mode of transmission, 15 for the period of communicability, 3 for the period of incubation, 37 for the period of quarantine, and 53 for symptoms.

The symptoms for adenoids, common cold, deafness, earache, flat feet, goitre, hyperopia, indigestion, mumps, myopia, rickets, St. Vitus' dance, tonsillitis, trachoma,

tuberculosis, and whooping cough were more generally known than those of other diseases and defects equally as common and as severe such as, anemia, influenza, kyphosis, lordosis, measles, scarlet fever, et.

Many teachers had only a vague idea that the answers they gave were correct.

4. Conclusions. The result of the questionnaire shows that teachers have but a meager knowledge of the diseases and defects of children.

### III. THE SIGNS OF PHYSICAL HEALTH AND HOW TO DETECT THEM

"Doesn't John look well?"

"Yes, and his appetite is simply ravenous."

The above and similar conversation is overheard and created by the majority of people frequently. But what is meant by these remarks? Sometimes we may mean that in comparison with previous times John looks well, not that he abounds with health. Often we imply more than a few of the attributes of health.

The specific signs by which we judge health, good or bad, are somewhat intangible. Much interest has been manifested in the suggestion that we have teachers trained to detect health deficiencies so that better health and happiness may be insured for the future. Before teachers can efficiently do this they must have a definite and compact scale by which<sup>1</sup> to rate the individual. Emerson gives us a list of fifteen items that show physical health and well-being.<sup>2</sup> Payne and Schroeder give a list of nine

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<sup>1</sup>  
W. R. P. Emerson, The Diagnosis of Health (New York: D. Appleton and Co., 1930), p. 5.

<sup>2</sup>  
E. G. Payne and L.C. Schroeder, Health and Safety in the Curriculum (New York: The American Viewpoint Society, Inc., 1925), p. 246.

points that are important as health guides, and  
3  
Chaplin gives twenty signs of health. These lists,  
which all compare favorably, can be condensed into  
eleven manifestations of health. They, with a dis-  
cussion, are as follows:

A. Signs of Health

1. The Glow of Health: Eyes Clear and Color  
of Skin Good.

a. Eyes. The eyes by themselves may express  
the glow of health. They show, by their expression,  
the condition of the nervous system. If the eyes  
are bright and clear, move normally, show no fatigue  
rings under them, do not squint, and the mucous mem-  
branes are pink and free from inflammation, we have a  
state of normalacy.

b. Color of Skin. The color of the skin of  
white children is generally a ruddy pink. A healthy  
person's skin is generally smooth, slightly moist,  
clear, soft and firm. Pallor and a complexion that  
is not clear indicates impaired health.

2. Expression of Face: Happiness and Well-being.  
The expression of the face is one of the surest in-  
dications of good health. The whole body reflects

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3  
H. Chaplin and E. A. Strecker, Signs of Health  
in Childhood (New York: American Child Health Asso-  
ciation, 1927), pp.4-7.

the condition of well-being, but it is particularly evident in the expression of the features. In health the appearance is one of happiness and good physical welfare, and there is an absence of the drawn, anxious look and dark lines, so often present even in childhood. When these lines appear it is an indication that the child is not healthy.

3. Hair: Smooth and Lustrous. Animals show their state of health by their smooth, glossy coats. Humans show the same signs of health. The hair of healthy individuals is smooth and glossy instead of dry and brittle.

4. Mouth Closed: Breathes Through the Nose. An individual who breathes through the mouth indicates a lack of breathing space caused by a nasopharyngeal obstruction, and therefore suffers from insufficient oxidation. Persistent mouth breathing causes deformities of the face and pharynx and results in impaired health.

5. Teeth Good. Normal teeth are well formed and well enameled. They are sound, regular, and well set in well developed jaws. The grinding surfaces of the double teeth meet directly. The upper incisors and canines slightly overlap the lower providing the scissor-like action intended for these teeth. They are clean and free from discoloration.



6. Muscles Show Good Tone. Flesh Firm. The muscles are firm, strong, and show good tone. The flesh is firm to the touch, but not hard. Hardness of the flesh and muscles indicates over-activity and the lack of fatty tissue. Individuals with such flesh and muscles are often capable of remarkable physical exertion for a short time, but they lack nervous stability and resistance to infection.

7. Posture Erect: Suggests Power and Endurance Good posture is naturally erect and is maintained by sets of muscles and ligaments acting on the bony framework of the body. These act one against another to give the body balance and poise.

When we are overtired or when the health is impaired, the muscles relax, and we assume, to a greater or less degree, the posture of fatigue. With the head set forward, the shoulders slouched, and the curvature of the upper part of the spine increased there is a compensation curve in the lower part. The chest becomes flattened, the abdomen protrudes, there is a slight bend in the knees, and the arches of the feet become flattened. Fatigue posture is always the result of impaired health.

In good posture the head is erect with the chin drawn in and the shoulders level. The shoulders may be sloping or squarely built, but not rounded. The chest is broad and deep with good expansion.

The bones of the arms and legs are straight. The feet are parallel with the great toes pointing forward when standing. The body is balanced equally upon the ball and the heel of the foot.

8. Gait, Alert. The gait of a healthy person is quite different from that of a sick or tired individual. In a healthy person there is a spring in the step and a resiliency of the whole body that is markedly absent in the dragging gait of those in poor condition. The well individual is alert and walks with an easy, graceful swing that indicates vitality, for the coordination of mind and body is close enough to eliminate unnecessary movements.

9. Optimum Weight for Height. Perhaps the most valuable single sign of health during the period of growth and development is the proper weight for height. We judge what this weight should be by comparison to weight charts and by observation of the body outline which should be smooth of contour in both the trunk and the extremities. In judging an individual's weight we observe particularly the smoothness of outline about the neck and shoulders, the appearance of the arms and legs, and the prominence of the bones in general. The bones of an underweight child project sharply, and their bony joints are prominent, but, in the overweight, ridges of fat appear at the waist,

and the abdomen becomes prominent.

10. Normal Reactions: Physical and Mental.

Response to a stimulus is normal. A healthy child's actions are always smooth without the jerky motion which show a nervous disturbance. The normal child plays or works with a freedom of action that shows good physical development and absence of mental interference.

11. Enjoys Life. Fond of Play. The most characteristic activity of childhood is play. It is true that all children do not enjoy the same kind of play, but all normal children enjoy some kind of physical activity. It may be a mild game, such as building with blocks or a more active game, such as baseball. Not only does a healthy child enjoy playing games, but he also enjoys doing something in the form of a task or duty. If a child cannot enjoy himself in some form of physical activity, then he is not physically healthy.

#### IV. PHYSICAL ILL HEALTH

Upon the basis of the facts revealed in the study of the questionnaire, the teachers in the field and those in training are woefully ignorant of the mechanism they are trying to teach. This fact is a serious inditement against modern curricula in the teacher training colleges of the land. It is a well known fact that prospective teachers graduate from the best teachers' colleges without a single health course and proceed to teach the children in schools. Further they are well informed as to the location of some unimportant island located near the north pole or the color of President Andrew Jackson's eyes. Why this should be puzzles the sane thinking school man. But a greater mystery is why health subjects are not required in these courses. To augment this it must not be forgotten that health heads the list of the cardinal objectives in education. This last fact has been expressed since the days of the Greeks. Yet educators continue to neglect its rightful importance.

The object of this study will be to compile facts which will enable teachers to detect the onset of different diseases, so that isolation and

quarantine will prevent epidemics within the schools, thus saving enormous amounts of time and money. In addition to this various organic defects will be analyzed.

With this in mind it has been thought expedient to classify the diseases and defects in three groups based upon the embryological origin of the organs and systems so affected. These groups will be classified as the ectodermal, endodermal, and mesodermal. The diseases and defects are arranged in alphabetical order within the group, rather than upon the basis of importance or the frequency of their occurrence.

These diseases and defects will be briefed in a general way in the beginning paragraphs, which will deal with early signs or symptoms, mode of transmission, period of incubation, source of infection, cause or causative agent, means of communicability, and the period of quarantine. These facts will be placed later in tabular form in the summary of this division of the thesis. In order that a better knowledge may be obtained quickly a brief statement of facts will be made in the beginning paragraph followed by a more comprehensive statement whenever possible.

No attempt will be made to write a treatise of medicine nor to indicate what treatment should be given. That study rightfully belongs in the province of the

physician, who has spent enough time in his study and treatment to satisfy the requirement to practise medicine within his state.

The first group of diseases and defects which is considered is that which affects the organs and systems of ectodermal origin and is as follows:

#### A. Ectodermal Diseases and Defects

1. Athlete's Foot, (Epidermophytosis.) The disease is caused by a ringworm fungus and is transmitted by contact with a person who has this disease or by using the soiled articles of such a person. It appears on the hands and feet in blisters or moist scales and is accompanied by intense itching. The germ multiplies between the skin layers of freely perspiring surfaces.

Applications of an ointment, composed of salicylic acid and benzoic acid, will kill the germ. These applications should continue for a week after the blisters or scales have disappeared.

#### 2. Eye Defects and Diseases

a. Farsightedness, (Hyperopia.) This is a defect of the eye in which the eyeball is too short for its focusing power. Those who have this defect often do not realize it, because they can unconsciously make a special effort of the eye muscles and see quite clearly both near and distant objects. Head-

aches, easy fatigue of the eyes, difficulty in concentrating on the work, and even indigestion, may result from the strain the farsighted person puts on his eyes when he does not wear glasses. All cases of farsightedness should be sent at once to an eye specialist.

b. Nearsightedness, (Myopia.) This is due to elongation of the eyeball. The focus of the myopic eye at rest is upon near objects, whereas the focus of the normal eye at rest is at infinity. It is only in the high degrees of myopia that one usually finds serious sight dangers which spring from degenerated or overstretched tissue.

The cause of this defect is not known. Myopia tends to run in families, and it generally develops during the growing period, ceasing at about twenty-one years of age. Children who show a definite tendency toward progressive myopia should be strongly urged to avoid the constant exacting use of the eyes in the trades, such as watch-making, or the prolonged education necessary for the learned professions. However, the majority of myopes have a mental development well above the average, and they are quite loathe if not positively unwilling to forsake the mental life which is so attractive to them. Children showing signs of this defect should

be sent at once to an eye specialist.

c. Trachoma, (Granulated Eyelids, Conjunctivitis.) The cause of the disease is not known. The source of infection is from the discharge of the eyes of an infected person. It is transmitted by contact with infected persons and by contact with articles freshly soiled with the infective discharges of such persons. The period of communicability is as long as there is a discharge from the eyes of the infected person. The period of incubation is not known. There is no quarantine.

Redness, a discharge, sticking together of the eyelids in the morning, or heaviness and swollen lids are symptoms.

Isolate the patient. Eliminate the use of the common towel and other such articles. The eyes should be kept clean and protected from dust, smoke, glare, and strain. For other treatment see a physician.

3. Itch, (Scabies.) Itch is a contagious disease due to burrowing into the skin of the female acarus, with secondary lesions which result from scratching. The disease is transmitted by clothing coming in contact with the infected part or by articles freshly soiled. The site of infection is the skin between the fingers, the flexor surface of the wrists, the axillae, and, in males, the genitals.



There is intense itching of the infected parts and small eruptions of the skin. It is not seen upon the face, except in infancy.

The first treatment should be a hot bath, in order to soften the epithelial scales about the burrows. The body should be thoroughly scrubbed with soap and water, preferably with a nail brush, the bath being continued for at least half an hour. It is well to do this at night. After the bath, the body should be annointed with a parasiticide, (sulphur ointment), which should be thoroughly rubbed into the skin, clean clothing applied, and the child put into a perfectly clean bed. In the morning the ointment should be washed off and the child dressed in clean clothing. This treatment should be repeated for two or three successive nights, and if thoroughly done will effect a cure. If the infection is at all stubborn or severe the advice of a physician should be sought.

4. St. Vitus' Dance. Suggested causes are heart disease and rheumatism, and other possible causes are whooping cough, scarlet fever, and anemia. Nervous troubles may be an important factor in the cause, and eye strain, impaired hearing, or defective speech usually aggravate it. The face is drawn into horrid grimaces, the eyes wink rapidly, the head is jerked

from side to side, the shoulders are raised, the arms jerk, or some other muscles of the body are acted upon to the amazement of the onlooker and the unhappiness of the patient. This disease is usually found in childhood between the ages of five and fifteen.

It is necessary to protect the child from undue notice or ridicule of the infirmity, to build up the general health through play, fresh air, sunshine, moderate exercise, and good wholesome food, and to have a physician thoroughly examine the child.

#### 5. Teeth, Defects and Diseases

a. Pyorrhea. The disease is a common chronic infection of the gums. It is probably partly due to neglect of the mouth. A small amount of white discharge, pus, appears at the gum line. It gives an offensive odor to the breath, and an offensive appearance. It is likely to cause the teeth to loosen and to need extraction. It may also result in the general absorption of poison, and ill health. It can usually be prevented in a well person, by the daily care of the mouth. The care of the teeth involves correct diet, proper mastication of food, little candy, attention to malposition or injury of the teeth, frequent inspection by a dentist, and daily cleansing.

All cases of pyorrhea should be sent at once to a dentist or a physician.

b. Dental Caries. Among the causes of dental caries the most important is want of cleanliness--the almost entire neglect of the toothbrush among the poor. Malnutrition and improper food, especially during life in utero and in early childhood, certainly affect the teeth. In some children a congenitally defective enamel is present. Dental caries is very common in the second set of teeth that have suffered from severe and prolonged rickets. Hereditary syphilis is also a cause, and in children with congenital mental defects the teeth are prone to early decay. The symptoms are both local and general. Locally, as a result of decomposition and infection, there are present foul breath, gingivitis, alveolar abscess, ulcerative stomatitis, and toothache. The lymph nodes in the neighborhood frequently become enlarged. Tuberculosis of the submaxillary and submental lymph nodes is nearly always the result of infection through the teeth or the gums. The general symptoms result in part from improper mastication of food and in part from sepsis from the local condition. There may be only failing nutrition, loss of appetite and anemia; or these symptoms may be accompanied by a slight but continuous fever which may persist for months. Many cases of illness, diagnosticated acute rheumatism, have their origin in oral sepsis the cause of which are carious teeth, and no treatment has any influence upon the condition until these are removed. From the local

irritation various symptoms may arise. The most common are habit spasm and headaches. The presence of carious teeth is a menace to the general health. They certainly are predisposing causes of local tuberculosis.

The treatment of this condition belongs to the dentist, but cleanliness of the mouth is an important preventive.

### B. Endodermal Diseases and Defects

The second groups of diseases and defects which is considered is of endodermal origin and is as follows:

1. The Common Cold. The cause of the disease is not known. The source of infection is from the nasal and mouth discharges of infected persons. A cold is usually transmitted by droplet infection that is coughed, sneezed, or forced into the air by speaking, although it is often transmitted by contact with soiled handkerchiefs or utensils used by the infected person. The period of communicability is not definitely known, but a cold is communicable as long as causative agents remain in the nose or throat. If of the communicable type, it is highly communicable in the early stages of the disease and in epidemics. Some so-called colds are due to tobacco or dust or other irritation and are not communicable. The period of incubation is very brief, usually from twelve to twenty-four hours. There is no quarantine.

The onset of the disease is usually marked by sensations of burning or itching at the primary area of invasion. This is generally in the posterior nares, but may be in any portion of the upper respiratory tract. In about thirty per cent of all cases the inflammation remains localized, but in a great many instances the nose, pharynx, larynx, trachea, and nasal sinuses become extensively involved. At the height of the disease patients are quite dejected and uncomfortable. The nasal mucosa is red and swollen, the nostrils are partly or completely occluded, and from them a watery discharge pours continuously thus causing much sniffing and blowing of the nose. Headache and dull pain in the face and back of the nose are common and are aggravated by inspiration of air. The sense of smell, taste, and hearing is often impaired. The voice becomes husky and muffled. The tongue is dry and coated. Swallowing and opening of the mouth may be painful or difficult. Patients complain of vague aching in the back and extremities. Their hands and feet are often cold, and they wear additional clothing to protect themselves from drafts to which they are particularly sensitive. Other organs besides those of the respiratory tract may also be affected and produce symptoms, the common ones being constipation, diarrhea, abdominal cramps, and nausea. The symptoms may last a few days or many months.

Local applications of antiseptics to the nose and throat is usually without value in treating a cold. Treatment consists mainly in the relief of symptoms as they arise. Patients are usually more comfortable in bed, although in most instances they prefer to continue their daily occupations. Isolation is desirable, as it protects others and minimizes the opportunity of acquiring secondary infections. The body, especially the feet, should be kept warm and dry. Smoke, cold, damp air, and other irritants should not enter the respiratory tract. Any simple diet is suitable. An occasional saline cathartic may be indicated even when the bowels are active.

In severe cases a physician should be called.

2. Constipation. Constipation is a disturbance of the intestinal function, usually of the colon, which results in delayed or incomplete evacuation of the feces. It is most often caused by a diet which leaves insufficient undigested residue, sedentary habits, irregular hours for defecation, and inattention to the "calls of nature." When constipation develops it is usually aggravated by the use of cathartic drugs, which, in turn, cause or increase inflammation of the large intestines.

Constipation may impair the health but little for a long time, but sooner or later it causes coating of the tongue, lassitude, and mental depression. Frequent symptoms are headache, vertigo, anemia, acne, and other

affections of the skin. Neuritis, neuralgia, and arthritic pains often follow. There is usually indigestion, particularly a sense of fullness after meals, eructation of gas, and distention of the abdomen. Fever is an occasional symptom.

The treatment varies with the cause and type of the disease. In all cases which are clearly functional in origin or are the result of slight mechanical interferences, regular adequate evacuation should be reestablished by regulation of the diet, insistence on hygienic measures and exercises, and cessation of the use of drugs. Much may be accomplished by systematic habits, particularly in the young. The patient should go to the stool at a fixed hour every day, whether there is a desire or not, and the desire should always be granted. Water should be taken freely, one or two glasses on arising and before retiring; one glass of cool water with each meal aids digestion and at least one glass should be taken between meals. Exercise in moderation, preferably out-of-doors, is desirable. None of these measures, however, will restore the function to normal unless the diet contains a large amount of undigestible material. The following foods should be included in the diet: whole wheat bread, bran muffins, or cooked bran, cooked and raw vegetables, such as lettuce, celery, endive, spinach,

string beans, carrots, and beets, cooked fruits, such as prunes, apricots, cherries, and plums, figs, dates, raisins, and nuts. Raw fruits and fruit juices should be given sparingly, except in early and mild cases. A tablespoonful of mineral oil taken once or twice daily when the stomach is empty often relieves the milder cases.

If the case is persistent, see a physician.

3. Diphtheria. Diphtheria is an acute, specific infectious disease caused by the bacillus diphtheriae. The source of infection is from the secretions of the nose and throat. It is transmitted by contact with the diseased person, by articles freshly soiled with discharge, or through infected milk or milk products. The incubation period is from two to five days or longer. The period of quarantine is from one to two weeks. The initial symptoms may be very slight. The patient complains of a little soreness of the throat, the temperature is slightly elevated, varying between 100 and 103 degrees, but the subject is often not ill enough to remain at home. The local lesions begin most frequently in the pharynx, affecting especially the tonsils, the larynx, or the naso-pharyngeal mucous membranes.

The disease is caused by the bacillus diphtheriae which casts off a soluble toxin in the blood and causes wide-spread disturbances. The growing point of



the organism is local. Diphtheria is very common among school children and young people. The fact that it is transferred through air makes an epidemic always possible. Too, there is always a number of carriers in any group which is a constant menace to the susceptible. These organisms grow in the throat, producing lesions in the mucous membrane of the fauces, the uvula, tonsils pharynx, larynx, sometimes the trachea, and the smaller bronchi. Similar lesions occur in the nose, often in the ear and skin. The lesions have many common characteristics, typical in that they are characterized by redness of the whole lining of the throat, difficulty in swallowing and acute illness. White or yellowish white flakes appear on the reddened surface and gradually spread. This is a false membrane, characterized by being elevated, dull in color, opaque, and adherent to the underlying tissue. When peeled off there is a raw surface, blood oozes freely, and a new false membrane is quickly formed. Often in the trachea it forms a complete lining. One shouldn't be alarmed when children cough up the whole lining of the trachea, or parts of it. Diphtheria bacilli may produce a milder inflammation which simulates catarrh. This occurs when there is infectious streptococci present. If these streptococci are virulent, inflammation of the tonsils, and pillars of the pharynx, deep destruction of the tissues,

and great cedema may occur. Often there is occlusion of the respiratory tract due to the cedema or by accumulation of these false membranes, thus producing asphyxiation. Death from the closing of the trachea is a common result. The results that often follow diphtheria are serious. Broncho-pneumonitis is common, due to the fact that the streptococci and staphylococci pass into the lungs through the bronchi and the bronchial tubes. The other results are due to the diffusion to the strong toxin circulating freely in the blood and acting upon many organs. When there is great toxemia, death, due to the damaging effects of the diphtherial toxin on the heart and circulatory system, often results. Cloudy swelling, fatty degeneration, and fractured heart muscle fibers are easily found. The toxin has powerful effect on the vaso-motor control, allowing them to relax, thus causing the circulation to fail. It is debatable whether the first described heart damages or the effect on the vaso-motor control is the cause of circulatory failure, or a combination of the two. In fatal cases, at least, there is marked effect on the kidneys with the interstitial tissues greatly swollen, and the urine filled with albumen. Throughout the body there is always hemorrhages and cellular destruction. Paralysis is one of the important results. The destruction of both motor and sensory

nerves and their cell border is a common result. The nerves that are often effected are those of the palate and the intrinsic and extrinsic muscles of the eye, paralysis of the arms and legs occur, but it is not as common in this disease. Generalized periphial neuritis is extremely common in diptherial infections. A rash may occur on the skin.

There should never be a case of diptheria found in the school-room. The fact can be realized by the use of the toxin-antitoxin treatment. Every susceptible child can be detected by the Schick test, which every teacher should be able to explain to her patrons. The story of Von Behring and the development of the production of diptherial anti-toxin should be told in simple language to every school child in this country.

#### 4. Ear Defects and Diseases

a. Deafness. This is usually caused by such diseases as catarrh, infected tonsils, adenoids, scarlet fever, measles, or hysteria. It may also be produced by the stoppage of the ear by wax, a jar on the head, or a loud noise. Deafness is recognized by the inability of the child to hear clearly. All children should be tested for this defect. A good test is to speak in a low tone and notice the reaction of the pupils in question. A watch may be used to test the hearing by placing it at different distances from the

subjects or subjects in question. All cases of deafness should be taken care of at once by a physician.

b. Earache. This may be caused by tonsillitis, measles, scarlet fever, colds, diphtheria, typhoid fever, violent blowing of the nose, a sudden jar on the ear, loud noises, or an infection of the ear. The symptoms are swollen ears, oftentimes fever, placing the hands to the ears, especially in small children, extreme pain, or a discharge. Earache is very common in children and indicates a more serious condition. To ease the patient apply a few drops of warm oil or a warm cloth to the ear. All cases of earache should be taken care of at once by a physician.

5. Goitre. A chronic enlargement of the thyroid gland, due to lack of iodine, occurs sporadically or endemically in this disease. It is rarely congenital except in very goitrous districts. Cases are most common at or about puberty, and the tendency diminishes after the twentieth year. The disease occurs at every latitude and in every altitude, in valleys and in plains, and in various climates. It seems to be less prevalent by the seashore.

The increase in size of the gland is usually insidious and in many cases there are no symptoms. The only complaint is the disfigurement from the enlarged gland. The symptoms are more or less stridor and

cough, which may be present for years without special aggravation. Goitres may be present with very large glands, the small encircling goitre, or with a goitre which passes deeply beneath the sternum. Pressure on the recurrent nerves may cause attacks of dyspnoea, particularly at night, and the voice may be altered. Sometimes there is difficulty in swallowing, and the veins of the neck may be compressed. Dullness, decreased movement of the larynx on swallowing, laryngeal paralysis, venous obstruction, and signs of bronchial compression may be found.

All cases of goitre should be referred to a physician.

6. Indigestion. This is recognized by uncomfortable, "sour," heavy, and sometimes painful feeling after eating and is a very common ailment. The presence of it does not mean that the stomach is necessarily at fault, as it may result from disorders in any part of the body. Diseased tonsils or teeth, constipation, mental worry, heart disease, and many other conditions have caused cases of indigestion. Sometimes the cause is due to purely local conditions. Overeating, heavy foods, spicy foods, and greasy foods are often the cause, as are very hot or cold foods. Drinking quantities of cold water before eating, or eating while fatigued may cause it. In fact, it may be caused

by any unnatural or abnormal condition. Temporary relief can often be had by taking a little baking soda in water, but a physician should be consulted if the trouble occurs often.

7. Influenza. The cause of the disease is not known. It is transmitted by contact with a person who has the disease. The source of infection is from the secretions of the nose and throat. The period of incubation is from one to three days. There is no period of quarantine. The onset of the disease is very sudden and is indicated by a fever, chilly sensations, and prostrations accompanied by catarrhal symptoms.

The mucous membrane of the respiratory tract from the nose to the air cells of the lungs may be regarded as the seat of election of the infection. In the simple forms the disease sets in with coryza, and presents the features of acute catarrhal fever, with perhaps rather more prostration, and the picture is that of severe toxæmia. The cough is usually severe and persistent. Oedema of the larynx is not uncommon. The more grave conditions are bronchitis, pleurisy, and pneumonia. The disease may develop in several forms. The one already discussed is the respiratory. Other forms are nervous, gastro-intestinal, and febrile. In the nervous form the disease

may develop with catarrhal symptoms, but severe headaches, pain in the back and joints, and profound prostration usually appear. Among the more serious complications may be mentioned meningitis and encephalitis. In the gastro-intestinal form there may be nausea and vomiting, or the attack may set in with abdominal pain, profuse diarrhoea, and collapse. In the febrile form there may be nausea and vomiting or the attack may set in with abdominal pain, profuse diarrhoea, and collapse. In the febrile form the fever may be the only manifestation of the disease. It is sometimes markedly remittent, with chills, or in rare cases there is a protracted, continued fever of several weeks' duration.

In treating the disease the patient should be isolated when possible, and old people should be guarded against all possible sources of infection. There is no conclusive proof that vaccines have a preventive effect or that they are useful in treatment.

8. Mumps. The cause of the disease is not known. The source of infection is from the secretions of the nose and throat. The mode of transmission is by direct contact with the sick person. The period of communicability is not known, but it is thought to be until the glands return to normal size. There is no period

of quarantine. The first sign of the disease is a fever. The temperature usually runs from 101 to 104 degrees. There is marked pain on one side of the face. Earache and perhaps dullness of hearing may occur. The parotid gland is the seat of the swelling and it may be very sore. The skin over the swollen glands is tense, but not reddened. Mild redness of the pharynx is usually seen at the onset.

Mumps is a general, specific, infectious, and contagious disease, with a characteristic localization in the parotid, less frequently in the submaxillary and sublingual glands. Metastatic complications may occur in the organs of the genito-urinary, nervous, digestive, circulatory, or endocrine systems. Mumps occur most often in children between the ages of five and fifteen, but young adults under thirty are still susceptible. The disease is uncommon after the age of forty, and is very rare in infancy.

The parotid swelling has an elastic feeling to the touch and varies in size and in extent. The parotid gland lies in front of the auricle below the zygoma and extends backward under the lobe of the ear, sometimes as far as the mastoid process. If the submaxillary gland is involved as well, the edema of the surrounding tissues may be so great as to obliterate the normal curve of the neck. The pulse rate is slowed throughout an attack, 50 to 60 beats per minute being



the average. Prostration may be marked from the onset, and is always increased when complications arise. The spleen is often enlarged at the height of the attack. Abdominal pain and diarrhea occasionally occur.

The use of serum from convalescent mumps patients has been found effective when administered before the seventh day after exposure in doses of two to eight c. c. During the acute stage, rest in bed is essential. The patient should be strictly isolated until all glandular swellings have disappeared. Exposed persons should be watched throughout the incubation period. In schools and other institutions exposed and unexposed units should be kept apart.

9. Pneumonia. This is an acute infectious disease, caused by the pneumococcus, and characterized by a massive inflammatory exudate in one or more lobes of the lungs. The source of infection is discharges from the mouth and nose of healthy carriers, as well as of infected individuals, and sometimes articles freshly soiled with such discharge. It is transmitted by contact with an infected person, or with articles freshly soiled with the discharges from the nose and throat, and possibly dust of rooms occupied by infected persons. The period of communicability is not known. The period of incubation is usually from two to three

days. There is no quarantine period.

The disease is usually ushered in by a chill. A fever occurs very soon and it "may run very high." A cough and pains in the chest are very characteristic signs of the disease. Breathing becomes difficult and the sputum is bloody.

Pneumonia is an acute infectious disease which begins suddenly, usually with sharp pain in the chest and chill and high fever. It proceeds with extensive consolidation of the lung, evidences of intoxication, and various metabolic disturbances, to the death of the patient or to sudden disappearance of the symptoms, and rapid passing away of the consolidation, or to a slower and more gradual defervescence and relief from the symptoms of the disease. Occasionally, while the symptoms of the acute illness disappear completely, and convalescence seems complete, a form of consolidation of the lungs persists, and is found to be due to a replacement of the exudate by fibrous tissue. Since most persons harbor pneumococci in their mouths, and since pneumonia seems not to be a particularly contagious disease, although rarely occurring in small epidemics, the question arises as to the mode of entry of the organisms into the lungs and the conditions under which they produce pneumonia. It is shown that many persons who do not contract diphtheria are carriers of virulent bacilli,

and the same is true, in a modified way, of other organisms. It has long been known that crushing or contusion of the thorax is frequently followed by pneumonia, and there is also the general impression that alcoholism predisposes it, and that some sudden exposure to cold is likely to precipitate invasion of the infection. Pneumonia arises as an acute inflammatory reaction of the trachea, bronchi, alveolar ducts, atria, and alveoli, the severity of the reaction being greatest in the terminal bronchioles and alveoli, but acute interstitial pneumonia does not develop early in the course of this as an acute lymphangitis, arising in the peripheral lymphatics and extending to the subpleural network and the hilum. This augments the primary bronchogenic inflammatory process and tends to hasten the complete involvement of the affected lobe. The inflammatory reaction is commonly divided into several stages. Of these, the first, the so-called stage of engorgement, is rarely seen at autopsy, except perhaps at the edges of an advancing consolidation, and it must be conceded that its characters are to some extent constructed from the known source of the inflammation elsewhere. The capillaries of the alveolar walls are dilated with blood, and there exudes into the air-cells fluid from the blood, together with leucocytes and red corpuscles. The second stage, which is the earliest

one commonly seen, is called the stage of red hepatization. At this stage, an abundant inflammatory exudate is found to have filled the alveoli and to have clotted. The third stage is the stage of gray hepatization, although it is usual to find the consolidated lung in an intermediate condition, and of a color half-way between red and gray. The last stage is the stage of healing and is easily recognized. It consists in the relining of the alveoli with alveolar epithelium after the complete removal of the exudate. Complications of pneumonia, which are perhaps commoner in the case of various types of lobar pneumonia, are abscess formation, organization of exudate, and gangrene.

10. Tonsillitis. The cause of the disease is definitely known as streptococcal. The source of infection is from the mouth and nasal secretions of an infected individual. It is transmitted by contact with a person who has the disease. The period of communicability is the duration of the disease. The period of incubation is from one to three days. There is no quarantine period. The onset of the disease is usually marked by sensations of chilliness or a definite chill, aching pains in the back and limbs, and a rapid rise of the temperature to 103 or 104 degrees. The throat is sore and swallowing becomes difficult. The tongue is coated, the entire pharynx dusky red, the tonsils are swollen to perhaps

double their normal size, and the yellow-white exudate may fill the crypts. Prostration is marked and the usual symptoms of fever are present. In children the pulse is increased and respiration is rapid.

At times it is difficult to distinguish tonsillitis from diphtheria. Typical acute tonsillitis is readily recognized by swelling of the tonsil, the yellowish-white patches in the follicles, and the redness and congestion of the pharyngeal mucous membrane. The exudate in tonsillitis does not spread to the pharynx, and is easily wiped away from the congested tonsillar surface.

There is no specific treatment for acute tonsillitis. It is, therefore, desirable that the patient stay in bed until the temperature is normal, be restricted to a fluid diet, and take large amounts of water to which sodium carbonate may be added. The mouth should be kept clean with an antiseptic gargle. After every attack the heart should be carefully watched. Tonsillectomy is necessary if the attacks recur frequently.

11. Tuberculosis, (Consumption.) The disease is caused by the bacillus tuberculosis. The source of infection is by discharges from open tubercular lesions, or by articles freshly soiled with the discharges, the most important discharge being the

sputum. Of less importance are the discharges from the intestinal and genito-urinary tracts, or from lesions of the lymphatic nodes, bone, and skin. It is transmitted usually through the respiratory, occasionally through the digestive tracts by direct or indirect contact with infected person through coughing, sneezing, or other droplet infection, kissing, or using contaminated eating or drinking utensils. The period of communicability is as long as the specific organism is being eliminated by the infected person. Tuberculosis is not as highly communicable as small-pox or measles. The degree of communicability varies with the virulence and number of bacilli, with the degree of immunity, and the intensity and frequency of exposure. The period of incubation is variable depending on the type of the disease. There is no quarantine. The symptoms of the disease are a cough that persists, unexplainable pains in the chest, unexplainable fever, loss of weight, night sweats, bloody sputum, and unexplainable fatigue. Chronic fibroid cases (not ill with the disease) are the greatest spreaders of tubercle bacilli. Such cases should be hospitalized or otherwise isolated. There is no practical vaccination against the disease.

In the lung the first lesion is commonly,

though by no means always, in the wall of a bronchus, an inch or so below the apex. While the establishment of a lesion with subsequent cavity formation near the apex is extremely common, it is not the only way in which the disease can begin in the lung. The same process may take place in one of the lower lobes, or simultaneously in several places. In the opposite lung, by infection from that-involved, hundreds of lesions may be simultaneously produced. Or in the entire absence of any primary lesion there, miliary tubercles may be showered over both lungs, from a focus somewhere else in the body. The rate of progression, while perhaps about the same in the majority of cases, is capable of great variation, so that on the one hand, we find a man dying a few weeks after the first symptoms appear, on the other, a man who has had pumonary tuberculosis for many years and finally dies from some concurrent disease, revealing extensive scarred and almost healed lesions in the lungs.

It is important to indicate the functional disturbances produced by the disease. Disturbances of temperature regulation (fever in the afternoon, etc.) are common, but it seems that the most intense symptoms of this kind are due to secondary invaders of all sorts, which may get into the cavities and grow

there. Changes in the general metabolism are of regular occurrence--the consumptive wastes away and becomes anemic; the metabolism of fat is disturbed, so that it accumulates especially in the liver, and there are general, though somewhat intangible, evidences of poisoning, doubtless from the absorption of toxic substances which the bacilli produce. Up to the present it does not seem that any degree of immunity is produced in those persons who have withstood one infection although there is an allergic condition produced by the initial infection. Persons with pulmonary tuberculosis almost invariably infect themselves further. The lymph-glands at the hilum of the lung inevitably contain tubercles, and other more distant nodes may also be infected. The outpouring of tuberculous sputum very often sets up ulcer formation in the trachea and larynx, while, especially in children who do not expectorate and in adults who swallow their sputum, the intestines and sometimes even the stomach develop ulcers.

The cure for tuberculosis lies not in patent medicines, preparations, or appliances, but only in hygienic living. Plenty of rest, nutritious food, and fresh air will prevent the disease, and if started early enough, will cure it. For years everyone thought that the disease could be cured only in certain dry climates having high altitudes. This has been disproved, for cure does not depend on any special climate. Outdoor air and sunshine,



nourishing food, and rest comprise the treatment. Given these factors, the body will complete the cure. Treatment is best carried on in a sanatorium or hospital, because there the patient can have continuous expert attention and care. Hospitals also insure the protection of family and friends who might be in danger of infection if the patient were cared for at home.

12. Typhoid Fever. The disease is caused by the bacillus typhosus. The source of infection is from the discharges of the bowels and urine of infected persons and carriers, infrequently by sputum. Healthy and chronic carriers are a common cause of outbreaks. It is transmitted by direct or indirect contact with a source of infection. Among indirect means are contaminated milk, water, and shellfish. Contaminated flies may be a means of transmitting the disease. The period of communicability is from the time of the first appearance of the symptoms, and occasionally before, through the illness and relapses during convalescence, and until repeated bacteriological examinations of the discharges show persistent absence of the infecting organism. The period of incubation is from seven to twenty-three days, averaging fourteen days. There is no period of quarantine. The onset of the

disease is gradual, with general malaise, headache, occasional nose-bleed, weakness, and a fever. The fever usually runs its course in four weeks and an eruption usually runs its course in four weeks and an eruption usually appears on the abdomen during the second week of the disease.

Typhoid fever is essentially a disease of unsanitary conditions of life, and disappears in proportion as the food and water supplies are kept clean. Infection with the bacillus typhosus produces in man a protracted febrile disease, which begins usually one to two weeks after infection and lasts for five or six weeks or more. There are localized changes in the intestines, on the abdominal lymph glands, the spleen, and the bone-marrow. There is cloudy swelling of the organs, with wide-spread focal necroses, and other less constant lesions. In the first week of the disease, the lymphoid nodules of the intestines, including, of course, Peyer's patches, become swollen and stand up above the surrounding mucosa. This may be partly caused by hyperaemia, but is chiefly due to an increase in the numbers of lymphoid and other cells. The change is most evident in those Peyer's patches, and solitary nodules in the lower part of the ileum, becoming less marked, and finally fading away toward the upper part of the intestine. In the colon the degree of swelling varies greatly--sometimes

it is imperceptible; in other cases it is extreme and overshadows the slighter changes of the ileum. Later, in the second week in most cases, superficial parts of the swollen patches of Peyer and nodules lose their reddish-gray color and the velvety smoothness of their surface, and in smaller or larger areas become opaque and dry looking, and the areas become stained a brownish-green from the intestinal contents. This formation of the slough is an expression of the partial necrosis of the swollen patch. Sometimes the change progresses rapidly and goes deep, involving all but the margin of the patch. In the nodules the necrotic slough appears as a little, rough, greenish plug embedded in the top, and surrounded by the hyperaemic margin. Not all the Peyer's patches or solitary nodules advance to this stage. It is quite common to find the advanced stage only in those situated rather low in the intestine, near the ileocaecal valve, although it is quite true that there are other cases in which all the lymphoid areas throughout the greater part of the ileum have run the gamut of changes. Still later other changes occur in the patches of Peyer which present necrotic areas. The greenish mass retracts a little from the edge and loosens all its margin. The ulceration goes deeper toward the middle, and soon the whole slough is dislodged and falls into the lumen of the intestines, leaving an excavation or ulcer of

corresponding depth. In many cases there is bleeding from the ulcerated intestinal wall, and the blood escaping with the stool sometimes in such quantities that the patient dies from the loss of blood. After the ulcer is cleaned of its slough, healing begins by the formation of a layer of granulation tissue in the base, soon followed by the growth of a single smooth layer of epithelium across its surface.

The mesenteric lymph glands become swollen, soft, and often hemorrhagic. The retroperitoneal glands take some slight part in this, but the glands most affected are those which drain the most involved part of the intestine. Bacilli are scattered in their sinuses and tissues. The lymph-cords show exactly the same changes as are seen in Peyer's patches. The lymph sinuses are enormously widened and packed with cells, which are mostly macrophages, although there are many lymphocytes. Probably most of the cells are swept into this situation from the intestinal lesions, but some may appear in the gland itself. Necroses quite like those described are found beginning in the mass of cells which fills the sinus, and extending thence to the lymph-cords. Sometimes nearly the whole gland becomes necrotic. From the glands great quantities of the large cells and others can be swept on into the thoracic duct, and thus into the subclavian vein. The acute splenic tumor, which is very constant in typhoid fever, differs

from that found in other infections in the extreme abundance of red corpuscles, both loose in the splenic pulp, and engulfed in numbers by large phagocytic cells. Necrosis occur in the splenic pulp, exactly as they do in the lymph glands and Peyer's patches. The result of the changes is the great enlargement of the spleen. The organ becomes soft, and may rupture during life, with alarming or fatal hemorrhage. The blood contains bacilli through most of the course of the disease. The number of leucocytes is low, with usually a relative increase of the mononuclear cells. Platelets are decreased in number. In the course of the disease, especially in its later stages, there may arise a severe anemia. The bone-marrow responds to the infection by the production of abundant lymphoid cells and others resembling plasma cells, but the formation of granular myelocytes, the forerunners of the neutrophile leucocytes, appears to be in abeyance. Everywhere through the marrow there are found the macrophages, which show here, as in the Peyer's patches a great avidity for the injured bodies of other cells. Necroses occur, just as they do in the spleen and the lymphoid apparatus. The liver is always swollen, and on section appears dull, opaque, and inelastic. Rarely large necroses or abscess-like foci occur in the liver. The gall-bladder may become infected with the bacilli, probably by way of the bile-ducts, either from the

intestines or from the liver, although it is perfectly possible that they might arrive there by the bloodstream. They may cause no trouble, but may remain and multiply there for years. Such persons are among the typhoid carriers mentioned above. The kidneys show a cloudy swelling of the cortex comparable to that of the liver. Oedema with great pallor is sometimes observed. Actual acute nephritis with the exudate changes is rare. The bacilli pass through the kidney evidently through lesions of some sort, and appear in the urine. The urine continues to show the presence of bacilli for a long time in most cases. Lobar and lobular pneumonia may accompany typhoid fever, the former rarely, the latter as a common terminal affection. In the pharynx and larynx there is sometimes an extensive diphtheritic and haemorrhagic inflammation in the late stage of the disease. The heart muscle is soft and flabby and opaque, and may contain a little fat. There are instances in which the peripheral arteries, especially of the brain, have been occluded by thrombi. In other cases thrombosis of the brachial or femoral arteries has led to gangrene. Thrombosis of the veins is far more prevalent than that of the arteries. It usually occurs in the left femoral and saphenous veins, and causes an extremely painful swelling of the leg which has long been known as "milk leg." With the organization of the clot and its recanalization, together with the development of

collateral channels, the oedma disappears and the leg can be used. Other veins may also be affected. A wide-spread hyaline degeneration of the substance of the muscles-fibres lose their striations, and are divided into irregular, formless clumps within the sarcolemma. Rupture of such injured muscles gives rise to gross hemorrhages, and if one observes a great hemorrhage within the sheath of the rectus abdominis, suspicion is at once directed to a typhoid infection, although the condition is not peculiar to typhoid. After convalescence, or even many years later, there sometimes arise painful, abscess-like swellings over the ribs or the tibiae, or over any bone. Prominent among the changes in the skin is the roseola or typhoid rash. Slightly raised, flat, rose-colored spots appear early in the disease, and are an evidence of the diffuse septicaemic character of the disease. Purpuric spots, diffuse erythema, etc., may also occur. Furnunculosis, so common in the later stages, is due to a secondary staphylococcus infection. Actual cerebral changes are rare. Owing to the prolonged illness and the stuporous condition, the mouths of these patients become foul unless continually cleansed. Parotitis may arise by extension of infection along the duct of Stensen, or by lodgment of bacilli carried there by the blood. Suppuration may destroy much of

the gland and extend into the adjacent tissue or into the neck. In these cases there is generally a mixed infection.

13. Whooping Cough. The cause of the disease is the bacillus pertussis. The source of infection is from discharges of the laryngeal and bronchial mucous membranes of infected persons. It is transmitted by contact with an infected person or by articles freshly soiled with the discharges of such a person. The communicable stage extends from seven days after exposure to three weeks after the development of the characteristic whoop. The period of incubation is usually seven days, although uniformly within ten days, and not exceeding a sixteen-day maximum. There is no period of quarantine. The early symptoms resemble those of a cold in the head; later there is a persistent cough. The characteristic "whoop" does not develop until about a week or more after the onset of the disease. An early symptom is spasms of coughing ending in vomiting.

A child may succumb to one of the complications of pertussis and yet show no lesions which may with certainty be attributed to the primary disease. Catarrhal inflammation of the respiratory mucosa, especially of the larynx and trachea, and to a less extent of the nose and pharynx, is probably the lesion most



common in pertussis. If the disease persists for any length of time before death, there is some degree of pulmonary emphysema. Enlargement of the bronchial and trachial glands, acute bronchiectasis, congestion of the brain and other organs are less commonly seen at autopsy. Pertussis is generally divided into three stages--the catarrhal, the paroxysmal, or spasmodic, and the stage of decline. The symptoms of the first stage differ in no way from those of a mild attack of subacute trachio-bronchitis, and usually excite no suspicion of pertussis unless there is an epidemic or a definite history of exposure. After about a week the cough, instead of showing a tendency to subside, increases in both intensity and frequency, until within a day or two the characteristic paroxysms occur. In the second stage coughing is more frequent than at first, and each paroxysm is terminated by inspiratory whoop, which gives the name to the disease. The onset of a typical paroxysm can often be foretold. Explosive coughs recur in such rapid succession that there is no interval for the child to breathe; the face becomes congested and of a deep red or sometimes black color, the tongue protrudes, the eyes and the mouth discharge, and perspiration appears in the face; finally, the cough ceases and a long-drawn-out inspiration through the narrow glottis produces the curious

sound called the whoop. A second paroxysm usually follows the first and sometimes a third and fourth occur in rapid succession. After the paroxysm, a small amount of tenacious mucous is coughed up. This gives instant relief. Vomiting often occurs when paroxysms follow indigestion of food. Exhaustion of brief duration is produced by the more severe paroxysms. Paroxysms are less frequent if the patient stays out doors, and more frequent and more severe at night. All patients do not exhibit such typical symptoms as those described; many, indeed, cough for a number of weeks with only an occasional paroxysm, and vomit rarely or not at all. Such cases may escape recognition altogether and thus disseminate the infection. The duration of the second stage is variable. Although it averages between three and six weeks, it may continue for a long time, or in very mild cases, may stop after a single week. During the third stage the frequency and intensity of the paroxysms gradually abate until the character of the disease differs in no way from ordinary bronchitis. The cough generally persists for two or three weeks, but during the winter and in feeble patients or at any season it may be prolonged. Throughout the stage of decline the paroxysms may recur with the onset of any fresh respiratory infection, and for weeks or months after all symptoms of pertussis have vanished any respiratory infection may be a signal

for the recurrence of the whoop. Bronchopneumonia is the complication above all others to be dreaded, and it is so closely related to the high mortality in pertussis. It is particularly fatal in infants in the first few months of life, especially when it occurs in cold weather.

All patients are to be excluded from school until one week after the whoop has ceased. Exposed individuals need not be excluded from school.

### C. MESODERMAL DISEASES AND DEFECTS

The third group, the mesodermal, is as follows:

1. Adenoids. Adenoids are hyperplasia of the normal lymphatic tissue in the nasopharynx, which usually occurs in childhood, but may persist in adult life.

The symptoms of nasal obstruction and mouth breathing in children are characteristic. The dull facial expression with the open mouth, thick lips, pinched nose, and dead toneless voice all point in children to adenoids. These children are restless, their memories are bad which interferes with school progress. The slightest mental effort produces a headache which incapacitates them for mental work. These obstructive symptoms, of course, vary with the size of the growth. When there is a marked nasal obstruction for a long time, children often develop a deformity of the chest known as "pigeon breast." Children

with adencias often have peculiar facial movements or twitchings.

All cases of adencias should be taken care of by a physician.

3. Anemia. Two classes of secondary anemia will be explained so that the teacher will recognize them more clearly. In anemia there is a loss of red blood cells due to many recognized causes such as hemorrhage, destruction of blood cells caused by bacterial toxins, other parasites, poisonous drugs, and malignant tumors of various kinds.

a. Secondary Anemia. One group is known as post hemorrhagic anemia. This depends on the severity and frequency of the hemorrhages. The destruction of large blood vessels is followed by incomplete filling of the vessels resulting in fainting, nausea, etc., but the concentration of red cells is not changed; however, the volume of blood remaining is. Soon the volume is complemented by body fluids until the original volume of blood is restored. The bone marrow becomes active until the fat of the long bones become red, and upon microscopic examination many nucleated red cells and myelocytes are seen. Strange to say the leucocytes do not increase appreciably. This condition is the result of severing of large blood vessels, erosion of large vessels in pulmonary tuberculosis, rupturing of large veins, recurring nose bleed, hemorrhoids, and even the

continual biting of intestinal parasites cause greater anemia.

b. Secondary Anemia. This group is due to the destruction of red cells. This destruction is caused by various chemical substances, bacterial toxins, etc. Immunology has been able to produce many haemolytic substances that destroy the red corpuscles with rapidity. No doubt these substances react the same in the body as in the test tube. They help the student understand better what occurs in the body. Acute infections always are accompanied by rapid destruction of red cells. The haemolytic streptococci produce potent hemolysins, while the haemolytic "green" streptococci do not produce such vigorous acting haemolysins. Typhoid fever, tuberculosis, and syphilis produce various degrees of anemia. The various kinds of tapeworms, the fish tapeworm especially, cause anemia. Because the cause of these anemias are known they are classed as secondary. When the cause is once known, this group responds to treatment readily. Primary or pernicious anemia does not occur in childhood.

3. Boils. The staphylococcus is the cause of the disease. It is found in the pus, the most common forms being the staphylococcus albus and aureus. The source of infection is from the infected parts, or by articles freshly soiled with discharges from the infection of another infected person. The period of communicability

is the duration of the disease. The incubation period is not known. There is no quarantine period.

A boil starts as a painful, red, indurated spot, slightly raised above the level of the surrounding skin. At first the color is purplish red, with a halo of brighter redness, and the boil feels hard. Later, the center softens and becomes a yellow color, the epidermis gives way, and by a single irregular opening pus is discharged. On the rupture of the boil and the removal of the core the inflammation at once begins to subside and the swelling and redness gradually disappear, though some induration may persist. The sloughed-out cavity and a scar remain.

The local treatment of boils is important. Poultices should never be used, as they tend to produce fresh lesions around the original infected part. A piece of gauze placed over the infection to prevent further spread of the infection is the only advisable local treatment.

There is a vaccine for the disease. In severe or persistent cases see a physician.

#### 4. Curvatures of Spine

a. Kyphosis, (Round Shoulders.) This condition presents a round back, and involves part or all of the vertebral column. The region most affected is the dorso-lumbar. The spinal curvatures usually begin early in childhood, but sometimes start between the

school entrance and puberty. The predominating cause is rickets, a disease in which the onset may be traced, in more than ninety percent of the cases. Muscular inactivity is an important factor in the cause.

The chief aim in treatment should be to strengthen the muscles of the back, shoulders, and pelvis by appropriate gymnastic exercise. Bending exercises of the trunk forward and backward, breathing exercises, and walking may be used to remedy the defect. These should be taken with special attention to the proper posture, the hips retracted, the shoulders back, and the chin elevated. Massage is excellent, and vigorous outdoor exercise is indispensable. The use of braces should be avoided if possible. In severe cases have the pupil see a physician.

b. Lordosis. The spinal column in lordosis curves inward. It is usually caused by some form of hip disease or by dislocation. The correction consists in the discovery and removal of the cause, and for this purpose the advice of a skilled physician or surgeon is always needed.

c. Scoliosis. Lateral curvatures may be single or there may be two or possibly three such curvatures. These curvatures usually appear at the upper or lower end of the primary curves of the spine. They not only affect the spine, but also the trunk, and sometimes

the shoulders, which are either high or low. Some of the causes are, besides incorrect posture, disease or abnormal conditions of the bone, such as rickets or the lack of vitamins, and eye and ear defects.

Spinal curvatures can nearly always be improved by proper treatment and postural cases, where the bone is not diseased, can be cured altogether. All work in the correction of spinal curvatures should be done by a specialist in physical education or a physician.

#### 5. Diseases Due to Lack of Vitamins.

a. Rickets, (Rachitis.) Rickets is a disease of infants or it may set in from the tenth to the fourteenth year. It is characterized by impaired nutrition of the entire body and alterations in the growing bones. It is due to the lack of vitamin D in the diet. The onset of the disease is insidiously about the period of dentition or late in childhood. There is usually slight fever, the child is irritable and restless, and sleeps badly. If he has already walked, he shows a marked disinclination to do so, and seems feeble and unsteady in his gait. The tissues become soft and flabby; the skin is pale, and from a healthy, plump condition the child becomes puny and feeble. The muscular weakness may be marked, particularly in the legs, and paralysis may be suspected. This so-called pseudoparesis of rickets results in part from the flabby, weak condition of the legs, and in part from the pain associated with



the movements.

Coincident with, or following closely upon, the general symptoms, the characteristic skeletal lesions are observed. Among the first of these are the changes in the ribs, at the junction of the bone with the cartilage, forming the so-called rosary. The sternum may project, particularly in its lower half, forming the so-called pigeon or chicken breast. The spine is often curved posteriorly, the processes are prominent; lateral curvature is not so common. The head of a rickety child usually looks large in proportion to the body and face. The bones of the face are reduced in size. The normal process of dentition is much disturbed and late teething is a marked feature. The teeth may be badly formed and small. The abdomen is large, "pot-bellied," due partly to flatulent distention, partly to enlargement of the liver, and in some cases to diminution of the volume of the thorax. The spleen is often enlarged and readily palpable. The urine is stated to contain an excess of lime salts. Many rickety children show marked nervous symptoms; irritability, peevishness, and sleeplessness are constantly present. Rickety children are very susceptible to infections of the respiratory tract.

The child should be warmly clad and in the open air and sunshine as much as possible. There are specifics for rickets--cod-liver oil, sun and ultra-violet light rays, and irradiated ergosterol. The use of cod-

liver oil along with a diet consisting of fresh fruits and vegetables is advised. All cases of rickets should be treated by a physician.

b. Scurvy. A disorder of the metabolism due to the deficiency of antiscorbutic vitamin, vitamin "C" characterized by great debility, with anemia, spongy condition of the gums, and a tendency to hemorrhage. The disease is insidious at the start. Early symptoms are loss in weight, progressive weakness, and pallor. Swelling of the ear, which may extend to the scalp, has been noted early. Very soon the gums become swollen and spongy, bleed easily, and in extreme cases present a fungous appearance. The teeth may become loose and fall out. The breath is excessively foul. The tongue is swollen, and may be red and much furred. The salivary glands are occasionally enlarged. There are mental depressions, indifference, in some cases headache, and in the later stages delirium. Cases of convulsions, and of meningeal hemorrhage have been noted. Fever is not present, except in the later stages, or when secondary inflammation in the internal organs appear. The temperature may be far below normal.

The juice of two oranges or lemons daily and a full diet of meat and fresh vegetables suffice to cure all cases of scurvy, unless far advanced.

6. Flat Feet. In the normal foot, only the ball, heel, and the outer side touch the ground in walking and

standing. Poorly fitting shoes, improper use of the feet in walking, disease, muscular weakness, or other strains weaken the tendons, ligaments, and muscles that support the arches. This causes the arch of the foot to be flattened out, and the entire sole of the foot touches the ground. A test for flat feet is to step barefooted from a wet floor to a dry one. If the foot is normal, the print will show the foot touching the floor only at the heel, ball, and the outer side of the foot. If the foot is flat, the print will show every part of the foot touching the floor.

Because the main cause of flat feet is muscular weakness of the foot, the cure of the defect lies in the use of proper exercises to strengthen these muscles. Some corrective exercises are the following:

a. Stand before a mirror with the feet parallel and about four inches apart. Hold the ball of the foot and the heel firmly on the floor, gripping the floor with the toes. Without raising the ball or heel off the floor, raise the inner border of the foot as far from it as possible. While doing this one should have in mind that the weight is to be thrown over toward the outer side of the foot, and the ankle held upright.

b. Sit with the legs stretched out and try to make the soles of the feet face each other.

c. Try to make the soles of the feet face each other while about on the heels, with the balls of the

feet off the floor and the toes curled under. Practise gripping with toes, as though trying to pick up something from the floor with them.

d. Practise moving the large toe away from the other toes, so that it is at least in a straight line with the inner border of the foot.

e. Practise walking about, rising on the ball of the one foot as high as possible at each step, and lifting the other foot entirely off the floor. The whole body is to be raised up, first by one foot and then by the other, as each ankle alternately straightens as far as it will. This exercise should be done slowly at first, and then at one's usual walking speed.

The value of all these exercises is in doing them regularly and often, and in learning to apply the strength gained through them in all one's daily use of the foot.

7. Measles. The cause of the disease is not known, however, it is believed to be a filterable virus. The source of infection is from the mouth and nasal secretions of an infected person. The mode of transmission is usually the direct contact with the sick individual. The period of communicability is from two days before to five days after the appearance of the rash. The period of quarantine is during the period of communicability, usually about two weeks. The first real

signs of the disease is a breaking out in the roof of the mouth. There will be two or three distinct little inflamed popules in the mouth. Some hours later the breaking out will spread to the neck, face, forehead, and body. The child may at first appear to have a cold with a slight fever, a croupy cough, sore throat, and swollen tonsils.

Measles is a communicable disease which prevails, most frequently, in epidemic form during the winter and spring. It prevails in all climates and affects all races and nationalities. The disease is regarded as one of childhood, as 97 percent of the cases occur before the fifteenth year, and over one-half of the cases are reported during the first five years of life. It is a disease of the child because of the extremely high susceptibility of these individuals to it, its wide prevalence and ease of communicability, the lack of a recognized means of prevention, and the immunity that one attack confers. The disease is conveyed from one person to another by the infectious material. It may be spread indirectly by droplet infection during coughing, sneezing, and the like, or by direct contact with the secretions. The disease, while not readily transmitted by a third person, as the contagion is short-lived outside the body, may be carried to another person, unless strict precautions are observed. The rapid spread of the disease is due to not alone its high infectivity, but also to the fact that the patient is

most infectious for several days preceding the appearance of the eruption.

The infectivity rapidly subsides after the disappearance of the catarrhal symptoms, and probably ceases after the height of the eruptive stage is reached. The disease is characterized by its peribronchial and intestinal distribution, forming nodules of dense tissue and exudate about the terminal bronchioles with spread of the bacteria by way of the lymphatics through the interlobular septa to the pleura. The lymphatics are thrombosed and all the skeletal structures of the lung become thickened by new formation of tissue. The pleural cavity is quickly filled with a thin fluid full of bacteria, and organization of the exudate on the surface is rapid. While this is the usual condition, there are other cases in which low resistance allows the streptococci to produce extensive necrosis through the lung with hemorrhage and little response of a protective character. The other organs besides the lungs and skin, are not characteristically affected in measles. There is usually a moderate acute splenic tumor and general enlargement of the lymphoid apparatus. The conjunctivitis, rhinitis, etc., are probably caused by the specific agent, but bacteria are so regularly associated that the affection is not peculiar.

Prompt and strict isolation of the first case at the onset of the catarrhal symptoms will aid in limiting

the extension of the disease. The inoculation of children who have been exposed to measles with convalescent serum has proved a most effective means of protection. It has been found that when three to six ml. of blood serum from convalescent patients, taken one week after the eruptive stage, is injected into the exposed patient, not later than the fourth day of the incubation period and immunity develops in about ninety-five percent of the cases.

8. Scarlet Fever. The cause of the disease is a haemolytic streptococcus. The source of infection is from the discharge of the nose and throat. The disease is transmitted by contact with a person who has it, through the use of articles soiled by the discharges from the infected individual, or by food, such as milk or milk products. The period of incubation is from two to seven days. The quarantine period is usually four weeks. The disease comes suddenly and without warning. Vomiting and convulsions may be the earliest symptoms. Almost immediately the fever begins and attains a height of 104 and 105 degrees, on the first day. The face is flushed and the skin is dry and sore. The most characteristic sign of the disease is the rash that appears on the chest and neck. At the first sign, the pupil should be sent home to be under a physician's care.

	Cause or Causative Agent	Source of Infection	Mode of Trans- Mission	Period of In- cubation	Period of Communica- bility	Period of Quar- antine	Symptoms
1. Adenoids	Overgrowth of lymphath- ic tissue in the na- sal cavity						Mouth breathing. Dull facial ex- pression. Bad mem- ory. Frequent head- aches.
2. Anemia	Loss of red blood cells						Pallor. List- less. Showing a very weakened condition.
Athletes Foot 3.	Ringworm fungus	Secretion from the infected parts.	Direct contact Articles, soiled by secretions.	Not Known.	Duration of Infection,	None	Scales between toes. Freely producing an order.
4. Boils	Staphylo- coccus Pyocenes	Infected Parts	Contact with part Articles, freshly soiled.	Not Known	Duration of Infection,	None	Raised red spot of the skin. Great- ly inflamed. Us- ually having a core.
Common 5. Cold	Not Known	Secretion of the nose and throat.	Sneezing, coughing, articles freshly soiled.	12-24 hours	Duration of Disease	None	Headache. Sore throat. Maybe a fever. Nose runs.
Cons- 6. tipation	Improper diet. Lack of exer- cise.						Coating of tongue. Headache. Usually indigestion. Fruct- ion of gas.
Deaf- 7. ness	Various diseases. Broken ear, drum. Jar on head.						Inability to hear.
Dental 8. Caries	Rickets. Improper care of teeth.						Decomposition of teeth. Bad breath. Toothache
Dipther- ia 9.	Bacillus Dipther- ia	Secretion of nose and throat	Direct contact Articles, freshly soiled	2-7 days	2-3 days	1-2 Weeks	Sore throat.  Fever.



	Cause or Causative Agent	Source of Infection	Mode of Trans- mission	Period of Commun- icability	Period of In- cubation	Period of Quar- antine	Symptoms
	Effects of disease. In- fections of						Maybe headache Ears swollen. Pain in ears.
10. Earache	ear.						
	Improper shoes.						Arch falls. Foot becomes flat.
Flat	Weak Muscles.						
11. Feet							
	Lack of iodine in the diet.						Enlarged thyroid gland.
12. Goitre							
	Hyperop- Short ia (Far- eye- sighted- ball ness)						Headaches, eyes easily tired, not able to see clearly close objects.
13. Influenza	Not Known	Secretions of nose and throat	Contact	Duration of Disease	Not Known	None	Fever Head- ache.
14. Indigestion							
	Improper diet, dis- charge, con- stipation, and worry.						Sour Stomach. Ache in the stomach.
15. Itch	Female Acarvs	Skin between finger, wrists axillae gen- itals in males	Contact with Infected parts.	Duration of Disease	Not Known	None	Intense itching. Small eruptions.
16. (Scabies)							
	Rickets Also mus- cular in- activity						Round shoulders.
17. Kyphosis							
	Hip dis- ease, or by dis- location						Spinal col- umn curves in.
18. Lordosis							

	Agent	Infection	mission	bility	cubation	antine	
19. Measles	Not Known	Secretions of nose and throat.	Contact, 2-5 days or articles after soiled by the secretions	11-14 days	2-3 Weeks	Cough, cold in head, temperature of 102-104. Rash appears on face and neck after four days.	
20. Mumps	Not Known	Secretions of nose and throat	Contact	Not Known	10-14 days	None	Swollen parotid gland. Maybe earache.
21. Myopia (Nearsightedness)	Elongation of eyeball						Inability to see distant objects.
22. Pneumonia	Pneumococcus	Lungs, mouth, and nose.	Secretions from nose, mouth, or articles soiled by these secretions of the mouth.	Duration of Disease	Not Known	None	Cough, high temperature, breathing rapid. Pulse rate increased. Maybe delirium.
23. Pyorrhea	Not Known	Gums of the mouth				None	Infection of gums. Teeth loosen.
24. Rickets	Lack of Vitamin "D" Diet						Slight fever, restless, pale, muscular weakness "Pigeon Chest."
25. Scarlet Fever	Not Known	Discharge of nose and throat	Contact, 2-4 weeks or by articles soiled	2-5 days	Usually 6 weeks	Sore throat, high temperature. A rash appears after 1st or 2nd day.	
26. Scoliosis	Rickets lack of vitamins. Poor posture.						Lateral curvature of spine.
27. Scurvy	Lack of Vitamin "C"						Loss of weight. Pallor, swelling of ear, swollen gum mental disturbance.

	Cause, or Causative Agent	Source of Infection	Mode of Trans- mission	Period of Commun- icability	Period of In- cubation	Period of Quarantine	Symptoms
St. Vitus 28. Dance	Heart dis- ease, Rheumatism	Impaired senses					Nervous movements
Tonsil- litis 29.	Not Known	Mouth and nose secre- tions	Direct contact	Duration of dis- ease	1-3 days	None	Sore throat fever, ton- sils swolle
Trach- 30. oma	Not Known	Mouth and nose se- cretions of eyes	Contact, or art- icles soil- ed by such	Duration of Disease	Not Known	None	Redness, discharge, swollen lids.
Tuber- 31. culosis	Bacillus Tuber- culosis	Discharge from open lesions, or by articles soiled by such.	By direct and in- direct contact	Duration of Disease	Variable	None	Cough, pains in chest, fever loss of weight, bloody sputum, inexplicable fatigue.
Typhoid 32. Fever	Bacillus Typhosus	Discharge of bowels and kidney spu- tum	Con- tact	Duration of Disease	7-23 days	None	Fever, weariness headache, fail- ing appetite, cough, nose bleed
Whooping Cough	Bacillus Pertussis	Discharge of nose and throat	Con- tact	7-21 days after whoop starts.	7 days	None	Resembles cold in head. Cough Vomiting.
33.							

## V. THE SIGNS OF MENTAL HEALTH

One of the newer subjects known to teachers is mental health, altho we find from study of the peoples of early times that we must have had some experience with it. Psychologists of today make a special study of this subject, and many people are willing to leave the detection of symptoms of mental health to this specialized group. This, in a certain sense, is right since every teacher is somewhat of a psychologist in her knowledge and application of laws of learning, and the development of mind and body, principles of testing and remedial teaching, the psychology of discipline, and other similar subjects. Every teacher should know the signs of the mentally healthy child and how to detect them. Strecker<sup>1</sup> gives ten signs of mental health, and Wood<sup>2</sup> gives a list of fifteen characteristics that indicate mental and emotional health of the well-adjusted child. These two lists formed a basis for the more condensed one which is presented in this study. This list was compiled for use by the teacher, and is, with a short discussion of each point, as follows:

### A. Signs of Mental Health in Childhood

1. A Keen Active Interest in Friends, Games, Hobbies, or in All of Them. The infant is a living

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<sup>1</sup>  
E. A. Strecker, "What Constitutes Mental Health in Childhood," American Child Health Association, (1936), Vol. 2, Part 1, pp. 55-61.

<sup>2</sup>  
T. D. Wood, "Health Education," Report Joint Committee on Health Problems in Education, New York (1927)

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moving organism. The growth of the nervous system depends upon the opportunity to move freely and without restriction.

Physical motion brings a new and enormously rich group of sensory experiences to the mind of the child. Gradually these are sorted and classified, and the responses are improved and perfected. Thus the foundation of the very complex structure of mental life has been placed. Physical activity is therefore necessary in the development of the child. In some children, however, the desire for physical activity is somewhat less than in others, but in the mentally normal child it is never completely lacking.

The interest in friends and hobbies grows as the child develops. He no longer likes to play by himself, but seeks companions. Often it is not in humans that he is interested, but possibly in plants or animals. Dogs, cats, birds, or even trees may attract the child's attention. The hobby of knowing the names of all the common plants and animals or the collecting habit may be prevalent.

3. Repetition of the Happenings of the Immediate Environment. Child psychologists believe that one of the first things to do in studying the child is to make a detailed study of his environment. All the happenings

of the child's surroundings will, in some way, leave its mark on the actions of the individual. Bad habits and good ones are very often due entirely to imitation.

Imitation is one of the pet hobbies of childhood. Children will imitate, to a certain extent, everything with which they come in contact. It is very interesting to note the actions of a group of kindergarten children playing school during a vacation period, for they will imitate the school procedure closely enough to portray a good copy of kindergarten routine.

3. Suggestibility. Suggestibility is a refined and subtle variety of imitation. All normal children are suggestible, and therefore there is an extremely valuable avenue of approach to the mental life of the child. Unwise suggestion frequently does much harm in fixing unhealthy mental reactions in the child. The ability to take suggestions and to assimilate them is very important as a factor in the education of the child, for it is a sign of normal mental action.

4. Curiosity. Probably the most frequently used word in a child's vocabulary is the word "what", for he has learned that this word produces desired information. Curiosity also manifests itself in the desire to learn a new game, explore new territory, or determine the cause of a certain action in nature. Children who take their toys apart want to find out "what makes the wheels go 'round.'" Quite often the classroom will

exhibit a pupil whose curiosity leads him to test the teacher in respect to discipline. Children who are truly inquisitive are perfectly normal, and show a trait of superiority rather than one of inferiority.

5. Love of Power. Children love the power of control, and, by various devices, will attempt to retain it. This is a normal condition and not a sign of inferiority unless the desire is so strong that it interferes with the welfare of the individual. This love of power is often very noticeable with children at play, for many games have been terminated because too many wanted to be "it." This characteristic can also be detected in the classroom. Isn't the student who has made a remarkable recitation proud and happy? He loves to demonstrate his mental powers and to show superiority.

6. Evidence of "Animal Spirits." The term "little animals" when applied to children may be suitable at times because of the animal spirits that youngsters display. Boys, particularly, show these in their play in such games as "Horse", "Run Sheep Run", and "Fox and Goose", or any other that repeats the activities of the particular animal for which they are named. These same spirits creep out in the child's everyday activities, such as, in a child who imagines himself an Indian and the one who tries to imitate a deer. These signs are simply indications of normalcy and are nature's way of furnishing an opportunity to build health, strength, and

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courage. Do not stop the child from such play, but help him and encourage fairness in games and other forms of competition. Boy scouting, outdoor life, competitive school athletics, or summer camps are available for every child. He should be encouraged to participate in some such enterprise.

7. Powers of Imagination. What a dull and drab world this would be if children had no imaginative powers! This trait has various ramifications, for it shows in the games they play and stories they tell. The child who starts to tell a particular incident, and polishes it with the unreal, is often using his power of imagination. The young child who tells lies is not, in most cases, a premeditated liar, for usually his imagination is playing a trick on him. He does not intend to tell an untruth since the incident becomes so real to him through imagination that he actually considers it so. These fantastic stories show the development of the powers of imagination and are a sign of a healthy mind in a small child.

8. Appreciation of Moral Values. Any intelligent child, no matter what his environment, has some sense of moral standards. In judging these the environment of the child must be taken into account. In this connection it is well to remember that action and example are more powerful than words, and that the major portion of moral sense must be acquired through



imitation and suggestibility. Many mistakes of childhood are due to the lack of knowing right from wrong. Group games aid in helping the child to discriminate between right and wrong, for in this competition a child must conform to rules and regulations. A child that is mentally normal has some sense of moral values.

9. Some Intellectual Capacity. A mentally healthy individual must have a rating of near normal intelligence. The degree of intelligence is determined as exactly as possible by an intelligence test or a battery of tests. An individual who is decidedly below normal on these tests has a low intelligence, and therefore does not have a healthy mind.

10. Emotional Stability. A person who is stable emotionally is one who does not let the emotions conquer him. Many people, the "touchy ones," who are often emotionally disturbed, are carried from a state of happiness to one of despair very easily.

It is unwise to try to teach the child to suppress emotions, but it is worth while to try to prevent harmful emotions from being continued on a basis of misconception and misunderstanding. Helpful emotional reactions should be stimulated and utilized to weaken, or even displace, sinister ones.

11. Ability to Pass Through Critical Experiences and to Make Necessary Adjustments. An individual who cannot pass through a critical experience and adjust

himself to existing conditions is not mentally healthy. A child often has to pass through some trying situations of his own, but he should be able to adapt himself and "carry on." The statement "he who hesitates is lost" is very true in respect to the individual who cannot fit in with existing circumstances. Many who are in a state of indecision cannot survive a critical experience. Such people usually lacking the power to decide on a course and lacking in the ability "to stick to it" are mentally unhealthy.

## VI. SIGNS OF MENTAL ILL HEALTH

This subject, as treated here, does not deal with the great diseases of the brain, but with only those characteristics of mental ill health which the average teacher should be expected to detect and understand. The diseases, such as insanity, dementia praecox, and general paresis, are left entirely to the specialist. The teacher, conscious of many cases of mental ill health, is naturally expected to suggest the proper treatment. As this is so, references should be at her command.

<sup>1</sup>  
Averill gives a very good discussion of mental ills. He has grouped these into eight groups, giving the causes and treatments. Bagley <sup>2</sup> discusses mental ills in terms of discipline. Ferry <sup>3</sup> also treats these ills of the child under the problems of discipline.

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<sup>1</sup>  
L. A. Averill, The Hygiene of Instruction (Chicago: Houghton Mifflin Company, 1928) p. 166.

<sup>2</sup>  
W. C. Bagley, School Discipline (New York: The Macmillan Company, 1915).

<sup>3</sup>  
A. C. Perry, Discipline As a School Problem (Chicago: Houghton Mifflin Company, 1915).

Using these mainly as a source of material, a list of mental ills and treatment has been compiled. The list, brief and concise, is as follows:

A. Signs and Treatment of Mental Ill Health

1. The Deceitful Child. Deceitfulness is shown by unfairness in play, copying lessons, telling lies, and the like. It is caused by an over imagination, or the desire to raise the estimations of himself through manufactured stories, social imitation, wrong training in and out of the home, pure selfishness to escape punishment, and to get praise.

Except in extreme cases where a specialist should be called treatment may be given by the teacher who should investigate and enlist the home and associates. The child's responsibilities should be simple enough for him to master. A sympathetic and straightforward manner must be used in giving directions for the desired outcomes. The value of truthfulness must be stressed

and pleasure and approval shown at manifestations of it.

2. The Disobedient Child. Such a child is defiant of most, or all, rules and regulations. This disobedience is sometimes due to a lack of proper home training, too many petty rules made by the teacher, and often the imitation of associates.

The treatment of disobedience consists in getting the cooperation of the parents and of the child and in making as few rules as possible.

### 3. The Emotionally Abnormal Child.

a. The Temperamental Child. This type of child is one whose emotions are easily kindled. Exercise incites him too much, small matters worry him, and he is discouraged by the slightest rebuff. Hence, he suffers often from a sense of inadequacy and inferiority. The temperamental child works in fits and starts, is generally highly imaginative and impractical, craves freedom, resents routine and discipline, and is also hungry for a sympathy and an understanding which is rarely found. This child has an enthusiasm which outruns his capacity for steady and concentrated work and lacks common sense. His judgment is apt to be perverted.

Heredity is frequently the cause of such a child-type. He is often afflicted with unstable environment from unstable parents.

The teacher can try by gentle suggestion to help

regulate the home environment, but she can do more by cultivating within herself a sympathetic understanding of this maladjusted type. She can win the child's confidence and affection, and eliminate worry and discouragement from the classroom activities by not emphasizing his temperamental shortcomings and peculiarities.

b. The Negative Child. This child is solitary, secretive, and retiring, neither seeking companionship nor enjoying it when it is thrust upon him. He shuns responsibility, dreads "the limelight," rarely asserts himself, and is weak and devoid of driving power.

A negative child is the result of home environment as a rule. He has had little or no opportunity for self expression and development of initiative.

The teacher should attempt to obtain self expression and action at home, to promote social intercourse with other children, to find some legitimate activity in which he can "shine," and to praise good work freely.

4. The Indifferent Child. The marks of this child-type are carelessness, negligence, unresponsiveness to school tasks, inattention, lack of interest in work, a bored and depressed attitude, evasion of responsibility, and a characteristic coldness.

An indifferent attitude suggests something wrong with the teacher or with the child. While poor teaching may be a cause, other things are greater contri-

buting factors. There may be too much outside work, irregular or insufficient sleep, poor food, bad home environment, or poor school room conditions.

If the cause is poor health, see a physician, but if it is in the home, try to explain the situation to the parents.

5. The Irresponsible Child. This child disregards the ordinary responsibilities of membership in a school and ignores assignments, references, individual or group tasks, and does not carry out directions.

Environment, lack of responsibility, or indefinite directions given by the teacher may result in the irresponsible child.

With the cooperation of the parents the teacher should place group and individual responsibilities on the child and insist that they are properly executed. Minor tasks are of utmost importance, so the teacher should give the child a quantity of these.

6. The Lazy Child. The lazy child does not care to exert himself to talk, play, or work.

There are two chief physico-biological causes of laziness, physical irregularity and influence exerted by the growth impulse.

The non-biological causes are lack of interest, often called laziness, a too difficult task, the mental reaction of the pupil, or the lack of home interest.

To remedy this condition the teacher should diag-

nose the physical fitness of the child and then get the cooperation of the home. She should appeal to the pupil through interests that he has by causing him to master the assigned task.

7. The Child Lacking in Self-Control. There are three types of children lacking in self-control:

a. Talking Out. This is a symptom only in small children and is evident by the constant talking when not called upon.

The cause is usually due to the instinctive urge to talk or attract attention.

As a remedy first try to show the child the disturbance caused by this habit, but if this is not effective, show disapproval.

b. Tattling. This also is a symptom in small children only, and of course, is known by the child telling on other children.

The usual cause is the desire to win approval.

To cure this, one may explain that obedient thoughtful, polite children do not tattle, prohibit some of his privileges, or if the case persists, segregate him.

c. Rudeness. The symptoms of rudeness are impoliteness, roughness at play, vulgar language, and thoughtless remarks.

There are three causes for this: one is the lack of a standard of politeness and thoughtfulness in the



home, another is the desire to "show off," and the third is the failure to understand the teacher's viewpoints and a common lack of respect for them.

After determining the cause of the rudeness, treat the child accordingly. If the cause is either in eliteness or unthoughtfulness, the teacher can only show and explain the proper conduct, giving examples to illustrate; for it is too unsafe to try to create a standard in the home in such cases. But if the cause is due to a failure to understand the teacher's viewpoint, the work may be organized so ideas may be understood and respected.

C. The Selfish Child. There are three types of the selfish child. They are as follows:

a. The Self-Centered Child. This type displays a tendency to be a "lone sheep," to have the idea that the school is entirely for him, or is inconsiderate of others, being engrossed with his own ideas.

This child may be either a product of natural egotism, or of a highly developed opinion of himself through wrong parental or home training, or both.

If, in the home training, little effort is put forth toward uprooting this inner urge of the selfhood, and where parents are prone to "spoil" their child, nothing can be done in the way of corrective education. But the teacher should endeavor to teach altruism and stress the works of the great men of science, literature, etc., and the sacrifices they made for humanity.

b. The Jealous Child. The symptom for this type is the dislike for other pupils to gain honors or attention.

The cause, in most cases, is found in the home.

To aid in overcoming this the teacher should be strictly impartial and show no favoritism. Quiet talks with the children, telling them stories of the work of famous self-sacrificing people will help.

c. The Obstinate or Stubborn Child. It is easy to recognize this child, for he opposes directions, sulks when things don't go to suit him, and positively does not conform to the rules and regulations of the school.

The obvious reason for such action is that the home has taught the child that sulking and petulance will bring the desired result.

A regimen of careful and intelligent discipline and control should be undertaken, and so far as possible the mind of the obstinate child should be directed into new channels. In chronic and persistent cases deprivation of privileges, such as keeping the offender after school to do that which he failed to do in the right spirit or did not do at all, might help. As a last resort conferences and straightforward reproofs may be used.

## VII. CONCLUSIONS

1. It is surprising what little knowledge teachers possess that helps them to understand both positive and negative phases of health of school children. It must be remembered that no such requirement for teachers has been made and no opportunity for them to sufficiently prepare themselves in this field of education.

2. The indications of healthiness in childhood are: (a.) clear eyes and good skin color, (b.) expression of the face, happiness and well-being, (c.) hair smooth and lustrous, (d.) breathes through the nose, (e.) good teeth, (f.) muscles good tone and flesh firm, (g.) good posture, (h.) gait alert and full of pep, (i.) optimum weight for height, (j.) good mental and physical reactions, (k.) enjoys life and is very fond of play.

3. The teacher should be familiar with the common diseases and deformities of childhood and be able to aid in their treatment. These facts she does not seem to know.

4. The signs of mental health are: (a.) a keen active interest in friends, games, hobbies, or in all of them, (b.) imitation of happenings of the immediate environment, (c.) possesses the power of suggestibility, (d.) has curiosity, (e.) loves power, (f.) shows evidence

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of "animal spirits," (g.) has power of imagination, (h.) has sense of moral values, (h.) possesses some intellectual capacity, (i.) is emotionally stable, (j.) has ability to pass through critical experiences and to make necessary adjustments.

5. The signs of mental ill health are: (a.) the deceitful child, (b.) disobedient child, (c.) emotionally abnormal child (d.) the indifferent child, (e.) the irresponsible child, (f.) the lazy child, (g.) the child lacking in self-control, and (h.) the selfish child.

6. There is a very close relationship between physical unfitness and mental retardation. A child is often considered dull when the basic cause is physical ill health. A healthy mind and a healthy body are generally found together and it is just as usual to find an unhealthy mind with an unhealthy body since the mind controls the body and the body controls the mind.

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## AND DEFECTS OF CHILDHOOD

The purpose of this questionnaire is to gain sufficient data to provide an important part of the basis for my thesis which includes the common diseases and defects of childhood. Please answer this to the best of your ability as directed below. I assure you that all the information which I receive will be regarded as strictly private.

The common diseases of childhood are listed below, and I have outlined the information regarding each disease into seven parts. If you know the required information to complete the outline, write it in the space allotted to the point. And if you cannot complete the outline, mark an "x" in the blank, or if there is no answer, put an "o".

Please fill every blank.

## 1. Adenoids

- A) Causative Agent, or Cause \_\_\_\_\_
- B) Source of Infection \_\_\_\_\_
- C) Mode of Transmission \_\_\_\_\_
- D) Period of Communicability \_\_\_\_\_
- E) Period of Incubation \_\_\_\_\_
- F) Period of Quarantine \_\_\_\_\_
- G) Symptoms \_\_\_\_\_

## 2. Anemia

- A) Causative Agent, or Cause \_\_\_\_\_
- B) Source of Infection \_\_\_\_\_

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- C) Mode of Transmission\_\_\_\_\_
  - D) Period of Communicability\_\_\_\_\_
  - E) Period of Incubation\_\_\_\_\_
  - F) Period of Quarantine\_\_\_\_\_
  - G) Symptoms\_\_\_\_\_

3. Athletes Foot

- A) Causative Agent, or Cause\_\_\_\_\_
- B) Source of Infection\_\_\_\_\_
- C) Mode of Transmission\_\_\_\_\_
- D) Period of Communicability\_\_\_\_\_
- E) Period of Incubation\_\_\_\_\_
- F) Period of Quarantine\_\_\_\_\_
- G) Symptoms\_\_\_\_\_

4. Boils

- A) Causative Agent, or Cause\_\_\_\_\_
- B) Source of Infection\_\_\_\_\_
- C) Mode of Transmission\_\_\_\_\_
- D) Period of Communicability\_\_\_\_\_
- E) Period of Incubation\_\_\_\_\_
- F) Period of Quarantine\_\_\_\_\_
- G) Symptoms\_\_\_\_\_

5. Cold, Common

- A) Causative Agent, or Cause\_\_\_\_\_
- B) Source of Infection\_\_\_\_\_
- C) Mode of Transmission\_\_\_\_\_
- D) Period of Communicability\_\_\_\_\_
- E) Period of Incubation\_\_\_\_\_
- F) Period of Quarantine\_\_\_\_\_
- G) Symptoms\_\_\_\_\_

6. Constipation

- A) Causative Agent, or Cause\_\_\_\_\_
- B) Source of Infection\_\_\_\_\_
- C) Mode of Transmission\_\_\_\_\_
- D) Period of Communicability\_\_\_\_\_
- E) Period of Incubation\_\_\_\_\_
- F) Period of Quarantine\_\_\_\_\_
- G) Symptoms\_\_\_\_\_

7. Deafness

- A) Causative Agent, or Cause\_\_\_\_\_
- B) Source of Infection\_\_\_\_\_
- C) Mode of Transmission\_\_\_\_\_
- D) Period of Communicability\_\_\_\_\_
- E) Period of Incubation\_\_\_\_\_
- F) Period of Quarantine\_\_\_\_\_
- G) Symptoms\_\_\_\_\_

8. Dental Caries

- A) Causative Agent, or Cause\_\_\_\_\_
- B) Source of Infection\_\_\_\_\_
- C) Mode of Transmission\_\_\_\_\_
- D) Period of Communicability\_\_\_\_\_
- E) Period of Incubation\_\_\_\_\_
- F) Period of Quarantine\_\_\_\_\_
- G) Symptoms\_\_\_\_\_

9. Diphtheria

- A) Causative Agent, or Cause\_\_\_\_\_
- B) Source of Infection\_\_\_\_\_
- C) Mode of Transmission\_\_\_\_\_
- D) Period of Communicability\_\_\_\_\_
- E) Period of Incubation\_\_\_\_\_

F) Period of Quarantine\_\_\_\_\_

G) Symptoms\_\_\_\_\_

10. Earache

A) Causative Agent, or Cause\_\_\_\_\_

B) Source of Infection\_\_\_\_\_

C) Mode of Transmission\_\_\_\_\_

D) Period of Communicability\_\_\_\_\_

E) Period of Incubation\_\_\_\_\_

F) Period of Quarantine\_\_\_\_\_

G) Symptoms\_\_\_\_\_

11. Flat Feet

A) Causative Agent, or Cause\_\_\_\_\_

B) Source of Infection\_\_\_\_\_

C) Mode of Transmission\_\_\_\_\_

D) Period of Communicability\_\_\_\_\_

E) Period of Incubation\_\_\_\_\_

F) Period of Quarantine\_\_\_\_\_

G) Symptoms\_\_\_\_\_

12. Goiter

A) Causative Agent, or Cause\_\_\_\_\_

B) Source of Infection\_\_\_\_\_

C) Mode of Transmission\_\_\_\_\_

D) Period of Communicability\_\_\_\_\_

E) Period of Incubation\_\_\_\_\_

F) Period of Quarantine\_\_\_\_\_

G) Symptoms\_\_\_\_\_

13. Hyperopia (Farsightedness)

A) Causative Agent, or Cause\_\_\_\_\_

B) Source of Infection\_\_\_\_\_

C) Mode of Transmission\_\_\_\_\_

D) Period of Communicability\_\_\_\_\_

E) Period of Incubation\_\_\_\_\_

F) Period of Quarantine\_\_\_\_\_

G) Symptoms\_\_\_\_\_

14. Influenza

A) Causative Agent, or Cause\_\_\_\_\_

B) Source of Infection\_\_\_\_\_

C) Mode of Transmission\_\_\_\_\_

D) Period of Communicability\_\_\_\_\_

E) Period of Incubation\_\_\_\_\_

F) Period of Quarantine\_\_\_\_\_

G) Symptoms\_\_\_\_\_

15. Indigestion

A) Causative Agent, or Cause\_\_\_\_\_

B) Source of Infection\_\_\_\_\_

C) Mode of Transmission\_\_\_\_\_

D) Period of Communicability\_\_\_\_\_

E) Period of Incubation\_\_\_\_\_

F) Period of Quarantine\_\_\_\_\_

G) Symptoms\_\_\_\_\_

16. Itch (Scabies)

A) Causative Agent, or Cause\_\_\_\_\_

B) Source of Infection\_\_\_\_\_

C) Mode of Transmission\_\_\_\_\_

D) Period of Communicability\_\_\_\_\_

E) Period of Incubation\_\_\_\_\_

F) Period of Quarantine\_\_\_\_\_

G) Symptoms\_\_\_\_\_

17. Kyphosis

A) Causative Agent, or Cause\_\_\_\_\_

- B) Source of Infection \_\_\_\_\_  
C) Mode of Transmission \_\_\_\_\_  
D) Period of Communicability \_\_\_\_\_  
E) Period of Incubation \_\_\_\_\_  
F) Period of Quarantine \_\_\_\_\_  
G) Symptoms \_\_\_\_\_

18. Lodoses

- A) Causative Agent, or Cause \_\_\_\_\_  
B) Source of Infection \_\_\_\_\_  
C) Mode of Transmission \_\_\_\_\_  
D) Period of Communicability \_\_\_\_\_  
E) Period of Incubation \_\_\_\_\_  
F) Period of Quarantine \_\_\_\_\_  
G) Symptoms \_\_\_\_\_

19. Measles

- A) Causative Agent, or Cause \_\_\_\_\_  
B) Source of Infection \_\_\_\_\_  
C) Mode of Transmission \_\_\_\_\_  
D) Period of Communicability \_\_\_\_\_  
E) Period of Incubation \_\_\_\_\_  
F) Period of Quarantine \_\_\_\_\_  
G) Symptoms \_\_\_\_\_

20. Mumps

- A) Causative Agent, or Cause \_\_\_\_\_  
B) Source of Infection \_\_\_\_\_  
C) Mode of Transmission \_\_\_\_\_  
D) Period of Communicability \_\_\_\_\_  
E) Period of Incubation \_\_\_\_\_  
F) Period of Quarantine \_\_\_\_\_  
G) Symptoms \_\_\_\_\_

21. Myopia (Nearsightedness)

- A) Causative Agent, or Cause \_\_\_\_\_
- B) Source of Infection \_\_\_\_\_
- C) Mode of Transmission \_\_\_\_\_
- D) Period of Communicability \_\_\_\_\_
- E) Period of Incubation \_\_\_\_\_
- F) Period of Quarantine \_\_\_\_\_
- G) Symptoms \_\_\_\_\_

22. Pneumonia

- A) Causative Agent, or Cause \_\_\_\_\_
- B) Source of Infection \_\_\_\_\_
- C) Mode of Transmission \_\_\_\_\_
- D) Period of Communicability \_\_\_\_\_
- E) Period of Incubation \_\_\_\_\_
- F) Period of Quarantine \_\_\_\_\_
- G) Symptoms \_\_\_\_\_

23. Pyorrhea

- A) Causative Agent, or Cause \_\_\_\_\_
- B) Source of Infection \_\_\_\_\_
- C) Mode of Transmission \_\_\_\_\_
- D) Period of Communicability \_\_\_\_\_
- E) Period of Incubation \_\_\_\_\_
- F) Period of Quarantine \_\_\_\_\_
- G) Symptoms \_\_\_\_\_

24. Rickets

- A) Causative Agent, or Cause \_\_\_\_\_
- B) Source of Infection \_\_\_\_\_
- C) Mode of Transmission \_\_\_\_\_
- D) Period of Communicability \_\_\_\_\_
- E) Period of Incubation \_\_\_\_\_
- F) Period of Quarantine \_\_\_\_\_
- G) Symptoms \_\_\_\_\_

## 25. Scarlet Fever

- A) Causative Agent, or Cause \_\_\_\_\_
- B) Source of Infection \_\_\_\_\_
- C) Mode of Transmission \_\_\_\_\_
- D) Period of Communicability \_\_\_\_\_
- E) Period of Incubation \_\_\_\_\_
- F) Period of Quarantine \_\_\_\_\_
- G) Symptoms \_\_\_\_\_

## 26. Scoliosis

- A) Causative Agent, or Cause \_\_\_\_\_
- B) Source of Infection \_\_\_\_\_
- C) Mode of Transmission \_\_\_\_\_
- D) Period of Communicability \_\_\_\_\_
- E) Period of Incubation \_\_\_\_\_
- F) Period of Quarantine \_\_\_\_\_
- G) Symptoms \_\_\_\_\_

## 27. Scurvy

- A) Causative Agent, or Cause \_\_\_\_\_
- B) Source of Infection \_\_\_\_\_
- C) Mode of Transmission \_\_\_\_\_
- D) Period of Communicability \_\_\_\_\_
- E) Period of Incubation \_\_\_\_\_
- F) Period of Quarantine \_\_\_\_\_
- G) Symptoms \_\_\_\_\_

## 28. St. Vitus Dance

- A) Causative Agent, or Cause \_\_\_\_\_
- B) Source of Infection \_\_\_\_\_
- C) Mode of Transmission \_\_\_\_\_
- D) Period of Communicability \_\_\_\_\_
- E) Period of Incubation \_\_\_\_\_
- F) Period of Quarantine \_\_\_\_\_



G) Symptoms \_\_\_\_\_

29. Tonsillitis

A) Causative Agent, or Cause \_\_\_\_\_

B) Source of Infection \_\_\_\_\_

C) Mode of Transmission \_\_\_\_\_

D) Period of Communicability \_\_\_\_\_

E) Period of Incubation \_\_\_\_\_

F) Period of Quarantine \_\_\_\_\_

G) Symptoms \_\_\_\_\_

30. Trachoma

A) Causative Agent, or Cause \_\_\_\_\_

B) Source of Infection \_\_\_\_\_

C) Mode of Transmission \_\_\_\_\_

D) Period of Communicability \_\_\_\_\_

E) Period of Incubation \_\_\_\_\_

F) Period of Quarantine \_\_\_\_\_

G) Symptoms \_\_\_\_\_

31. Tuberculosis (Consumption)

A) Causative Agent, or Cause \_\_\_\_\_

B) Source of Infection \_\_\_\_\_

C) Mode of Transmission \_\_\_\_\_

D) Period of Communicability \_\_\_\_\_

E) Period of Incubation \_\_\_\_\_

F) Period of Quarantine \_\_\_\_\_

G) Symptoms \_\_\_\_\_

32. Typhoid Fever

A) Causative Agent, or Cause \_\_\_\_\_

B) Source of Infection \_\_\_\_\_

C) Mode of Transmission \_\_\_\_\_

D) Period of Communicability \_\_\_\_\_

E) Period of Incubation \_\_\_\_\_

F) Period of Quarantine\_\_\_\_\_

G) Symptoms\_\_\_\_\_

33. Whooping Cough

A) Causative Agent, or Cause\_\_\_\_\_

B) Source of Infection\_\_\_\_\_

C) Mode of Transmission\_\_\_\_\_

D) Period of Communicability\_\_\_\_\_

E) Period of Incubation\_\_\_\_\_

F) Period of Quarantine\_\_\_\_\_

G) Symptoms\_\_\_\_\_

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