Aids to the diagnosis and treatment of diseases of children (medical) / by John McCaw.

AIDS
TO THE TREATMENT
OF
DISEASES OF CHILDREN

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AIDS

TO

THE DIAGNOSIS AND TREATMENT

OF

DISEASES OF CHILDREN

(MEDICAL).

BY

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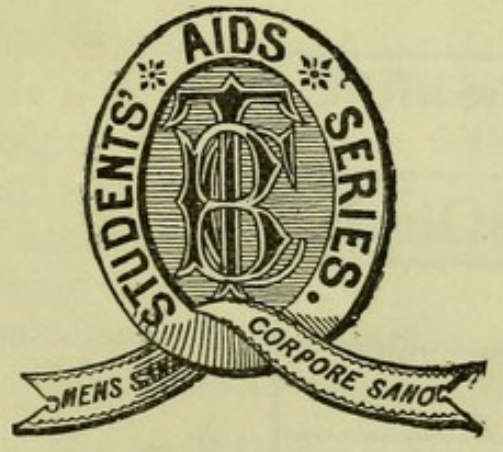

LONDON: BAILLIÈRE, TINDALL & COX,
KING WILLIAM STREET, STRAND.
EDINBURGH: LIVINGSTONE. DUBLIN: FANNIN & CO.
GLASGOW: STENHOUSE.

PREFACE.

In writing the following pages it has been my aim to place before the student and busy general practitioner an account of the Diseases of Children in a concise and clear way. It will be well, I think, at once to state that the little work claims to be nothing more than a compilation; and here it is my wish to acknowledge, in the fullest manner possible, my great indebtedness to the following works, viz.: Ashby and Wright, 'Diseases of Children,' 2nd edit.; Eustace Smith, 'On Disease in Children,' 2nd edit.; Keating's 'Cyclopædia of the Diseases of Children;' Goodhart, Henoch, Carmichael, and Donkin.

It will, no doubt, be noticed that I have left out all reference to diseases of the skin. I thought this course preferable to writing in a meagre way on a subject that has lately grown very much in extent and importance; moreover, there are already several manuals on Diseases of Children that deal fully with diseases of the skin.

I desire to thank many friends for their aid in writing this book, as well as the Publishers for their unvarying courtesy.

21, Shaftesbury Square, Belfast,
September, 1893.

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THE DIAGNOSIS AND TREATMENT

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DISEASES OF CHILDREN

(MEDICAL).

CHAPTER I.

INFANT FEEDING—WET-NURSES—ARTIFICIAL FEEDING—WEANING.

THIS most important subject very fittingly occupies the first chapter in the 'Aids to the Diseases of Children;' and in assigning to it this prominent place, my reason must be that 'improper feeding' of infants is the cause, directly or indirectly, of the very high death-rate amongst children in our large cities and towns. There is a general consensus of opinion in favour of the superiority of breast-feeding over artificial feeding; so that, as Dr. Rotch says, 'It has become a scientific truth;' or again, as Dr. Ashby has it, that 'the natural food of the infant is the milk from the breast of its mother;' therefore this point may be insisted on—*that the baby should be breast-fed in every possible instance.* No doubt there are many cases where this is not possible; for instance, the mother may be weakly and unable to bear the strain which suckling puts upon her; she may be consumptive; the secretion of milk may be almost *nil* or entirely absent; malformation of the nipples or extensive fissures of them may prevent the baby from obtaining the milk; or the child itself may be unable to suckle. These are all good reasons why suckling cannot be accomplished; but I may take this opportunity of protesting against such excuses

as the bother and trouble it involves, and the curtailment of social enjoyments it is sure to entail.

The first rule, therefore, in infant feeding will be that the infant is to be 'nursed' or 'suckled at the mother's breasts' for the first eight or nine months, and no other food of any kind whatever is to be thought of. It should be applied to the breast a few hours after birth, and from this time forward regularity in the time of feeding is of paramount importance. Every hour and a half will be often enough during the day, a longer interval being allowed at night. A strong infant will empty the breast in about ten minutes, and during this time will extract about 1½ to 2 ozs. of milk. As the infant's stomach enlarges, so the secretion of the breasts increases, and after the first few weeks the intervals of nursing may be extended to every two hours; after the third month every three hours or so will be often enough, or six or seven nursings in the twenty-four hours, during which time it gets from 20 to 40 ozs. of milk. The common practice of giving the baby the breast whenever it cries cannot be too strongly condemned; such practice is not good for the child, and has a bad effect on the secretion of the breast. So also the mother's health should be carefully looked after, as it is impossible for one in ill health to give good milk. Certain drugs, such as morphia and Epsom salts, affect the milk, and so probably the baby; they should, therefore, be avoided. The mother's diet should consist of milk, porridge, soups, vegetables, fish, and light puddings; butcher's meat and stewed fruit may be allowed in moderate quantity; but pastry, raw fruit, and all highly spiced or seasoned food and alcoholic liquors had better be avoided. Plenty of exercise in the open air is very important. After the eighth or ninth month, if the child has thriven well and has cut a few teeth, it may have, in addition to the breast, a meal or two a day of milk thickened with white bread or well-boiled oatmeal porridge. At ten months it may have a little light meat broth made with barley or rice once a day, and at twelve months it ought to be taken off the breast. From twelve

to eighteen months of age the diet should be arranged somewhat after the following table, taken from Ashby and Wright:*—

First meal, 7.30 *a.m.*—Fine bread sops with milk, or oatmeal, or hominy porridge made with milk.

Second meal, 11 *a.m.*—A drink of milk.

Third meal, 1.30 *p.m.*—Bread-crumbs and gravy, or a lightly boiled egg and bread and butter. Sago or rice pudding.

Fourth meal, 5.30 *p.m.*—Bread and milk.

Fifth meal.—Milk to drink, or thin oatmeal porridge.

After eighteen months, small quantities of fish, fowl, or meat may be allowed. Underdone mutton chop, very finely minced and mixed with bread-crumbs or well-mashed potatoes, forms a good combination at this time. All pastries are to be avoided.

Wet-Nurses.—If the mother is unable to suckle her baby, a 'wet-nurse' is to be procured, if possible. In choosing one, the following points should be remembered: Her own child should be a little older than the infant to be nursed,—a month or six weeks. The child will nurse more easily and have better care from a multipara than from a primipara. She should not be under twenty-one years of age or over thirty-five years. A chemical analysis of her milk should be made, to ensure its quality. A medical examination of both the nurse and her infant is imperative. Her breasts should be of moderate size, and give evidence to the touch of a good quantity of glandular and not too much adipose tissue; the nipples should be well-formed and free from cracks or abrasions of any kind whatever; on gentle pressure the milk should come freely from the nipple. Her throat, legs, the glands of the neck, and, if necessary, her genital organs should be examined, that any evidence of strumous or syphilitic disease may be excluded. Her own infant should then be seen, for its appearance gives one of the best tests of her capacity to nurse. It should be plump, have well-rounded limbs, and healthy skin and mucous membranes. The symptoms of early congenital syphilis should be looked for.

* 'Diseases of Children,' 2nd edit. p. 48.

Artificial Feeding.—If the child *must be* brought up by hand, the most convenient substitute for human milk is the milk of the cow. Goat's milk has some advantages. It is said the goat never suffers from tuberculosis, and we know the cow is very liable to suffer from this disease: this is an important consideration. Again, a goat can be kept with but little trouble or expense compared with a cow; and the difference in the composition of the two milks is not great. In the vast majority of cases, however, it is cow's milk we shall have to resort to in practice, and in a short work like the present I must confine my attention to it alone; but I would gladly refer any one to Dr. Cheadle's admirable handbook on 'Infant Feeding,' in which he will find the subject treated in a very masterly and practical way.

In giving cow's milk to an infant, it is fortunate we have the standard set by Nature in the composition of human milk to go by. Here is the composition of the two milks side by side—

	Human (directly from the breast).	Cows (as received in towns).
Proteid, or albumen	1·8	4·0
Hydrocarbons, or fats	3·5	4·0 to 5·0
Carbohydrates, or sugar	7·0	4·0 to 5·0
Ash	0·2	0·7
Solids	12·0 to 13·0	13·0 to 14·0
Water	87·0 to 88·0	86 0 to 87·0
Reaction	Alkaline	Acid
Bacteria	Absent	Abundant

The first point of importance in these two analyses is that human milk, as the child gets it from the breast, is absolutely sterile, or free from all noxious germs: this is a point of enormous importance. The next point is that the albumen in cow's milk is fully twice as great in quantity. Again, the sugar is deficient by about one-half, while the fat is about the same in both. It will be clear now that we must dilute cow's milk—*one-half at least*, so that the albumen will be reduced in quantity, else we shall have that very common trouble set

up of vomiting and the passage by the bowels of hard masses of undigested curd. It will be no less clear that, if we do this, we shall get a mixture very deficient in fat; but this difficulty can readily be got over by the addition of cream, and the proper amount of sugar can be obtained by the addition of sugar of milk. The cream to be had for sale is not constant in strength, and is liable to be stale and slightly acid. The best cream for the mixture is obtained by the following method, suggested by Dr. A. V. Meigs: Take a pint of good cow's milk, and place it in a tall cylinder in a cool place for three hours; draw off the upper half of this with a pipette inserted half-way down the cylinder. If three parts of this weak cream be now diluted with five parts of water, the amount of fat and curd in the mixture will be about equal to that in human milk. Thus—

Weak cream (as above) . .	3 ozs.
Lime-water	1 „
Pure water	4 „
Milk-sugar	2 teaspoonfuls

This is Meigs's mixture, and cannot be surpassed.

Poor people cannot afford cream, and for their infants the best mixture to adopt at first is cow's milk one part, water two parts, with sugar and a twelfth part of lime-water added. There is great difference in the capacity of children for digesting cow's milk, and many of them will pass curd in their motions daily without apparently being the worse for it. If curd is vomited in a sour condition, the milk in the mixture should be still further diluted, and the amount of lime-water increased. After the first month, half milk and water, and after the third month and until the sixth two parts of milk and one of water, should be the proportions. The addition of barley or oatmeal water to the milk is good practice; for, besides forming a much finer curd, the mixture is more nourishing.

Whey is a useful material, and may be given, with cream and sugar added, as a substitute for breast-milk. Thus—

Weak cream	½ oz.
Whey	1 „
Warm water	1 „
Sugar of milk . . .	1 teaspoonful

Feeding-bottles.—The simplest are the best, and those with long indiarubber tubes, corks, and a profusion of lettering and figuring on their surfaces, are to be condemned. The best bottle is the one supplied with Soxhlet's sterilizer, which is perfectly plain and fitted with a large teat. The bottle, after being used, should be thoroughly cleaned and then inverted, which prevents dust getting into it; or kept immersed in boracic acid water or a solution of corrosive sublimate (1 in 10,000); it should be rinsed with clean water before being used.

Sterilization.—All milk received in towns should be sterilized by boiling, or, better still, by using one of the milk-sterilizers —Soxhlet's or Escherich's. This is especially of importance during the summer months.

Peptonized Milk.—In times of sickness, or where the child is very delicate, it may be advisable to predigest the milk, and by this means a difficulty may be tided over. In the early months of life, add 2 ozs. of boiling water to 2 ozs. of cold milk; mix, and add 3 grs. of Benger's peptonizing powder, and let the mixture stand for ten minutes; add two or three teaspoonfuls of cream, sweeten with sugar of milk, and give at once to the infant without boiling. It is not desirable to use predigested milk for long at a time, as it may tend to weaken the functions of the stomach.

Before passing from the subject of artificial feeding, let me draw attention to the very common and highly pernicious practice of giving young children farinaceous substances, such as corn-flour, arrowroot, etc., before they are six months old, and often from birth onwards. The following table, taken from the 'Cyclopædia of Children's Diseases' (Keating), gives the general rules for infant feeding:—

GENERAL RULES FOR INFANT FEEDING.

Age.	Intervals of feeding.	Number of feedings in 24 hours.	Average amount at each feeding.	Average amount in 24 hours.
First week . .	2 hours	10	1 oz.	10 ozs.
One to six weeks.	2½ hours	8	1½ to 2 ozs.	12 to 16 ozs.
Six to twelve weeks, and possibly to fifth or sixth month .	3 hours	6	3 to 4 ozs.	18 to 24 ozs.
At six months .	3 hours	6	6 ozs.	36 ozs.
At ten months .	3 hours	5	8 ozs.	40 ozs.

Weaning.—As has been already advised, the child should get the breast for the first twelve months, at the end of which time it ought to be weaned, if it is healthy and well-nourished. If it is delicate, and the mother's supply of milk is still good, there is no objection to let it have the breast for a couple of months more. The weaning should be accomplished gradually, and it will be well to avoid the summer months, or a time when the infant is cutting a tooth, in which to make a beginning. The bottle should be substituted once a day at first, then twice a day, and so on, until the breast is given up altogether. It is well to weigh the infant every week, as a gain in weight is one of the surest indications that it is thriving.

CHAPTER II.

DISEASES OF THE DIGESTIVE ORGANS.

INFANTILE ATROPHY.—*Definition.*—By Infantile Atrophy is meant the slow wasting so commonly seen in improperly hand-fed babies. The terms Chronic Vomiting, Chronic

Diarrhœa, Simple Atrophy, Malnutrition, and Athrepsia are all used in a similar sense, according to the prominence of one or other symptom.

Causes.—Insufficient food, as where the breast-milk is poor and watery; improper feeding; premature birth; or congenital weakness.

Symptoms.—These may be divided into three stages, viz.—

1. There is diarrhœa with green, curdy, and sour-smelling stools, or there may be much mucus passed; flatulence and colic; restlessness, and often some stomatitis. Vomiting is rarely absent, and may be almost constant and severe; the vomit is sour-smelling and curdled, or it may be tinged with bile. Wasting is never long delayed.

2. All the symptoms persist and are intensified; wasting becomes well marked; the stools present various appearances, both as to colour and consistence, but are never natural-looking; the child is never satisfied with what it gets; it cries and kicks, for which it is given laudanum, etc., 'for the pains;' the skin is dry and hangs in folds; various skin-eruptions make matters worse; the temperature is sub-normal; the face wears a pallid, earthy tint, and the wasting advances rapidly.

3. The child's cry is now a mere whine; it becomes drowsy, and takes little notice of anything. Death may be preceded by muscular twitchings or general convulsions.

Complications.—Broncho-pneumonia; acute general tuberculosis; rickets.

Morbid Anatomy.—The stomach and intestines are atrophied; their mucous membrane is thin and pale; and the glands have almost disappeared. The microscope reveals extreme wasting of the mucous membrane with atrophy of the glands of the stomach and intestines; in some places the glands have entirely disappeared.

Treatment.—As a rule, an infant suffering from athrepsia or food atrophy will require to have its diet completely remodelled. If it is being breast-fed, the milk should be examined, to ascertain its composition, and the health and

mode of living of the mother inquired into. It is rarely necessary to take a child off the breast. In bottle-fed babies it is of the first importance that absolute cleanliness of all bottles, tubes, teats, and milk-pans should be insisted on, and, as the treatment resolves itself into one of feeding, the reader is referred to the article under 'Infant Feeding.'

Having regulated the diet, there are some medicines of use. In the first place, a small dose of castor oil or rhubarb and soda will be useful to clear away any offending masses of curd, and then half a drop of liquor arsenicalis, with two grains of bicarbonate of soda in a few drops of spirit of chloroform, and water to a teaspoonful should be given three or four times a day (see ℞ 1). This is a good mixture where the stomach is irritable and vomiting is troublesome. If diarrhœa is the trouble, and the stools are curdy and offensive, a grain each of grey powder and Dover's powder at bedtime, or a mixture of bismuth and opium, will be useful; if bloody mucus is passed, an enema of starch, with two or three drops of laudanum at bedtime, is good treatment.

SIMPLE CATARRHAL STOMATITIS.—*Synonyme.*—Stomatitis Erythematosa.

Definition.—An inflammation of the mucous membrane of the mouth, of varying intensity, but stopping short of ulceration.

Causes.—Dentition; irritation from prolonged sucking at an artificial teat; too hot food; an excess of sugar; exposure to cold and wet; digestive derangements; pneumonia.

Symptoms.—The child is feverish and irritable; it refuses the breast from the pain anything in the mouth produces; there is salivation, and the salivary glands are enlarged and tender. On the inside of the cheeks, gums, and hard palate, patches of inflamed mucous membrane are seen, or the whole inside of the mouth may be bright red, dry, and angry-looking. The tongue is often dry and red, or it may be furred down the middle and red at the tip and edges. Digestive troubles are common, such as diarrhœa, flatulence, and curdy stools.

Treatment.—Direct the mouth to be washed, after each time the child takes the breast or bottle, with a weak alkaline solution, or one just coloured with Condy's fluid. Be careful that no curd is allowed to remain between the cheeks and the gums, and see that the sucking-bottle, tube, and teat are perfectly aseptic. The mother, if the child is at the breast, should also wash her nipples in the alkaline solution after each nursing. After the mouth is cleansed, dust on the child's tongue a few grains of borax, and avoid using the common borax and honey, or borax and glycerine, as the sugar in these preparations is sure to defeat your object by becoming rancid. If the child is being bottle-fed, order all the milk to be boiled; and if curdy, sour-smelling motions are passed, add a tablespoonful of lime-water, or a larger quantity of barley-water, to each bottleful. Give a dose of castor oil, to be followed the next day with a mixture containing two grains of bicarbonate of soda or bismuth, with a few drops of tincture of rhubarb and aromatic spirit of ammonia in sweetened water (see ℞ 2).

APHTHOUS STOMATITIS.—*Synonymes.*—Follicular Stomatitis, Aphthæ.

Symptoms.—This condition is most common in children from two to six years of age, and it is often seen in an epidemic form attacking all the children in a house at the same time. There is an eruption of vesicles on the mucous membrane of the mouth, which are extremely sensitive and painful; they are circular or oval, and vary in size. After a few days the vesicles burst, and disclose small ulcers, which are surrounded by inflamed areolæ. They vary in number from two or three to twenty or thirty. There is often considerable constitutional disturbance, the temperature being 103° or 104° F., the tongue coated; the breath hot and offensive; with vomiting, thirst, and diarrhœa. Salivation is profuse, and in weakly children the ulcers may run together. The general symptoms may become aggravated, and the condition serious.

Bednar's *Aphthæ*, or the *Plaques pterygoidiennes* of Parrot,

are two aphthous patches, seen, one on each side of the median raphè near the junction of the hard and soft palates; they are round superficial ulcers one-quarter to one-third of an inch in diameter, and are produced by the pressure of the back of the tongue against the hard palate in sucking; they are not syphilitic.

Treatment.—Local.—Make the child wash out its mouth frequently (every hour) with a solution of common salt and water, made the strength of sea-water; and dust a little borax in powder on the tongue. If the little ulcers are sluggish, they may be touched with the Lapis divinus (equal parts of sulphate of copper, alum, and nitrate of potash fused together) or brushed with a solution of nitrate of silver 10 grs. to the ounce of water. The stomach and bowels should be regulated with a dose of castor oil or a grain of grey powder, with two each of rhubarb and soda (see ℞ 3). The diet should be light and easily digested, such as milk and light soups, and care taken that farinaceous articles and sweets are avoided. In ordinary cases, little medicine is required, but if the child is not improving, and the ulcers are angry-looking and show a disposition to run together, give chlorate of potash in 2 or 3 gr. doses. Stimulants are rarely called for.

ULCERATIVE STOMATITIS.—*Synonymes.*—Stomacace, Putrid Sore Mouth.

Definition.—Inflammation of the mucous membrane of the mouth, which speedily results in extensive ulceration, more especially of the gums, accompanied with much fœtor of the breath. It is frequently contagious, and is probably due to a specific germ.

Causes.—The period of second dentition, or between the ages of three and ten years; insanitary surroundings; destitution; the tubercular diathesis; the spring, summer, and autumn months; caries of the teeth; tartar round the teeth; neglect of cleanliness of the mouth; scurvy; rickets; and poisoning by mercury, lead, copper, and phosphorus.

Symptoms.—The first thing that is noticed is the increased

flow of saliva; the gums become red, swollen, and spongy-looking; mastication is painful; salivation is copious; and the breath is very offensive. Numerous irregular ulcers are seen on the gums, greyish in colour, and surrounded by a zone of redness; these usually spread to the tongue, cheeks, or lips, and the ulcerative process is generally confined to one side of the mouth. The teeth opposite the ulcerated gum become loose, and often fall out. Chewing is very painful; the sub-maxillary glands are swollen and tender; the child is generally out of sorts; the temperature is 102·5° or 103° F., and in bad cases there may be necrosis of the jaw.

Treatment.—The same local treatment as in the preceding must be used. Insanitary surroundings should be counteracted, and an abundant supply of fresh air insisted on, the child being made to spend most of the day outside. A liberal supply of nourishing food, with stimulants, should be given. Chlorate of potash is the drug here, and it must be given at once and persevered with; 3 grs. every four hours to a child of two years, or 5 grs. for one five or six, will be the proper dose. Tincture of the perchloride of iron may be combined with the salt.

CANCRUM ORIS.—*Synonymes.*—Gangrenous Stomatitis, Noma.

Definition.—Is a rapidly progressing necrosis of the gum or cheek, which is commonly fatal.

Causes.—Insanitary conditions and poverty. It may follow measles, typhoid, scarlatina, or small-pox. No matter how it comes on, it is always seen in the very lowest condition of vitality.

Symptoms.—It begins as a painful spot on the inner surface of the cheek; it spreads very rapidly, and soon the whole depth of the cheek is involved. Seen from the outside, the cheek is swollen, pale or livid, and soon a black spot appears in the centre; the cheek is perforated, the edges of which are black, and the sloughing process spreads rapidly. The breath and saliva are intensely fœtid; the pulse is small and frequent; but usually

the temperature is little if at all elevated. In bad cases the gangrenous process spreads to the gums, and causes rapid and widespread destruction of tissue; large blood-vessels may be opened in its course, and hæmorrhage may still further complicate matters. Pneumonia is very liable to supervene, owing to septic absorption. If the case is seen early, and vigorous treatment resorted to, a certain number of these cases recover, but the affection is very fatal.

Treatment.—Local.—Free local application of strong nitric acid or the actual cautery, after which the part is to be powdered with iodoform and smeared with carbolic oil.

General.—Abundance of strong nourishment, such as eggs, pounded raw meat, milk and brandy, and meat extracts. Fresh air should be freely admitted to the room, and the steam-spray kept playing constantly with carbolic acid 1 in 30. For medicines, quinine and iron are the best.

PARASITIC STOMATITIS.—*Synonymes.*—Thrush, White Mouth, Sprue.

Definition.—Is an affection of the mucous membrane of the mouth, characterized by the development of certain fungi.

Causes.—Unhealthy conditions of the mucous membrane; insanitary conditions; hot weather; improper feeding; and dirty sucking-bottles. It is rarely seen in breast-fed babies, and is most common during the first few weeks or months of life.

Symptoms.—Difficulty of sucking or pain in doing so is first noticed; there is redness of the mucous membrane, with some rise of temperature, before the white patches are noticed; the bowels are disturbed, with green, curdy, and sour-smelling motions, which give rise to redness and excoriation of the nates, and there may be vomiting as well.

The parasites appear in the form of small white points or scattered patches on the tongue, cheek, lips, and palate; they are firmly adherent to the mucous membrane, but if one is forcibly removed, a red and bleeding surface will be left behind. These patches look exactly like pieces of milk curd, for

which they are mistaken until one tries to remove them. In mild cases these patches are few in number; in severe cases they run together, so as to involve the whole of the buccal cavity.

Examined microscopically, the patch is seen to consist of epithelial cells, yeast fungi, bacteria, and thread-like filaments. The specific organism producing the disease is the *Saccharomyces albicans*, or yeast fungus.

Treatment.—Perfect cleanliness of all sucking-bottles, tubes, teats, etc., is of the first importance, and the directions given under Follicular Stomatitis should be strictly followed out. Any gastric derangement should be set right with a little rhubarb and soda, and feeding suited to the age of the baby only allowed. Fresh air, and warmth to the abdomen by means of a flannel binder or pad of wadding, are important adjuncts.

CHAPTER III.

DISEASES OF THE DIGESTIVE ORGANS.—*Continued.*

ACUTE GASTRIC CATARRH.—Catarrh of the stomach is very common in children in the spring and summer months.

Causes.—Errors of diet; exposure to cold and wet; drinking cold water when the body is heated; the poison of the zymotic fevers; dentition; and rickets. One attack predisposes to another.

Symptoms.—These often set in suddenly with vomiting, headache, and fever, the temperature quite often reaching 104° F. The child is chilly and sits over the fire; is dark under the eyes or flushed. If the catarrh extends to the duodenum, there is vomiting of bile-stained fluid, and the conjunctivæ are often slightly jaundiced—gastro-duodenal catarrh. The appetite is lost; the tongue is thickly furred (white or yellow): and there is considerable thirst. Diarrhœa may be present if the catarrh

has extended to the intestines, but constipation is the rule. The attack lasts for a week or so. In strumous subjects the symptoms may be (often are) very severe. There is a non-febrile variety, in which all the symptoms are milder, and the attack is put down to biliousness. Such children suffer from constipated bowels, are a bad colour, have capricious appetites, and very often an offensive breath. They have a predilection for puddings, sweets, and pastry, and I have often found a family history in one or both parents of dyspepsia. Round or oval depressed patches are often seen on the dorsum of the tongue.

Diagnosis.—From Typhoid.—Gastric catarrh begins much more suddenly, the temperature rising at once to 104° F. or so; frontal headache is not prominent; there is little delirium at night; and the spleen remains normal. The attack is at an end in a week.

From Acute Tuberculosis.—Again the sudden onset will help you, together with the high fever. The expression is not distressed-looking; there is no œdema of the hands and feet; and the family history is important, if favourable.

Treatment.—Counteract errors of diet, and, while fever is prominent, give milk-food and light soups. Open the bowels with castor oil, and give bicarbonate of soda with aromatic spirit of ammonia (℞ 2) till the stomach settles; after the fever has subsided, hydrochloric acid and pepsine wine will help to restore digestion (see ℞ 4).

Regularity of feeding, combined with plain food, is most essential; plenty of open-air exercise, with warm clothing, especially over the stomach and bowels, is of little less importance; and cold sponging, followed by vigorous friction, will be useful.

DIARRHŒA.—There are three forms of this complaint—

1. Simple non-inflammatory, or mild intestinal catarrh.
2. Acute inflammatory diarrhœa; severe intestinal catarrh, or entero-colitis.
3. Choleraic diarrhœa, or infantile cholera.

1. Simple Non-inflammatory Diarrhœa.—In this variety there is derangement of function without anatomical changes, without fever, and without involvement of the stomach, or, as Dr. Holt, of New York, puts it, cases which are not dyspeptic.

Causes.—Improper feeding, but especially improper hand-feeding. Improper breast-feeding means giving the child the breast at irregular and far too frequent intervals, or, in other words, whenever it cries. This is a very common practice, and leads to mischief. It is bad for the child, because its stomach gets no rest; the quality of the milk is deteriorated, because the breast is kept constantly working.

It may also be caused by the mother's health being at fault, by drugs given to the mother, or by dietetic errors on her part; frequently also by menstruation or pregnancy, or by various influences, such as grief, exhaustion, or the like. The manner in which hand-feeding is performed has been blamed—and justly so. Hand-fed children are almost always overfed; the bottle is placed in the crib, and the child takes a pull at it every now and again. Articles of food unsuited to the child's age are very often given, and it is surprising the compounds these children are made to swallow. Another common cause is the practice of preparing for the child in the morning the whole day's supply of food, and allowing it to stand about till it is required; in the hotter months it does not remain many hours sweet, and is often quite unfit for the child long before it reaches it.

It may be due also to chilling of the surface from insufficient covering on the legs and lower parts of the body; to impure cow's milk, due to disease in the cow, or to the care and food of the cow; to adulteration or pollution of the milk in the process of delivery; to dirty utensils, pails, pans, or cans, in which the milk is kept; and last, but not least, to dirty or improper feeding-bottles.

Symptoms.—The attack occurs suddenly, and is preceded for some hours by griping pains. There is nausea, a furred tongue, restlessness, and peevishness, followed by a discharge of thin

feculent matter containing lumps of undigested food, or curd. These dejections have often an offensive smell, are frothy, and are followed later by smaller ones, more watery and slimy, showing an excess of mucus. There is no vomiting, and the temperature is not elevated. The attack lasts from twenty-four hours to two or three days, and, if neglected, often passes on into the next variety.

Treatment.—Give a full dose of castor oil, especially if the motions are lumpy. After this give opium, either in the form of paregoric or Dover's powder, 6 to 10 mins. of the former, or ½ gr. of the latter, to a child one year old. Keep the abdomen warm by means either of a pad of cotton wool or a flannel binder, and the following day give ℞ 5. If the child is being nursed, nothing but the breast is to be allowed at regular intervals. If it is being hand-fed, sterilize the milk, and add to it equal parts of barley-water and ten drops of the saccharated solution of lime. It will rarely be necessary in this variety to abandon milk altogether.

2. **Inflammatory Diarrhœa, or Entero-colitis.**—The causes of this form are those already enumerated as giving rise to the simple variety. Drinking contaminated water; the effluvium from decaying organic matter given out by the putrefying refuse of large cities; living in a badly drained and crowded house;—each or all give rise to it in many cases. There is likely to be a strong septic element in many cases of this variety.

Symptoms.—The attack often begins as a mild diarrhœa, and gradually passes on into this more severe kind. There is vomiting, and considerable rise of temperature (103° F. or so); the child rapidly wastes; the eyes get hollow and the face pale; the pulse is rapid and feeble; and a typhoid state is often reached, with dry, brown tongue, the child dying with all the signs of collapse. The dejections are thin and watery, brownish or greenish, and very irritating and offensive. There may be considerable tenesmus, and prolapse of the bowel is common.

Treatment.—Stop all milk-food at once, except in the case of an infant at the breast, when it should get nothing else. If

the subject is only a few months old and hand-fed, try and get a wet-nurse for it; if you cannot, give it whey and cream, or whey and barley-water, or barley-water and cream,—this should be given cold, and in small quantities at a time. A tablespoonful of cream to a large cupful of barley-water or whey will be sufficient. If you fail with one of these mixtures—and you often will, in my experience—try weak veal or chicken tea, diluted with an equal quantity of barley-water or whey. More obstinate cases still will yield to raw-meat juice or Valentine's meat-juice. Professor Whitla speaks highly of Nestle's food in these cases, made fresh each time.

As to drugs in this affection, a powder containing bismuth, soda, and Dover's powder, will be of service (see ℞ 6) night and morning, and during the day the mixture recommended in the simple form of diarrhœa (see ℞ 5). The laudanum-and-starch enema is indicated where there is much mucus and straining. Hippo is a useful drug, and may be substituted for the laudanum in the foregoing enema in the dose of 5 grs. to 2 ozs. of thin starch. It is often given where there is much vomiting, in drop doses of the wine in a teaspoonful of water every hour. Much benefit will follow a change of air, with iron and quinine tonics and cod-liver oil, when the attack is at an end.

The parents should be warned against giving the child unsuitable articles, such as currant-cakes, oranges, potatoes, vegetables, and fruits, for some time after the attack has subsided, because relapses are serious.

3. **Choleraic Diarrhœa, Acute Gastro-intestinal Catarrh, Inflammatory or Zymotic Diarrhœa, or Cholera Infantum.**—These are the names by which the third variety is known.

Causes.—This form is most likely due to a distinct micro-organism akin to the comma bacillus of Asiatic cholera. It is very rarely seen in breast-fed babies, and Professor Whitla writes, in his 'Dictionary of Treatment,' that 'sterilized milk is a perfect safeguard against ordinary summer diarrhœa, or the more severe cholera infantum.' It is noteworthy that in both these cases the milk is perfectly aseptic. It is commonly seen

amongst the poor of large cities, and during very dry and hot summers.

Symptoms.—There is obstinate vomiting and very persistent diarrhœa. The vomited matter passes from the contents of the stomach to mucus fluid; thin watery fluid tinged with bile; or it may be pure bile itself. The dejections pass from the contents of the bowel to a thin offensive fluid consisting largely of serum, and the quantities of this passed are quite astonishing. Wasting is rapid and extreme; thirst is urgent; and only a few hours are sufficient to produce the pinched features and depressed fontanelle of this affection. The pulse is very rapid and thready; the temperature is 104° or 105° F. Unless a stay can be put upon the disease, a state of profound collapse is reached, and, the coma increasing, the child dies quietly or in a convulsion.

Treatment.—When the vomiting is very severe, drop doses of the glycerine of carbolic acid in a teaspoonful of water every hour should be tried. All food by the mouth had better be stopped, and small pieces of ice given to suck. Recently liq. hydrarg. perchlor. has been found almost a specific, given in five-drop doses every two hours. I can recommend it.

Dr. Holt, of New York, relies most on the hypodermic injection of morphia and atropine, and he advises small doses repeated as being preferable to one large dose. For a child a year old, $\frac{1}{100}$ gr. of morphia with $\frac{1}{800}$ gr. of atropine may be injected and repeated in an hour.

Henoch recommends the free use of a one-per-cent. saline solution hypodermically. Hyperpyrexia can only be met with the cold bath and ice-water injections. Brandy and ether may be given hypodermically in desperate cases. Hot fomentations to the abdomen give some comfort. Vigorous friction will be certainly beneficial.

CONSTIPATION.—*Causes.*—Errors of diet; atony of the bowel, or sluggish peristaltic action; the habit of giving laudanum or soothing syrups to children; deficient secretion of bile and of the intestinal juices; and the want of exercise. It may be a symptom of cerebral disease, or due to some con-

genital malformation of the intestine, and in some cases it is undoubtedly hereditary.

Symptoms.—In Infancy.—The motions are large and solid, or pasty; the complexion is pasty and dull, and the child is fretful at night. Flatulence is an early symptom, and may give rise to violent attacks of colic. Palpation will often reveal hard masses in the colon. If of long standing, the health suffers, and the child gets flabby and is fretful.

In Older Children.—There is muddy complexion; diminished appetite; furred tongue, and unpleasant breath. They suffer from headaches, and are dull and listless. In neglected cases impaction of fæces may take place, and lead to serious trouble.

Treatment.—The diet is the first consideration, and should be carefully regulated, excess of starchy matters being avoided.

In infants, the complaint is almost entirely confined to those brought up by hand. If it occurs in breast-fed babies, the health of the mother or wet-nurse should be inquired into. Her milk may be poor, or her own diet constipating. Let her improve the quality of her food, and take gruel, oatmeal porridge, stewed fruit, or the like. If the infant seems unable to expel the motions properly, gentle massage of the abdominal muscles with the oiled hand; a small soap-and-water or glycerine enema; or a soap suppository, will be the proper means to use. In hand-fed babies, in addition to careful regulation of the diet, a tablespoonful of fluid magnesia, or the size of a bean of manna dissolved in a tablespoonful of warm water, may be added to each half-pint bottle of milk. Massage of the abdominal muscles is of undoubted service, and it might be combined with cold sponging beforehand. I have seen a teaspoonful of castor oil, applied on flannel to the abdomen, overcome the difficulty. Nux vomica with belladonna and senna often answers well (see ℞ 7), and cascara sagrada rarely fails to relieve. Enemata of soap-and-water, or glycerine; or suppositories, calomel, and the stronger purgatives had all better not be resorted to until the simpler remedies above named have had a fair trial.

After the age of infancy, regularity of meals as well as of the habits should be attended to, the child being made to go to stool every morning at the same hour. Pastry, salt meats, farinaceous foods, and sweetmeats should be avoided in favour of oatmeal porridge, green vegetables, stewed fruit, and figs. Cold bathing, with vigorous frictions; plenty of open-air exercise; 'early to bed and early to rise,'—will be beneficial. Aloes and iron often do well in these cases (see ℞ 8), or Sir Andrew Clark's pill may be given (℞ 9). The mineral waters come in useful in these cases, given the first thing in the morning in plenty of hot water. Tamar indien, cascara sagrada, calomel, etc., may have to be resorted to. I have seen a teaspoonful of glycerine given three times daily very effective, and it is readily taken by children.

DYSENTERY.—*Synonymes.*—Acute Ileo-colitis, Dysenteric Diarrhœa.

Definition.—Is a specific disease, which occurs in epidemics in tropical countries; it is rare in England, except in the chronic form.

Causes.—Foul air; impure water; bad drainage; and rapid variations of temperature, are the chief causes. Poverty and digestive derangements are predisposing causes.

Pathology.—The mucous membrane of the colon and rectum is swollen and injected; patches of thin membranous exudation are found, or there may be superficial ulceration. The solitary glands are enlarged, and other organs may be found congested and swollen.

Symptoms.—The onset is sudden, with vomiting, severe pain in the abdomen, and fever, followed by straining and the evacuation of the contents of the rectum; later, the straining is repeated, but this time it only brings away mucus and blood. The griping pains continue, and there is some tenderness of the abdomen. The face expresses the pain the child is suffering; it cannot find rest in any position, neither can it sleep. The disease may not go any further than this, but a severe form of it may be ushered in with rigors or convul-

sions; tearing pain and constant tenesmus are present, and the bowel is prolapsed. The mucus is bloody, or pure blood may come away. If the child survives long enough, sloughs and much shreddy matter are discharged, and the odour of the motions is very fœtid. The weakness becomes extreme, the face much pinched and haggard-looking; retention of urine may occur, and death from exhaustion ends the scene.

Diagnosis.—Straining and the passage of mucus and blood in an infant under a year old are almost certainly due to intussusception, and a careful examination of the rectum and abdomen for a tumour should be made. In older children, fever, vomiting, straining, and the passage of bloody mucus indicate dysentery.

Prognosis.—This is always serious, but much will depend on the stage of the attack at which the case is seen, for great importance attaches to early treatment.

Treatment.—Give a warm bath and apply hot fomentations to the abdomen. Begin with a dose of castor oil, with five drops of laudanum in it, and, after this has acted, give a starch enema with ten drops of laudanum. Opium after this should be used with great caution, or not at all, and its place taken by hippo, 6 grs. for a child ten years old, in as little fluid as possible. The blandest foods only are allowable, such as light soups, thickened with corn-flour, or arrowroot, or scalded milk and barley-water, with some saccharated solution of lime. Small bits of ice may be given for the thirst. For young children under twelve months old, give calomel instead of hippo.

In all cases a stimulant will be required, and brandy is the best form to give it in.

INTESTINAL WORMS.—*Varieties.*—(1) Thread, (2) Round, and (3) Tape.

1. **The Small Thread-worm (Oxyuris Vermicularis)** appears like a little bit of white thread. They infest the cæcum, colon, sigmoid flexure, and rectum. They are extremely fertile, and the male is larger than the female.

Symptoms.—Irritation and itching at the anus, worse in

the evenings and at night. Catarrh of the rectum may be set up, which gives rise to straining, with the passage of mucus and blood, and prolapse of the bowel. Vaginitis may be set up in girls, either by the worms getting into the vagina or by the scratching and rubbing they induce. There may be retention of urine as a consequence of the irritation. Itching of the nose, swelling of the upper lip, and dark rings round the eyes are also common symptoms. The child is usually weakly and anæmic.

Treatment.—Give a smart purge of calomel (2 or 3 grs.) and magnesia, so as to bring the worms as near to the anus as possible. After it has acted, give a large enema, either of infusion of quassia, of a solution of common salt, or of lime-water, and repeat the enema every night at bedtime for a week. In female children the injection should be used to the vagina as well, and the outlet smeared with red oxide of mercury ointment (1 in 3). The general health should be attended to, and iron tonics given. The food should be wholesome and as free as possible from sweets and starches. In obstinate cases, santonin, in grain doses, may be given for a few nights before the purgative.

2. **The Long Round-worm (Ascaris Lumbricoides)**, often called Lumbricus, is from 4 to 12 inches long, of a reddish white colour, the female being larger than the male. The body is cylindrical, the mouth triangular and armed with about two hundred microscopic teeth. It inhabits the small intestine, but has a peculiar tendency to wander, and so may be found in the stomach, gall-bladder, or large intestine. It has no power of penetrating living tissues.

Symptoms.—Colicky pains; diarrhœa, chiefly at night; and nausea and vomiting. The worm may cause jaundice by obstructing the bile-duct. The child picks its nose, and eats substances such as clay, mortar, coals, etc.

Treatment.—Santonin 1 to 3 grs., with a grain of calomel, should be given at bedtime for a few nights, and a dose of castor oil the morning after the last powder.

3. The Tape-worm is a flat, jointed worm. Several varieties may be met with, the most common being the *Tænia mediocannellata*, or the beef tape-worm. The *Tænia solium*, or pork tape-worm, is also sometimes found, but the *Bothriocephalus latus* is rare. This worm grows in segments from the head by a budding process, and may reach a great length (many yards). It infests the small intestine.

Symptoms.—Pains in the epigastrium; pallor, and loss of flesh; headache; and dyspeptic symptoms. Peculiar movements may be complained of in the inside.

Treatment.—Give a dose of castor oil, and in the morning 20 or 30 drops of the ethereal extract of male fern (freshly prepared) in some mucilage and water before breakfast. At noon give another dose of oil, when the worm will usually be expelled. Make a careful search for the head of the worm.

CHAPTER IV.

DISEASES OF THE DIGESTIVE ORGANS.—*Continued.*

CHRONIC ULCERATION OF THE BOWELS.—There are two varieties, viz. (1) Simple ulceration, and (2) Scrofulous or Tubercular ulceration.

Morbid Anatomy.—The simple ulcer is usually seen in infants, and affects the large intestine chiefly. These ulcers are round or irregular in shape, and vary much in size; their edges are sharply cut; their floor uneven and of a reddish colour. The tubercular ulcer is usually seen in children after the third year, and is generally associated with enlargement of the mesenteric glands and phthisis. The ulcers are usually seen in the small intestine (ilium); their edges are soft, red, and ragged; and their floor red or greyish in colour. In healing they cause contraction of the gut. Chronic peritonitis is frequently present.

Symptoms.—Prolonged diarrhœa, the motions being preceded by colicky pains; tenderness in the abdomen on deep palpation. The motions characteristic of the disease are of two kinds. (*a*) Consists of a reddish-brown water, highly offensive and putrid-smelling; small black spots, which are blood-clots, are seen in the sediment. (*b*) Consists of a pale yellow fluid like cream or thin paste, with an offensive but not putrid smell. Hæmorrhage is seldom copious. The number of motions varies greatly from one to twenty in the twenty-four hours. Wasting is always present, and is in proportion to the severity of the diarrhœa. There is usually some fever at night.

Diagnosis.—Simple ulceration is usually seen in babies; tubercular ulceration after the age of three years. Examine the stools until you are satisfied of the nature of the case. The presence of enlarged mesenteric glands, or chronic lung disease, will be a great help.

Prognosis.—Good in simple ulceration; bad in tubercular ulceration.

Treatment.—For a young child, weak veal-tea and barley-water, or whey and cream, is the proper food; yolk of egg beaten up with the veal-tea or barley-water may also be given. All food should be given in small quantities at a time, and wine whey may be given if the child is weak.

For older children, raw pounded beef is almost a specific; a teaspoonful may be spread on toast and eaten, or it may be given with barley-water or whey. As the diarrhœa subsides other things may be gradually allowed; but be careful about milk, and, when you allow it, watch the motions, to see if they contain any curd, and, if they do, stop the milk at once. The brandy-and-egg mixture will be very useful.

For medicines: If the stools are of the homogeneous kind, give nitrate of silver, with dilute nitric acid and laudanum (see ℞ 10). When there are reasons for believing that the ulceration is in the colon, such as the appearance of bright blood, tenesmus, etc., gently wash out the lower bowel with a long tube and warm water, and then inject 2 grs. of nitrate

of silver dissolved in 4 ozs. of tepid water; if there is much straining add five or six drops of laudanum.

Any of the following mixtures may be used: ℞ 10, ℞ 11, ℞ 12, ℞ 13.

Convalescence will be favoured by iron and quinine tonics. Both during the illness and for long after, the abdomen should be protected against chill by a pad of wadding and a flannel binder.

ACUTE OBSTRUCTION OF THE BOWELS.—*Causes.*—Intussusception; peritoneal bands; fæcal impaction; tumours; or twists in the bowel. By far the most frequent cause is intussusception.

Intussusception.—*Causes.*—Drastic purgatives; indigestible food; external injuries, such as a fall out of bed; violent exercise, or rapid up-and-down motion; violent coughing; a polypus or other foreign substance in the rectum that sets up peristaltic action. Rilliet attributes its frequency to the looser connections of the cæcum in the iliac fossa in young children.

Morbid Anatomy.—One portion of the bowel is forced from above downwards into another portion continuous with it. This gives rise to a sausage-shaped tumour. consisting of three layers of gut disposed one over the other. The mesentery is drawn in with the invaginated portion, and presses it to one side. Congestion of the bowel results, lymph is thrown out, and the opposed surfaces are glued together. Gangrene may take place, the invaginated portion being discharged, after which the opposed edges may unite and the patency of the bowel be restored. It is usually the last portion of the ilium with the valve that is invaginated into the colon.

Symptoms.—These come on very suddenly in the midst of health, with a sharp cry or scream; the child turns pale and vomits; it kicks and tumbles about as if suffering from colic. Soon the bowels are relieved of whatever is below the seat of obstruction, and many are thrown off their guard by this circumstance; this is followed by straining, and nothing now comes away but mucus and blood. Palpation will generally

detect a sausage-shaped swelling in the left iliac fossa; there is tenderness over this spot. A careful rectal examination should now be made; and the presence of a rounded tumour, while the withdrawn finger is smeared with blood, would confirm the diagnosis. The temperature is normal. The vomiting and straining continue, and soon the pinched look and sunken eyes proclaim the seriousness of the case. Unless relief is at hand, death usually speedily ends the child's sufferings.

Diagnosis.—The sudden onset of severe localized pain, the vomiting, straining, and passage of mucus and blood, with the presence of a rounded tumour in the rectum, make the diagnosis easy.

Prognosis.—This is always very grave.

Treatment.—Put the child under chloroform, and invert the body, at the same time kneading the abdominal walls with the hands; or the child may be shaken up and down in this position. This should only be done when the case is seen at once, and before congestion and adhesions have taken place. Another plan is the injection of water or soap-and-water, or, better, warm oil into the bowel. Inflation by air is also used, the tumour being manipulated through the abdomen at the same time.

Abdominal section may be resorted to where these means fail, and endeavours made to relieve the invagination. If drugs are given at all, the only one should be opium, either by the mouth or subcutaneously. For food, teaspoonfuls of iced milk or small quantities of beef-essence may be given; but everything is usually vomited.

ACUTE PERITONITIS.—This may occur in the child at any age, and is occasionally seen in the fœtus, when it is usually syphilitic.

Causes.—Blows and falls; exposure to cold and wet; perforation of the intestine in typhoid; rupture of hydatid cyst; extension of inflammation from a perityphlitis; from a pleurisy or pericarditis; perforating ulcers of the stomach, ilium, or

cæcum; intussusception; tubercle and caseous degeneration of the mesenteric glands.

Symptoms.—There is sudden onset of pain in the abdomen, with vomiting; there is diarrhœa at first, as a rule, and afterwards constipation. The abdomen is swollen and tympanitic; tenderness on pressure is very marked about the umbilicus; the decubitus is dorsal, with the legs drawn up, and the breathing is thoracic. The temperature is 102° or 103° F.; the face is pale, and wears an anxious expression; and the pulse is quick and thready. As the disease progresses, the vomiting becomes less troublesome and often ceases, but the tympanitis increases; the tongue is dry and brown, the eyes are sunken, and the pulse is very small and rapid. Death usually takes place towards the end of the first week. Occasionally, the case ends in recovery, the symptoms abating and the fluid becoming absorbed. When due to perforation of the bowel, it is usually fatal, and total disappearance of the liver dulness is a sure sign, according to Niemeyer, that peritonitis from perforation has taken place.

Diagnosis.—This is not difficult, the pain, swelling, and tympanitis, with vomiting and fever, and the position on the back, with the legs drawn up, making a characteristic combination of symptoms. In colic there is no duration of pyrexia; the pain is paroxysmal, and there is no tenderness of the abdomen on pressure between the attacks.

In obstruction of the bowels the pain on pressure is slight; there is no fever; the onset is more sudden; and there is fæcal vomiting. The pain of pleurisy is often referred to the abdomen, and so also, I have seen, the pain of pneumonia.

Morbid Anatomy.—On opening the abdomen, the peritoneum is found covered with recent lymph, and the intestines are matted together. More or less pus may be found in the pelvic cavity.

Prognosis.—This is always very grave. The perforative variety is usually fatal.

Treatment.—Perfect rest in bed, with hot laudanum fomentations and opium internally, are the first essentials. The drug

may be given by the mouth, if the stomach will retain it; if retching is severe, give it hypodermically. Two to five drops of laudanum in a teaspoonful of water every three hours for a child two years old; five to eight drops for a child five to ten years old; $\frac{1}{12}$ gr. of morphia hypodermically, for a child five to ten years can safely be repeated, and in giving opium either way in this disease it is well to produce drowsiness. The ice-bag may be tried, but in the majority of cases warm applications are more comforting. Purgatives are to be strictly avoided, and their place taken by small enemata. Thirst should be combated by small pieces of ice to suck; if retching is severe, all food by the mouth must be stopped, and small, frequent enemata of beef-tea and brandy given. Turpentine stupes are suitable for excessive tympanitis.

CHRONIC, OR TUBERCULAR PERITONITIS.—This is a common affection in children, and in the large majority of cases is due to abdominal tuberculosis. It is not usually seen till after the sixth year, and is very rare in young children. Henoch reports a chronic case, which was non-tubercular, the result of a blow. The following description refers to the tubercular variety:—

Two forms are described: (1) The Ascitic form, and (2) the Cicatrizing form.

1. **The Ascitic Form** is much the more common. The symptoms begin insidiously, the first thing noticed being that the belly looks large, and next that it is a little tender. The child is dull; looks pale and ill; and avoids all movements which cause a jolt or jar to his body, such as coming down-stairs, which he often does backwards on his hands and knees. The abdomen is rounded and distended; there is dulness and fluctuation in the flanks; the skin over the abdomen is shiny, and large blue veins ramify over its surface. Pain and tenderness may be entirely absent, and the swelling and fluid may be present alone. A careful search for tubercle in any other organ should be made, and inquiry into the family history is important. Hectic fever is usually present, the

temperature being 102° or 103° F. at night, falling to 99·5° in the morning. The appetite is capricious; the tongue coated; the bowels are irregular; and the child wastes.

2. **The Cicatrizing Form.**—This name is given to those cases in which little or no fluid is present from first to last, but its place is taken by lymph, which covers the peritoneum, parietal and visceral, matting all the organs together. Pain is now usually present, referred to the umbilicus; there is diarrhœa and hectic fever, and enlarged irregular-shaped masses may be easily felt through the abdominal wall (tabes mesenterica). Often the lungs become involved, when there is cough and expectoration of pus, and the child sinks rather rapidly; or the disease may attack the bowels, giving rise to diarrhœa, etc., followed by abscesses, or lardaceous degeneration of the liver, kidneys, or spleen.

Diagnosis.—Ascites is almost always tubercular, and if pain, diarrhœa, and hectic are present, it is almost certainly so. The family history is a help, and the presence of tubercle anywhere else in the body would settle the diagnosis.

Prognosis.—This is always very serious, but recovery may take place.

Morbid Anatomy.—Tubercles and lymph are found in the peritoneum, great omentum, and mesentery, matting them all together. Fluid, serous or purulent, will be found, as well as cheesy mesenteric glands, and often there is tubercular ulceration of the bowels.

Treatment.—Rest in bed, and light easily digested food, are essential. If the pain is troublesome, hot laudanum fomentations or belladonna and glycerine may be applied, or the following salve may be smeared over the abdomen night and morning: Hyd. oxidi flav. 20 grs.; lard ʒ j. mixed with an equal quantity (ʒ j.) of ungt. belladonnæ. Tincture of iodine may be painted over the abdomen at bedtime. Enemata and laxatives should be preferred to purgatives, and at night a few drops of Battley's solution may be given to procure rest and sleep. Tonics and cod-liver oil should be

given, together with brandy-and-egg mixture. If the case becomes very chronic, laparotomy and drainage should be tried, whether the fluid is purulent or serous.

TYPHLITIS AND PERITYPHLITIS.—*Causes.*—The lodgment of foreign bodies, pins, fish-bones, cherry-stones, etc., in the cæcum or vermiform appendage, or the impaction of hardened fæces; falls or blows; typhoid or tubercular ulcers; exposure to cold and wet. Inflammation of the cæcum or appendix follows, perforation takes place, and a local peritonitis is set up, which leads to abscess, or a general peritonitis may result.

Symptoms.—These set in suddenly with pain in the right iliac fossa, vomiting, and local tenderness. The bowels are usually confined, but diarrhœa may be present at first. There is fever, the temperature being 101° or 102° F.; the pain is now distinct in the right iliac fossa; the right thigh is flexed on the abdomen, and a hard swelling may be detected, which is dull on percussion. Under proper treatment the case may go no further, and resolution take place. Often, however, the tenderness increases; a distinct tumour is present in the right iliac fossa, and a local collection of pus is diagnosed. If the abscess is not promptly opened and drained, it will burst, in all probability, either into the bowel, bladder, or vagina, or it may point in the iliac region. A general peritonitis may now be set up.

Diagnosis.—The pain and swelling in the right iliac fossa, the fever and vomiting, with the flexion of the right thigh on the abdomen, are very characteristic symptoms, but in doubtful cases it will be wiser to treat a case of impacted fæces as a perityphlitis than *vice versâ*.

Treatment.—Perfect rest in bed; hot fomentations or poultices, and opium (see Peritonitis). Restrict the diet to milk and light soups, and avoid all purgatives and enemata. If no improvement takes place after a time, and the pain, fever, and drawing-up of the right leg continue, cut down on and open the abscess by an incision just internal to the anterior

superior spine of the ilium. If a general purulent peritonitis is found to exist, the abdomen should be opened and washed out with warm boracic solution and drained.

ASCITES.—*Causes.*—Chronic peritonitis; cirrhosis and hydatid of the liver; malignant and syphilitic disease of the liver; caseous glands in the hepatic notch; heart-disease and extreme anæmia.

Symptoms.—The abdomen is distended and globular; the umbilicus is prominent, and so are the superficial veins. Palpation gives fluctuation, and percussion a clear note in front and a dull note in the flanks; the position of the child should be changed from the back on to one side, when the upper flank will now give a clear note where it was dull before. If the amount of fluid is small and confined to the pelvic cavity, its presence may be detected by the finger in the rectum. The temperature is normal throughout.

Diagnosis.—In flatulent distension the abdomen is universally tympanitic, and no fluctuation can be detected. A hectic temperature would point to tuberculosis, as would also chronic diarrhœa and cough.

Slight jaundice or bile-pigment in the urine points to portal obstruction.

Prognosis.—This will depend on the cause of the fluid in the abdomen. If the child's health is unimpaired, the temperature normal, the skin natural, and no albumen in the urine, we may give a favourable prognosis.

Treatment.—If the amount of fluid is great, draw it off gradually with a Southey's trocar and canula. The child should have a warm bath every night; its bowels should be kept freely open with pulv. jalapæ co., and Basham's chalybeate diuretic given (see ℞ 14) three times daily. Its clothing should be warm with flannel next the skin, and the diet nourishing and suited to the digestive powers.

CHAPTER V.

DISEASES OF THE LIVER.

BEFORE entering on a consideration of the diseases of the liver, it may be well to say that this organ is proportionately larger in the child than in the adult, and that more of the liver is left uncovered by the ribs in consequence of the greater width of the angle made by the lower ribs with the sternum.

The upper limit of the liver reaches to the fifth space close to the right edge of the sternum, to the upper border of the sixth rib in the nipple line, to the seventh in the axillary line, and to the ninth in the scapular. The edge of the right lobe extends beyond the costal arch in the child while lying down; it never does so normally in the adult.

ICTERUS NEONATORUM.—Infants are often seen to be jaundiced a day or two after birth, but this staining does not depend upon the absorption of bile; in fact, it is not a jaundice at all, and passes off in a week. The urine does not contain bile-pigment. The sclerotics are not affected, and the stools are natural. The cause of this staining, according to Quincke, is that the ductus venosus remains patent, and allows some portal blood, which contains bile-pigment, to pass into the general circulation. Virchow and others believe it to be a hæmatogenous jaundice, the bile-pigment originating in a destruction of blood-corpuscles. The infants usually do well, and no treatment is needed.

CONGENITAL STRICTURE OR OBLITERATION OF THE BILE-DUCTS.—*Symptoms.*—Intense jaundice from birth, which affects the skin, conjunctivæ, mucous membranes, and urine; the motions are pale and completely devoid of bile; hæmorrhages are common from the bowels or into the skin; the liver may be normal in size, smaller, or greatly enlarged. At first (in some cases) nothing abnormal is noticed about the abdomen, but in a day or so the liver begins to enlarge, the spleen

enlarges, the baby wastes rapidly, and jaundice, varying in intensity, supervenes. Hæmorrhage from the umbilicus is a frequent symptom; it is of the oozing kind, and the child dies in a few days. Such cases show a tendency to appear in successive children of the same family. If the stricture is not very great, the child may live for a few months.

Morbid Anatomy.—The internal organs are intensely jaundiced. The liver is enlarged, granular on the surface, and of a dirty-green colour; wasting is extreme; the gall-bladder is small, and contains no bile, and the common and hepatic ducts are shrivelled up, greatly diminished in size, or obliterated. The liver may contain a great excess of fibrous tissue.

The etiology is obscure, but it may be due to syphilis, intra-uterine catarrh of the bile-ducts, or defective development.

Such cases are fatal, and admit of no treatment.

JAUNDICE FROM UMBILICAL PHLEBITIS.—Is due to infection of the navel with a poison similar to that which causes puerperal fever in the mother. Jaundice, in these cases, comes on a few days after birth, and is well marked. There is high fever, and the abdomen is swollen and tender; bloody pus oozes from the navel, and death is often preceded by convulsions.

CATARRHAL JAUNDICE.—This form is common in children, and is usually associated with gastro-intestinal catarrh.

Causes.—Catarrh of the mucous membrane of the common bile-duct and duodenum; plugging of the duct with inspissated bile; worms in the duct; and phosphorus-poisoning.

Symptoms.—The discoloration of the skin, conjunctivæ, and urine, with pale-coloured fæces, is preceded for a few days by symptoms of gastric disturbance. The liver is enlarged and may be tender; but it is rare to find the nausea and vomiting, the low temperature, and slow pulse so usual in the adult. The disease lasts about a week.

Diagnosis.—From acute yellow atrophy, catarrhal jaundice is diagnosed by the absence of brain symptoms and hæmorrhages. Remember that jaundice is not an early symptom in cirrhosis, syphilis, or new growth.

Treatment.—The diet should be light and easily digested, such as soups, milk, etc. The bowels should be kept freely open with one of the bitter waters given the first thing in the morning in plenty of hot water: Hunyadi Janos, Franz Joseph, Friedrichshall, or Carlsbad are suitable. During the day a mixture of bicarbonate of soda with tincture of nux vomicæ will be serviceable (see ℞ 15). The phosphate of soda with infusion of rhubarb makes another good combination (see ℞ 16).

ACUTE YELLOW ATROPHY OF THE LIVER.—This is rarely seen in the child, and when it does occur its symptoms are the same as in the adult. The disease begins with gastro-intestinal catarrh, and cerebral troubles (vomiting, delirium, and irregular pupils) are soon added. The uric acid in the urine is replaced by leucin and tyrosin. No treatment seems to have any effect, as it is always fatal.

CIRRHOSIS OF THE LIVER.—There are two varieties: (1) the Atrophic, and (2) the Hypertrophic.

1. **Atrophic Cirrhosis.**—*Causes.*—Syphilis is the chief cause, as alcoholism is rarely met with in the child,—some think it may arise in the child as the result of intemperance in both parents; contraction or malformation of the bile-ducts; tuberculosis; chronic heart-disease; and mediastinitis.

Morbid Anatomy.—There is an abnormal development of new fibroid tissue, which follows the branches of the portal vein. This new tissue after a time contracts, compressing the lobules so that the liver-cells become flattened and atrophied; obstruction to the portal circulation and congestion of the liver result. The organ is somewhat enlarged in the early stage, but afterwards becomes very small, contracted, hard, and granular.

Symptoms.—Indigestion, flatulence, and peevishness precede any special symptoms pointing to the liver; after some time, the complexion becomes sallow or pasty-looking; the bowels are costive, and the urine is very acid and deposits uric acid sand, and lithates. Ascites comes on gradually; the abdominal

veins are prominent, and palpation reveals an enlarged and tender liver. Slight jaundice is now usually seen, and often there is some puffiness about the ankles. The child may continue in this state for a varying time; but sooner or later the liver contracts and cannot be felt; the spleen enlarges; hæmorrhages from the stomach and bowels supervene; or the nose and gums may bleed, and purpuric spots appear on the skin. The digestive troubles increase; wasting progresses; bleedings become more frequent; and death takes place from exhaustion. Throughout the illness fever is absent.

Diagnosis.—The diagnosis is usually not difficult, and is made from the presence of ascites; enlargement of the spleen; prominent abdominal veins; hæmorrhages; apyrexia; and slight jaundice. Careful search should be made for evidences of syphilis, such as pegged teeth, interstitial keratitis, or scars about the mouth.

Prognosis.—This is always serious, and the occurrence of bleedings from the mucous surfaces points to an early fatal termination.

Treatment.—The earlier symptoms of gastric trouble are to be treated on general principles, but when the more characteristic symptoms appear it is usual to give an alkali with some bitter infusion (see ℞ 17). The bowels should be frequently acted on with one of the bitter waters—Carlsbad or Hunyadi Janos. The alkaline mixture should be varied from time to time with iron and quinine, and Basham's chalybeate diuretic is very useful in such cases (see ℞ 14). A liberal diet should be allowed, given in as easily digested a form as possible. A warm bath every night, and flannel next the skin, are useful adjuncts.

2. **Hypertrophic Cirrhosis.**—*Causes.*—The same as in the Atrophic form.

Symptoms.—The initial symptoms are the same as in the Atrophic form. Jaundice is early and intense; the liver becomes greatly enlarged; the spleen is enlarged in most cases; but there is no dilatation of the superficial abdominal veins, and no ascites. The symptoms are liable to exacerbations,

when there is slight fever, pain in the side, and occasionally the case ends with all the symptoms of malignant jaundice. Bleedings are often present; the tongue gets dry and brown; and the child dies in a state of coma. These two types may be present together, when we find enlarged liver, with ascites and enlargement of the abdominal veins.

Morbid Anatomy.—The liver is enlarged and smooth on the surface. The fibroid overgrowth, instead of following the branches of the portal vein, is now seen around the branches of the bile-ducts. There is little obstruction to the portal circulation, hence the absence of ascites and dilated veins; but there is great interference with the bile-ducts, which accounts for the deep jaundice.

Diagnosis.—The occurrence of enlarged liver with deep jaundice, no pyrexia, and no dilated veins or ascites, should suggest hypertrophic cirrhosis. Acute yellow atrophy comes on suddenly; there is little jaundice, and the liver rapidly becomes diminished in size.

Prognosis.—Very unfavourable.

Treatment.—The same as for Atrophic Cirrhosis.

FATTY LIVER.—This disease may be of two kinds: (1) Fatty infiltration, and (2) Fatty degeneration.

Causes.—Overfeeding; phthisis; scrofula; syphilis; rickets; and chronic dysentery.

Morbid Anatomy.—The liver is slightly enlarged; its surface is uniform and smooth; it is doughy and soft to the feel; its section is yellowish and imparts a greasy look to the knife. By the microscope, granules and globules of fat are seen in the hepatic cells.

Symptoms.—There are digestive troubles and general debility, anæmia, and want of tone. Such children have large abdomens, coated tongues, and pass pasty stools. There is never any jaundice, ascites, or pyrexia. It is rarely seen except as an accompaniment of one of the wasting diseases.

Treatment.—Careful regulation of the diet, together with small doses of calomel or grey powder, followed by Carlsbad

or Hunyadi Janos water, often brings about a great improvement in the condition. Other indications for treatment will be derived from the primary disease.

AMYLOID LIVER.—*Synonymes.*—Albuminoid, Lardaceous, or Waxy Liver.

This disease is not uncommon in the child. The spleen and kidneys often suffer at the same time.

Causation.—It is always secondary to some wasting affection, such as chronic suppuration or purulent discharge. Other causes are syphilis, scrofula, and tubercle. Chronic empyema with a fistulous opening, or dilatation of the bronchial tubes, with much purulent secretion, are common causes.

Symptoms.—Anæmia; digestive disturbances, such as loss of appetite, vomiting, and diarrhœa; the child is languid and easily tired, and his fingers and toes are clubbed. There is no pyrexia. On palpation, the liver is found to project below the ribs; the enlargement is often great; it is uniform; there is no tenderness on pressure, and there is neither pain nor jaundice. There is no compression of the branches of the portal vein; consequently, ascites and enlargement of the superficial abdominal veins are absent. In rare cases portal obstruction and jaundice are present, caused by enlarged waxy glands in the hepatic fissure. As a rule, when the disease in the liver is considerable, albumen will be found in the urine, pointing to similar degeneration of the kidneys. In 50 per cent. of the cases the spleen will be found similarly affected.

Morbid Anatomy.—The liver is uniformly enlarged, heavy, and very dense; its edge is thin and resisting. Iodine stains it of a reddish brown, and sulphuric acid first violet and afterwards blue.

Diagnosis.

Waxy Liver.	**Pleural Effusion.**
Dulness on percussion reaches to a higher level in front than behind.	Dulness on percussion reaches to a higher level behind than in front.

Dulness does not pass abruptly into resonance.	Dulness does pass abruptly into resonance.
Dulness is not modified by change in the position of the patient.	Dulness is modified by change in the position of the patient.
The needle gives negative results.	The needle draws off fluid.

Prognosis.—This is always serious.

Treatment.—Remove any long-standing suppuration or drain upon the system, if possible. Correct diarrhœa and vomiting. The diet should be as nutritious as possible, and stimulants are useful. For the liver itself, iodine is recommended, and iron should be given for the anæmia, which is always present. The remedies may be combined or given separately. Dr. Eustace Smith gives five drops of the tincture of iodine, freely diluted, before food, and 5 grs. of the exsiccated sulphate of iron in glycerine directly after each meal (for a child of five years). Iodide of potash with the tartarate of iron is a good combination (see ℞ 18). Warm clothing and plenty of fresh air are important auxiliaries.

HYDATID OF THE LIVER.—This is rare before the sixth year.

Causation.—This affection is caused by the ova of the *Tænia echinococcus* getting into the stomach and intestines, and then to the liver. It is a parasitic worm a quarter of an inch in length, and has four joints. It inhabits the alimentary canal of the dog and wolf; is passed by them with their fæces, and gets into water or other articles of food, by means of which it reaches the human subject.

Symptoms.—The liver becomes greatly enlarged, and a tumour is felt which is painless, smooth, round, and fluctuating. Jaundice and ascites are rarely seen. The spleen is not enlarged, and the kidneys are healthy. There is no fever, and the child seems well in every other respect. If three fingers are placed on the tumour, and the middle one is struck sharply, a trembling sensation is perceived, which is known as 'hydatid

fremitus,' or 'hydatid vibration.' The tumour may grow upwards and involve the chest, when there will be lung symptoms; or it may grow inwards towards the fissure, and cause hepatic and portal pressure symptoms (jaundice, ascites, enlarged abdominal veins, etc.).

Occasionally, the cyst suppurates, when the symptoms of abscess (hectic fever, shiverings, and pain) will be present. The cyst may burst and discharge its contents into the pleural or peritoneal cavities, setting up inflammation and causing death.

Diagnosis.—The tumour should be aspirated, when the presence of a non-albuminous fluid with hooklets in it would confirm the diagnosis. **Abscess** is negatived by the absence of constitutional symptoms. **Distended gall-bladder** is accompanied by severe biliary colic and jaundice. **Extensive effusion into the right pleura** will give *a concave outline upwards,* the limit of which is lower in the mid-axillary line than behind; hydatid cyst is just the opposite of this—*a convex outline upwards,* and it is highest in the mid-axillary line. If some of the fluid is drawn off, if it is pleural, it will be albuminous and coagulate on boiling; if it is from a hydatid cyst, it will be non-albuminous and remain fluid on boiling. **A soft cancer** would be certain to give rise to constitutional symptoms; it grows quickly; hydatids grow slowly.

Prognosis.—If the case is seen before the cyst bursts, the prognosis is favourable. If the cyst bursts, it is nearly always fatal.

Treatment.—The cyst should be tapped, after which a firm bandage is applied; in the majority of cases it does not fill again. If it does refill, the abdomen should be opened and the cyst secured to the abdominal wall and drained.

No medicines have any effect on the parasite.

HEPATIC ABSCESS.—This is occasionally seen in the child, and is caused by the absorption of septic matter. The liver is enlarged and very tender, and there is hectic fever. The outlook is very bad.

Exploratory punctures should be made, and, if pus is found, the abscess should be opened and drained under strict antiseptic precautions.

CHAPTER VI.

THE SPECIFIC FEVERS.

MEASLES.—*Synonymes.*—Morbilli, Rubeola.

Definition.—Is an acute, epidemic, contagious, and infectious disease, characterized by a papular eruption, which generally makes its appearance on the fourth day, being preceded by catarrhal symptoms, and followed by slight desquamation.

Etiology.—Measles is due to a specific poison. It is epidemic, in that it attacks great numbers of children at the same time.

Contagious, in that it is communicated by a visible infecting principle, such as the excretions from the skin, kidneys, and bowels; the nasal and bronchial secretions; the blood and the desquamated epithelium.

Infectious, in that it is communicated by an invisible infecting principle, such as is contained in the breath and blood in the form of micrococci, and which may be carried about on clothes, etc., and thus *infect* others.

Symptoms.—Incubation.—Four to fourteen days, during which time the child is not sick. Severe and malignant cases may incubate in a still shorter time.

Prodromal Stage, or Stage of Invasion.—This stage lasts about four days, during which time the child suffers from the following catarrhal symptoms: sneezing, bronchial catarrh, running from nose and eyes, and fever; with these come headache (frontal), loss of appetite, furred tongue, epistaxis, some soreness of the throat, diarrhœa, and vomiting. The temperature at this stage is from 102° to 105° F., pulse quick—120 to 160. Towards the end of this stage the eruption appears.

Eruptive Stage.—The eruption makes its appearance generally on the fourth day of sickness, and consists of minute red points, which soon increase in size and number, becoming distinctly raised or papular and darker in colour, with a marked tendency to coalesce, or run together so as to form patches. It is first seen over the forehead, close in at the roots of the hair, and about the ears and over the face; from these points it rapidly spreads over the body and limbs, so as to cover them in twenty-four hours from its first appearance. This is the common form of rash; but note the following uncommon forms:—

(1) The eruption, when it first makes its appearance, may take the form of isolated, hard, and prominent papules, giving the shotty feel of early small-pox eruption. Cases of this kind have been mistaken for variola.

(2) The eruption, in some cases, is delayed a day or two, and when it does come out may be situated on parts of the body where it is not usually seen, or it may come out in an irregular way, as on the buttocks or limbs. These cases have been described by Rilliet and Barthez under the term *Rougeolé Anomale.* I have seen a number of cases of this variety, and I noticed that before the eruption appeared the symptoms were severe and of a strongly meningeal type; indeed, I have seen cases like this diagnosed tubercular meningitis.

(3) The eruption, in some cases, does not disappear on pressure, as it should do. This is due to minute hæmorrhages into the skin, which delay the disappearance of the spots; it is not otherwise of any serious import.

The fever and catarrhal symptoms remain at their height, or may become intensified, until the rash begins to fade, which it does in from twenty-four to forty-eight hours after its first appearance, when the disease enters the next stage, or—

Stage of Decline.—The eruption now rapidly fades, and with it the fever subsides, some bronchial catarrh being the last symptom to disappear; the appetite returns, and convalescence

is established. This very regular and well-marked course may be departed from; therefore note the following modifications:—

(1) There may be absence of the premonitory and catarrhal symptoms, or they may have been so slight as to have been overlooked. These cases are called **Morbilli sine Catarrho.**

(2) The catarrhal and premonitory symptoms may be well-marked, but the characteristic eruption may be of the scantiest nature or absent altogether. These cases are called **Morbilli sine Exanthemate.**

(3) Cases may occur where evidences of extreme depression are present early in the attack, such as very small, frequent, and feeble pulse; rapid respiration; dry, brown, and thickly furred tongue; very high temperature (106° F.), with cold, clammy extremities; the child is anxious, restless, and somnolent; and there is a marked tendency to convulsions and coma. In many of these cases, the patient is carried off before the eruption has time to appear, or, if it does appear, it is seen to be imperfectly developed, and of a dark-red or violet hue, and the skin generally is thickly spotted with petechiæ. These cases are called **Black, or Malignant Hæmorrhagic Measles,** and are usually fatal.

Complications.—These are numerous, and have been arranged by Hebra as follows:—

Of the Stage of Invasion.—Diarrhœa, or severe vomiting, epistaxis (severe); spasmodic laryngitis (false croup), or laryngismus stridulus.

Of the Stage of Eruption.—Capillary bronchitis; diphtheria; and pneumonia, (catarrhal or croupous).

Of the Stage of Decline.—Glandular affections; acute miliary tuberculosis; acute Bright's disease; otitis; cancrum oris; gangrene of the vulva; and many eye affections.

Sequelæ.—All the above complications may be reckoned under this head. Whooping-cough is very common soon after measles.

Measles is justly dreaded, in consequence of its strong tendency to kindle any lurking tubercular or scrofulous taint, as seen in the frequency with which it is followed by suppura-

tion of glands, or by one or other of the tubercular diseases, and notably acute tuberculosis.

Diagnosis.—1. *From Rötheln, German Measles, or Epidemic Rose Rash.*—In this disease the eruption appears in from twelve to twenty-four hours; it is non-crescentic in its arrangement; it is lighter in colour, and much less papular. The general symptoms are much milder, especially the catarrh and coryza; and the temperature falls before the rash begins to fade.

2. *From Febris Rubra, or Scarlatina.*—In this disease the period of incubation is much shorter—from 24 hours to three days; there is marked sore throat; the catarrhal symptoms are very slight or absent; and the eruption is brighter in colour and more uniform. The temperature of scarlatina is higher and the pulse very quick.

3. *From Variola, or Small-pox.*—In this disease the eruption is more raised, is harder, and more resisting to the feel (shotty): catarrhal symptoms are slight or absent; and the temperature is higher. The symptoms abate very much when the rash appears; in measles they increase. If, on stretching a portion of the skin between the fingers and thumb, the papule becomes impalpable to the touch, the eruption is caused by measles; if the papule is still felt when the skin is drawn out, it is the result of small-pox. This is called the Grisolle sign.

From Varicella, or Chicken-pox.—In this disease the catarrhal symptoms are absent, and the general symptoms very mild. The vesicles are conclusive.

From Typhus Fever.—In this disease the catarrhal symptoms are absent; the eruption is darker in colour, and passes through a macular and petechial stage. Measles usually attacks the children first in a household; typhus usually attacks the adults first.

Prognosis.—In estimating the chances of recovery in any given case, take into account the following points:—

(1) The character of the epidemic, as to whether it is a severe or mild type of the disease.

(2) The previous state of health of the patient, and especially constitutional tendencies.

(3) The care and attention the case will receive.

(4) The presence of complications, especially pulmonary.

Treatment.—Isolate the case on the first appearance of catarrhal symptoms; remove all carpets, curtains, etc., and disinfect the room; suspend a sheet over the inside of the door, and keep it moist with a solution of carbolic acid (1 in 40).

Having made these arrangements, let the child be put in bed, and see that there is thorough ventilation without any draughts; let the temperature of the sick-chamber be maintained at 65° F., and the light be subdued by drawing the blinds. Sponge the body every morning, using tepid water coloured with Condy's fluid; wash and dry separately each part of the body, so as to avoid exposure to cold.

Let the diet consist of milk-food and light soups and puddings, and for drink give home-made lemonade, toast-water, barley-water, or plain filtered water. For medicines, give a dose of calomel to begin with, and a diaphoretic with a little paregoric to keep the skin and kidneys acting and to relieve the cough, such as ℞. 19.

Little more than this is required for ordinary cases, and complications must be met and treated on ordinary principles as they arise. Especial care must be exercised during convalescence, and everything done to brace up the system so as to combat any tendency to tubercular or scrofulous sequelæ.

A salt-water bath, followed by brisk rubbing, should be given each morning during convalescence; the clothing should be warm, with flannel next the skin; ℞ 20 or ℞ 21 three times daily, and a teaspoonful of cod-liver oil after food in milk will favour convalescence. A visit to a bracing seaside resort will go far to completely restore health.

GERMAN MEASLES. — *Synonymes.* — Rötheln, Epidemic Roseola, Rubella.

Definition.—An acute, specific, infectious fever, characterized

by the eruption of rose-red spots, which are first seen on the face, and extend rapidly to the limbs and body.

Symptoms.—Incubation.—Eight to twenty-five days, during which time there are no symptoms.

Eruptive Stage.—This stage is preceded by slight febrile symptoms, malaise, and poorliness; usually in twenty-four hours the characteristic rose-red rash appears, bearing some resemblance to both scarlatina and measles. The papules are slightly raised, disappear on pressure, and do not group themselves as in measles.

The general symptoms are mild, and there may be little or no rise of temperature. The throat is generally sore and complained of, especially at the time the rash appears, but it subsides in a few days, to reappear after a short interval. This return of the throat trouble is said to be characteristic of rötheln. Occasionally, the glands of the neck are painful and swollen. Rötheln does not protect from measles or scarlatina, nor does either of them protect from it.

Diagnosis.—1. *From Measles.*—By the lower temperature, the non-crescentic form of the rash, and much shorter eruptive stage.

2. *From Scarlatina.*—By the mildness of the symptoms, and especially the absence of vomiting, the low range of temperature, and the absence of the strawberry tongue; the eruption is rose-red, not dusky-red, and the pulse is not much accelerated.

Treatment.—Keep the child warm and in bed for a day or so; give a dose of calomel or castor oil, and afterwards a saline diaphoretic every three hours, such as ℞ 19. If debility should remain after the attack, give iron tonics and quinine, with change of air.

SCARLATINA.—*Synonymes.*—Scarlet Fever, Scarlet Rash, and Febris Rubra.

Definition.—Is an acute, epidemic, infectious, and contagious disease, characterized by an eruption, which appears from a few hours after infection to two, three, or even four days; by sore throat, more or less severe; and by feverish symptoms of varying severity.

Etiology.—Scarlatina is very infectious and contagious, being readily transmitted from one person to another by the exhalations from the body, and more especially by means of the desquamated epithelium. The nature of the contagion has not yet been determined, but there is reason for believing it to be due to a scarlatinal microbe. The contagion possesses extraordinary tenacity and vitality, and may be carried about in endless ways, such as by clothing, furniture, toys, flowers, letters, all articles of food, domestic animals, etc.

The patient is less dangerous during the first few days, as a source of infection, than afterwards, and particularly during the period of desquamation. The disease is most common in children between the first and second years, 64 per cent. of all cases occurring before the end of the fifth year. It is most prevalent in autumn and in winter. A mild case may give rise to the most virulent type in another person, therefore the necessity of thoroughly isolating every case, even the mildest. It has been noticed that epidemics of scarlatina often follow closely upon epidemics of measles.

Clinical History.—Three forms of scarlatina have been generally accepted—

1. *Scarlatina Simplex*, in which the disease runs through its stages without complications or sequelæ, and terminates in complete recovery.

2. *Scarlatina Anginosa*, in which the throat suffers severely, and the cervical glands are much enlarged.

3. *Scarlatina Maligna*, marked by great and early prostration and typhoid symptoms.

1. **Scarlatina Simplex.**—*Symptoms.*—(1) *Stage of Incubation.*—After exposure to infection, a certain time elapses before the outbreak of symptoms declaring the disease, and this time varies from twenty-four hours to three or four days; it has not been shown ever to exceed seven days. This is important, for *note* that one who has been exposed to infection, and does not sicken *within a week*, may be pronounced safe. Murchison writes in regard to this stage thus—

(*a*) The duration of the incubation stage may be only a few hours.

(*b*) In a large proportion of cases it probably does not exceed forty-eight hours.

(*c*) It very rarely exceeds seven days.

This stage may present no symptoms, or towards its close there may be headache, malaise, lassitude, and loss of appetite.

(2) *Stage of Invasion.*—The attack begins abruptly, *as a rule*, with shivering, vomiting, diarrhœa, and sore throat, or a slight convulsion may be added; there is thirst, with furred tongue, red at the tip and edges (strawberry tongue); the pulse is very rapid, 140 or 160, and this extremely rapid pulse is regarded by many as pathognomonic. The skin is hot and dry; the tonsils, soft palate, and uvula are deeply injected; and the glands in the neck are often hard, swollen, and tender at this time. The mucous membrane of the nose and eyelids is seldom or never affected; in other words, there is no coryza, thus giving an important diagnostic symptom from measles.

(3) *Stage of Eruption.*—The rash appears first about the neck and shoulders and over the forehead, rapidly extending to the trunk and extremities. 'It appears as scarlet points not elevated above the surface; these points are closely set, and their borders, which are paler than the centre, unite so as to produce, when fully developed, the appearance of a pink ground dotted thickly over with scarlet points' (Eustace Smith). Sir Thomas Watson compared the colour to that of a boiled lobster. When the finger-nail or a pencil is drawn across the reddened surface, *a white line* is developed, which lasts for a few seconds, and is due to the increased contractile power of the superficial arterioles; this white line is called the 'Tache Scarlatinale,' and is of considerable diagnostic value: it was first pointed out by Bouchut. The rash disappears on pressure, and is best seen on the abdomen and inside of the thighs. As a rule, the eruption is general over the whole surface, but occasionally it is quite patchy, having the spots larger than usual and slightly elevated; in fact, may simulate the eruption of measles. The

rash reaches its height on the third or fourth day, by which time there is considerable irritation and some swelling of the skin. Dr. Moore, of Dublin,* says the rash fades gradually, leaving persistent blood-coloured (petechial) lines in the folds in front of the elbows, in the axillæ and popliteal spaces, which lines may be of use for diagnostic purposes. The condition of the throat becomes worse during this stage, and is seen to be *uniformly* red and swollen, with enlarged glands and sometimes ulceration; as a rule, the throat improves with the fading of the eruption. The urine is scanty and high-coloured, and at this time should be free from albumen. The temperature rises through both stages until it reaches 104° and quite often 105° F. Towards the end of this eruptive stage, which lasts two or three days, the rash fades, and the temperature returns gradually to normal, when desquamation begins. This process of peeling depends somewhat on the intensity of the rash, beginning earlier in those cases where the eruption has been profuse and accompanied by miliaria, and being delayed in those where the eruption has been slight The skin begins to fall in fine branny scales over the body, and in coarser scales over the hands and feet; in these latter parts large patches of epidermis may be shed, forming gloves of skin, which may even include the nails. Desquamation may occupy a variable time—from ten days to as many weeks—and it ought to be facilitated as much as possible by frequent warm baths, together with scrubbing and oiling. With the completion of desquamation, convalescence is usually established.

The nails are sometimes shed along with the epidermis, but more often their nutrition is interfered with for a time, and they show this by the formation of a transverse groove upon them (atrophic groove). At this stage of the disease, albuminuria should be looked for. Relapse or recrudescence is rare.

2. **Scarlatina Anginosa.**—In this form the onset is more severe; the throat is very painful from the beginning, so that swallowing becomes a very real difficulty. Inspection reveals

* 'Eruptive and Continued Fevers.'

the tonsils swollen, of a deep-red or violet hue, and studded with little white specks of exudation; these are the spots where ulceration takes place, or the spots may extend or coalesce, causing wide destruction of tissue. The glands at the angles of the jaws are much swollen, hard, and tender. The child presents all the symptoms of very grave illness, the face being dusky, and the pulse very small and quick. There are sordes on the teeth and lips; the breath is very offensive; there is a discharge of muco-pus from the nostrils; the tongue is dry and brown; œdema of the glottis may now set in, or a typhoid state may be reached. These anginose cases are very fatal.

3. **Scarlatina Maligna.**—Of this there are two varieties: (1) Ataxic Scarlatina, and (2) Hæmorrhagic Scarlatina.

The first variety is ushered in with rigors or convulsions, violent and persistent vomiting; very rapid, small, and running pulse; very high temperature, 106° to 108° F., and higher temperatures have been recorded. If the patient survives the first outbreak, it is only to sink into a state of coma, with dusky face and cold extremities. The rash, if it appears at all, is badly developed and of a dusky colour.

The second variety presents the same severe symptoms, but in addition there is a violet colour of the rash, with points of hæmorrhage freely scattered over the surface of the body; further hæmorrhages take place from the gums, nose, colon, and urinary passages. Thomas has noted pleuritic and pericardial hæmorrhage in these cases.

Pathology.—Recent experiments point to the existence of an organism peculiar to scarlatina, which has been found in the blood and desquamated epithelium. The changes found after death will vary with the time at which death took place. The blood is dark in colour, and contains excess of white corpuscles. The throat presents œdema, congestion, and ulceration. The cervical glands are enlarged, hyperæmic, and softened, and often there is diffuse cellulitis. The kidneys present the appearance of acute Bright's disease; the heart presents degeneration of its fibres, the result of the hyperpyrexia; and empyema, sup-

puration into joints, periostitis, and necrosis of bones, cancrum oris, and suppuration in the middle ear, may be added.

Complications.—(1) *In the First Week.*—Diphtheria, diarrhœa, and coryza.

(2) *In the Second Week.*—Bronchitis, pneumonia, rheumatism, and all serous inflammations, such as endocarditis, pericarditis, pleuritis, peritonitis. If pleurisy occurs, the effusion very quickly becomes purulent. The following varying opinions are held regarding the etiology of scarlatinal rheumatism: First, that it is a true rheumatism, occurring quite independently of the scarlatina. Second, that it is a septic arthritis, arising from putrefying matters carried from the throat, ears, or other parts. Third, that it is a further manifestation of the scarlatinal poison, which has fastened on the joints, just as it may and does fasten upon the kidneys or throat.

(3) *In the Third Week.*—In this week the patient is especially liable to kidney mischief. At this time, too, we get otitis, gangrene, and abscesses. Albuminuria does not bear any relation to severity of attack. The onset of nephritis is announced by the usual signs of scanty, smoky urine; puffy-looking face; swollen eyelids; and general œdema; vomiting and headache are prominent and early symptoms.

Diagnosis.—(1) *From Erythema.*—In this disease there is slight fever, no sore throat or swelling of the cervical glands; no kidney affection, and the eruption is absent from the neck and extremities.

(2) *From Small-pox*, which has often at the very beginning an erythematous rash, so as to make the illness look very like scarlatina, and, moreover, the throat may be sore; to guard against mistake here, bear in mind the prevailing epidemic, note the pulse-rate and temperature, examine the throat and cervical glands, and watch the case closely.

(3) *From Measles.*—By the early appearance of the rash; by the absence of coughing and sneezing; the early sore throat the strawberry tongue, and glandular swellings of scarlatina.

(4) *From Rötheln, or German Measles.*—By the slow pulse, trifling sore throat, and absence of kidney affection or other complications of rötheln. Remember the prevailing epidemic, and that in rötheln the rash lasts about twelve hours.

(5) *From Erysipelas.*—By the rash being localized and not punctate; by the surface being smooth; and by œdema of the connective tissue; bullæ often occur. In scarlatina, desquamation may occur in places where there has been no eruption; this never occurs in the case of erysipelas.

(6) *From Acute Tonsillitis.*—By the absence of vomiting, rash, and albuminuria; generally speaking, tonsillitis is more marked on one side than the other; in scarlatina both sides are equally affected.

Prognosis.—Always give a guarded opinion, no matter how mild the attack. The mortality is much higher in children under five years.

Treatment.—Isolate promptly, and send the other children away from home, if possible. The following drugs have been used from time to time as prophylactics, but they are of questionable value: belladonna, arsenic, and sulphurous acid. Isolation is the only effectual prophylaxis of scarlatina, but it must be thorough, and kept up until complete desquamation is over. Don't let a child mix with others (go to school, etc.) sooner than two months, and no child should be allowed to mix with others while scarlatina is in its own home.

However mild the symptoms, the child must be kept in bed in a well-ventilated room, and the same measures used as advised in speaking of measles as to disinfection, diet, and drinks. For the heat and irritation of the skin nothing is so soothing and grateful as sponging the surface of the body with tepid water; after the sponging, anoint the body with carbolic oil (1 in 50), and later, when desquamation sets in, the strength of the oil may be doubled (1 in 25).

It is usual, in ordinary cases, to give a diaphoretic, such as ℞ 19, every three hours. Many other lines of treatment are recommended, such as the routine use of the biniodide of

mercury, strongly advocated by Dr. Illingworth, 10 mins. of solution of the perchloride of mercury with ½ gr. of iodide of potassium in a teaspoonful of water every three hours, and Dr. Eustace Smith advises the addition of ½ gr. of chlorate of potash to each dose. The mineral acids find favour with many, notably the Hydrochloric (Swedish method). Carbonate of ammonia, eucalyptus oil, chlorate of potassium, sulphocarbolate of soda, sulphurous acid, quinine, and benzoate of ammonia and soda have all, in their turn, been vaunted as specifics.

Should the throat present severe symptoms, and the disease assume the anginose form, give ice to suck, and apply hot linseed poultices or cold compresses to the sides of the neck. Should there be ulceration of the tonsils, many local applications are recommended, such as solution of nitrate of silver 20 grs. to the ℥ j. applied three times daily. It will, I think, be found very difficult to paint the painful and swollen tonsils of a young child, and I have derived more benefit in practice from the spray. The following is a good spray in these cases, and may be used frequently :—

℞ : Glycerin. boracis . . . . . ℥ iv.
Glycerin. acid. carbolici . . . . ℥ iii.
Aqua rosæ ad . . . . . ℥ x
Misce bene.

This may be frequently sprayed into the throat.

Many other substances may be used in this way, as corrosive sublimate (with care), sulphurous acid, iodine, permanganate of potash, tincture of iron, and chlorate of potash. A good local application in older children is to paint the throat three times daily with the following:—

℞ : Glycerin. acid. carbolici . . . . . ℥ i.
Tr. iodi . . . . . ℥ ii.
Misce.

as recommended by Ashby and Wright.

In addition, the patient will require increased nourishment

and stimulants, such as strong beef-tea and essences (Valentine's), eggs and cream and brandy; and for medicines quinine and iron or carbonate of ammonia.

Treatment of Complications.—Obstinate vomiting: Give ice to suck, and nothing else.

Diarrhœa: Give a dose of castor oil or rhubarb and soda to begin with, and after that chalk mixture or oxide of zinc.

Hyperpyrexia, by antipyrin, antifebrin, or quinine. The cold bath is the best means, and may be used at a temperature of 70° F., and the child kept in it till shivering is produced. Children bear high temperatures well, as a rule, so that you will do well to be guided, in giving the cold bath, more by the general symptoms than the thermometer.

Rheumatism: Give salicylate of soda, and wrap the joints in cotton wool.

Bright's disease you must be always on the look out for, by examining the urine frequently, and, when you detect albumen in any considerable quantity, proceed at once to treat the disease on general principles (see Bright's Disease).

Even in mild cases the child should be kept in bed between blankets for three weeks from the beginning of his illness, and in his own room for a week longer. When desquamation is completed, a visit to the seaside will do much to restore health, together with iron tonics and cod-liver oil.

In the malignant variety treatment is scarcely ever of any avail, the child dying in a day or two.

SMALL-POX.—*Synonyme.*—Variola.

Definition.—Is an acute, specific, infectious, and contagious disease, characterized by the eruption of a papular rash, which passes through the stages of vesicle, pustule, and scab.

Owing to vaccination, the disease is greatly modified nowadays, and we seldom see in the child a severe form of the affection, but more often what is known as varioloid or modified small-pox. This modified form, however, is as dangerous from an infective point of view as the true disease. One attack, as a rule, protects against a second.

Etiology.—Small-pox is eminently a contagious disease, and it thrives, irrespective of soil, wherever its virus is carried, but the season of the year seems to favour its outbreak, it being most commonly noticed in the late autumn and early spring. Cocci have been found in the fresh lymph of human and cow-pox, and in the pustules of true small-pox; they are regarded as the active principle of vaccine lymph, and have been called the 'Streptococcus Variolæ.' The poison may be carried about in various ways, as by the air, on clothes, etc., and the chief stages of infectiousness are those of the earliest period of suppuration, and of desiccation or scabbing, though it must not be forgotten that the disease is infectious before the eruption comes out.

Symptoms.—Incubation.—Nine to fifteen days, or in inoculated cases eight days. There are no symptoms more than a little malaise towards the close of this stage.

Invasion.—Chilliness; fever; vomiting; and severe pains in the head, back, and limbs; thirst; loss of appetite; furred tongue; grinding of the teeth; and quite often convulsions. The violence or otherwise of the symptoms in this stage is not to be looked upon as a forecast of a severe or mild attack. This stage lasts forty-eight hours, during which time the temperature continues to rise. During this stage it is quite common for erythematous rashes to appear very like scarlatina, and these rashes are more frequently seen in the modified form of the disease, thus giving rise to much difficulty in the diagnosis; they have been called 'Roseolæ Variolosæ,' and Hebra and Trousseau remarked that the parts affected by this rash afterwards remained free from the small-pox rash. Petechiæ may be developed during this stage, and are of bad omen. This stage lasts three days generally, but it may be as short as two or as long as five.

State of Eruption begins generally on the third day, in the form of small, red papules, which are first noticed in children on the chin, nose, and forehead, and then quickly spread to the face generally. They are next seen on the wrists, and,

after twenty-four hours, spread to the chest, arms, trunk, and lower limbs. In severe cases they appear as soon as the second day; in mild cases as late as the fourth day. The pustules have a tendency to group themselves in threes and fives. The papules feel hard and resistent to the touch (shotty). They are vesicular on the third day of eruption, pustular on the fifth day, and umbilicated when the vesicle is matured; suppuration is reached on the sixth day of eruption and ninth of the disease, when the skin around the pustules is swollen and œdematous. The pustules ripen and enlarge for the next three days, during which time the temperature rises, and the suffering, from constant smarting pain and itching, is considerable.

Stage of Desiccation sets in about the tenth day, and gradually the pustules are seen to dry up, the secretion forming into scabs; the swelling disappears from the intermediate skin, and the features show signs of returning. After this, desquamation sets in, the scabs being thrown off, leaving underneath a white puckered scar. The temperature, having risen steadily until the appearance of the eruption, suddenly falls, and remains sub-febrile for twenty-four hours, when it again begins to rise, and continues to do so until maturation is complete. This is called the 'secondary' fever, and its intensity varies with the severity of the attack.

Varieties.—**Discrete, or Distinct,** in which the pustules are few in number, separate, and distinct.

Confluent, in which the pustules are numerous, and unite the one with the other, or flow together.

Corymbose, in which the pustules are confluent, in patches or clusters.

Malignant, or Hæmorrhagic, in which bleeding takes place into the pustules, as well as from the various mucous surfaces; general symptoms are very severe, and the prostration profound.

Complications and Sequelæ.—Boils; abscesses; gangrene; acute cellulitis; otitis; ulcers of the cornea, etc.; erysipelas;

pyæmia; pleurisy; pneumonia; bronchitis; peri- and endo-carditis; laryngitis; and œdema of the glottis; diarrhœa is common and serious; acute nephritis is also seen.

Diagnosis.—From Measles.—(See latter disease.)

From Varicella.—By the following points, taken from Dr. Moore's work on 'Fevers:'—

(1) Chicken-pox has often prevailed epidemically without small-pox; varioloid or modified small-pox has never been prevalent without coincident small-pox.

(2) Very young childen are attacked with chicken-pox; whereas small-pox usually shows itself in adults.

(3) Vaccinated children readily take chicken-pox; not so small-pox, even in the modified form.

(4) Children who have had chicken-pox may contract small-pox, even soon afterwards.

(5) The two diseases may coexist.

(6) The virus of chicken-pox never gives rise to small-pox; and the converse is equally true.

(7) Chicken-pox is non-inoculable; whereas small-pox is notoriously so.

(8) The eruption of chicken-pox appears in twenty-four hours; that of small-pox not till the third day.

(9) The febrile symptoms continue after the eruption appears in chicken-pox; those of small-pox subside.

(10) In chicken-pox the spots come out in successive crops; this is never seen in small-pox.

(11) The spots in chicken-pox are unilocular, and collapse on being punctured; the spots in small-pox are multilocular, and do not collapse on being punctured.

(12) In chicken-pox the eruption is very irregular, and appears over the body generally; in small-pox it appears in groups of threes and fives, and is always seen on the limbs.

(13) The papule in chicken-pox is soft, and disappears on stretching the skin; in small-pox it is hard and shotty, and does not disappear on stretching the skin.

Prognosis.—Must be guarded, as the mortality is very high

up to ten years. Young children usually succumb to even the discrete variety.

Bear in mind the type of the epidemic, and the previous state of the child's health; for weakly children and those of a scrofulous or tubercular diathesis have their chance of recovery lessened. Previous successful vaccination is an important factor, the mortality falling from 50 per cent. in the unvaccinated to 2·3 per cent. in the efficiently vaccinated.

Treatment.—The usual preliminaries detailed in measles and scarlatina are here stringently to be enjoined, such as isolation, disinfection, the preparation of the sick-chamber, etc. Cooling drinks will be urgently called for, and ice to suck is grateful. For the irritation of the skin, tepid sponging is very soothing, and the bed and body linen should be very frequently changed. Open the bowels with a dose of calomel, and give a diaphoretic (℞ 19).

For the more severe varieties the diet should be liberal, and consist of milk, strong beef-tea, yolks of eggs, etc.; stimulants will be required, and the brandy-and-egg mixture supplies a very good form. For the treatment of the eruption with a view to the prevention of pitting, many different methods have been adopted, such as applying carbolic oil 1 in 30; painting with tincture of iodine; cold compresses; glycerine and water, or the glyceride of starch.

When the pustular stage is reached, give iron and quinine, and as much nourishment as the patient can digest.

CHICKEN-POX. — *Synonymes.* — Varicella, Waterpock, or Glasspock.

Definition.—Is an acute, specific, infectious disease, characterized by a short febrile period, and the eruption of clear vesicles over the body, which appear in successive crops, and disappear by desiccation in from three to five days.

It is essentially a disease of children, being most common from six months to five years.

Symptoms.—Incubation.—Is usually fourteen days. Towards the end of this period the child is restless and sick.

Invasion.—Child is feverish, restless, and peevish.

Stage of Eruption.—Within the next twenty-four hours the eruption makes its appearance, in the form of small, rosy-red spots, slightly elevated, and which disappear on stretching the skin. These spots become vesicles within the next twelve hours, and are often surrounded by a faint red or pink areola. The vesicle in a day or two bursts and forms a scab, which falls off in a few days, leaving no scar. The general symptoms are very mild, and the disease is usually at an end in a week. Mr. Hutchinson has drawn attention to a variety he has named 'Gangrenous Varicella.' He says it is not confined to the weak and ill-nourished, but is most common in them. It is associated with the tendency to spontaneous gangrene. The vesicles, instead of drying up, get larger and become black; deep ulcers result, and a dusky blush surrounds them. These cases are very fatal.

Diagnosis.—Remember the following points about chicken-pox: There is no prodromal fever; no pain in the back; no vomiting; the eruption appears *within twenty-four hours;* the vesicles are clear, not umbilicated, unilocular, *and come out in crops;* they are not shotty to the feel, and disappear on stretching the skin.

Prognosis.—This is always good, except in the gangrenous variety. It is well to remember that chicken-pox seems to leave behind it a delicacy of skin, and it is often followed by eczematous or itching skin-eruptions, which are slow in responding to treatment.

Treatment.—Little treatment is required, but many give a diaphoretic while there is any pyrexia, and confine the child to bed for a few days. Be watchful that the child does not scratch itself, and sponging with tepid water, and afterwards applying cold cream, will go far to prevent this itching. During convalescence, iron, quinine, and cod-liver oil will hasten recovery, and a change to the seaside will be followed by much benefit.

ENTERIC OR TYPHOID FEVER.—*Definition.*—Is an acute

continued fever due to a specific poison. It is characterized by gastro-intestinal catarrh, fever, varying in duration from ten to twenty days, prostration, wasting, and an eruption of rose-coloured spots, which are slightly raised, and disappear on pressure. These spots come out about the eighth or ninth day, and are developed in crops. The disease may be generated *de novo* (Murchison).

Etiology.—Predisposing Causes.—Accumulations of decomposing animal matter; individual susceptibility; and early life.

Exciting Cause.—The entrance into the system of the pathogenic germ called the *Bacillus typhosus* by Eberth. The disease is communicated from one to another by means of water, milk, etc.; but there can be little doubt that, through close contact with the patient, the disease may be contracted.

Morbid Anatomy.—Hyperæmia and swelling of the mucous membrane of the small intestine; of the solitary and agminated glands (Peyer's patches); and of the mesenteric glands. In mild cases nothing more serious than this takes place; but in others the swelling increases and ulceration is the result. The ulcers are elliptical in form, with margins thick and sharply defined, and their long diameter parallel with that of the intestine; they vary in depth according to the severity of the disease, and may have the muscular coat for their floor, or, in bad cases, the peritoneum. They begin to heal about the end of the third week, and do so without causing any contraction of the bowel.

Symptoms.—Incubation.—Seven days to a fortnight.

During the First Week.—Frontal headache; loss of appetite; furred tongue; fever; bowels either confined, relaxed, or irregular, with light-coloured motions; pains in the limbs; restless sleep; epistaxis; and there may be vomiting and cough, due to slight bronchial catarrh.

During the Second Week.—The spleen is enlarged and tender; the abdomen is uniformly swollen and a little tender, especially in the right iliac fossa, with gurgling at this part; usually the bowels are relaxed; but quite as often there is constipation in children. The headache now subsides, and delirium takes its

place at night; the expression is dull, decubitus dorsal, with flushed cheeks; and the patient is indifferent to its surroundings, but not in any apparent suffering. Thirst is considerable; the skin dry; temperature variable from 101·5° to 104° F., rising towards evening and falling again in the early morning; but it is necessary to bear in mind that throughout the attack the highest temperature may be registered in the morning (inverted typhoid); the catarrh increases, and the cough gives trouble. About the eighth day the eruption should appear on the abdomen, chest, back, and limbs; but it is altogether absent in a fair number of cases (25 or 30 per cent.); the spots are small, elevated, and of a delicate rose tint, varying in size from half a line to a line and a half, and disappearing under pressure; their number varies, and they come out in successive crops, each spot lasting two or three days. All the symptoms are aggravated during this week.

During the Third Week.—The general symptoms now usually show an improvement, and in mild cases the temperature returns to normal about the fourteenth day. In more severe cases the swelling of the abdomen increases; deafness is common; the pupils are dilated; and there may be retention of urine; hæmorrhage from the bowel may make its appearance in varying quantity, and add greatly to the gravity of the case; or perforation and general peritonitis may occur, as shown by the disappearance of the liver dulness (Niemeyer).

Relapses are far from uncommon, and are, as a rule, shorter and milder than the primary attack.

Convalescence is tedious, and the patient is enfeebled intellectually as well as physically (West).

Diagnosis.—From Acute Tuberculosis.—By the course of the temperature, the absence of spots and tympanitis, and the natural size of the spleen in tuberculosis. The expression of the patientin tuberculosis is always one of suffering; and miliary tubercles may be detected in the choroid; a careful examination of the chest should be practised in every case.

From Tubercular Meningitis.—By retraction of the abdomen

and the doughy feel of the abdominal walls; the slow irregular pulse; and the sighing breathing; the intolerance of light and sound, and, later, by squint, irregularity of the pupils, or ptosis; the temperature may be normal, and is rarely above 101° F. Note: Meningeal symptoms may be strongly marked in the early stage of typhoid.

Acute Gastric Catarrh, in scrofulous subjects, may set in with marked typhoid symptoms; but usually they are more severe than in early typhoid, and subside in a few days; there is no enlargement of the spleen or abdomen.

Simple or Tubercular Ulceration of the Bowels may be mistaken for enterica; but the temperature is less elevated, and there is absence of rose-rash, enlargement of the spleen, and pulmonary catarrh.

Prognosis.—Is always good in children.

Complications.—Epistaxis; hæmorrhage from the bowels (third week); bronchitis; pneumonia; pyæmia; tuberculosis; perforation of the bowel, and peritonitis. This last is the one most to be dreaded, and when it occurs it is almost universally fatal.

Treatment.—The nursing of this disease is of the first importance. Give the same directions as in the other fevers, as to isolation, sponging, dieting, and it is important that the patient be put to bed at once. A flannel binder round the abdomen is good practice. Avoid giving solids or farinaceous foods and fruit; the latter have a tendency to ferment and cause acidity. Plenty of good sweet milk and light soups will be sufficient. Remember, if the patient is very thirsty and is inclined to drink a large quantity of milk, to dilute it with barley, soda, kali, or plain water. If milk does not seem to agree well, you can try Benger's or other food, or you may peptonize the milk. When the temperature falls to normal, don't give way to the demands of the patient for something to eat, but continue your fluid diet for seven or ten days, after which small quantities of fish and fowl may be tried, carefully watching the temperature all the time. If any rise should occur, return at once to the fluids.

In ordinary and mild cases no medicine is necessary, though a diaphoretic for the first week, and hydrochloric acid and quinine during the remainder of the attack, are generally given. Stimulants are not often called for in children.

Hyperpyrexia should be treated with quinine, antipyrin, cold sponging, the cold pack, or the cold bath.

Excessive Diarrhœa, by restricting the fluids and giving some astringent, with starch and opium enemata, or Dover's powder, etc.

Sleeplessness and Delirium, by small doses of nepenthe, chloral, or bromide; cold or tepid sponging; or the cold bath.

Hæmorrhage, by gallic and sulphuric acids; turpentine and opium; Ergotin, by hypodermic injection, and an ice-bag to the abdomen; restrict the amount of milk given, and substitute strong meat-essences.

Peritonitis will call for full doses of opium, and the abdomen may be smeared with extract of belladonna and glycerine.

Constipation is best treated by enemata of glycerine, or glycerine suppository, or a teaspoonful of castor oil internally; sometimes a teaspoonful of castor oil smeared over the abdomen, or applied on a slip of flannel, will act well. Constipation during convalescence is due to atrophy of the muscular fibres of the bowel, and will be best treated by strychnine and the mineral acids.

TYPHUS FEVER.—This disease may attack children during the prevalence of an epidemic. It runs a mild course in them, and calls for the same treatment as in the adult.

CHAPTER VII.

WHOOPING-COUGH, ETC.

WHOOPING-COUGH.—*Synonymes.*—Pertussis, Chin-cough.

Definition.—Is an infectious disease, due to a specific poison, and characterized by malaise, fever, catarrh, and a hard, dry,

convulsive cough, which occurs in paroxysms. It is epidemic, and often follows closely on measles.

Etiology.—It occurs in epidemics; is highly infectious and contagious; is very common under two years; less so after ten, but it may be seen at all ages; it does not, as a rule, occur more than once in the same subject.

Symptoms.—(1) Prodromal stage; (2) Convulsive stage; (3) Stage of Decline.

1. This stage comes on gradually, with some fever; malaise; restlessness; peevishness; slight cough, *which gets worse towards evening and at night*; and some coryza. All these symptoms get worse, and advice is sought towards the end of this stage.

2. After a variable time, the character of the cough changes, the spasmodic, or convulsive, stage is reached, and with it the nature of the disease established; a number of short expiratory puffs are followed by a long inspiration, which constitutes the 'crow,' or 'whoop;' the number of paroxysms in the twenty-four hours is very variable, according to the severity of the attack; and it should be borne in mind that there is such a thing as whooping-cough without the 'whoop.' Epistaxis, hernia, prolapse of the bowel, may each and all be caused by the violent fits of coughing, and in the same way the eyes may be congested and swollen, the lips swollen and blue, and the countenance altogether changed during the height of the attack. Often the paroxysm ceases with the discharge of a quantity of viscid mucus; in vomiting, or, in severe cases, in general convulsions. The physical signs in the chest will be those of bronchial catarrh. The duration of this stage is very variable, according to the state of the child's general health, the nature of its surroundings, and the care in nursing it will receive.

3. This is a gradual fading away of the frequency and violence of the paroxysms, the cough losing its peculiar character; the whoop being less frequent; and there is a gradual return to the original catarrhal condition with which it started. Indiscretions in diet, or getting a fresh chill, will very likely light up the complaint again.

Pathology.—The vagus theory is now given up, but for a long time the disease was believed to be due to inflammation of this nerve or pressure on it by enlarged bronchial glands. The theory most accepted now is that it is caused by a bacillus, which has been obtained from the expectoration, and which produces the disease in animals. This same bacterium was found in the lungs and respiratory mucous membrane of children who died of pertussis, and M. Afanassieff considers it to be the true cause of the disease; he names it the *Bacillus tussis Convulsivæ.*

Complications. — Sub-lingual ulceration; hæmorrhages; vomiting; diarrhœa; pneumonia; bronchitis; emphysema and collapse of the lung; pleurisy; pericarditis; and laryngitis. Collapse of the lung is the most common, and is very serious. Like measles, whooping-cough often develops any latent tubercular or scrofulous taint.

Prognosis.—Bear in mind the following points: Is the epidemic mild or severe? The age of the child, and the care and nursing it will receive; the presence or absence of complications; the number and severity of the paroxysms.

Convulsions, and bronchitis with collapse of a portion of the lungs, are the chief things to be dreaded. In the absence of complications, and with proper care and nursing, a child of healthy constitution ought to get better. Rickety children are very bad subjects for whooping-cough.

Treatment.—In the first stage, is the same as for ordinary cases of bronchial catarrh, viz. keep in one room at a temperature of 60° F. Stokes's or other liniment or a poultice to the chest, and a dose of ℞ 19 every three hours. Directly any peculiarity in the cough is noticed, I can recommend the following, advised by Dr. Eustace Smith *:—

℞: Zinc sulphate	gr. $\frac{1}{6}$
Liq. atropiæ (B.P.)	♏ $\frac{1}{2}$
Glycerine	♏ xx.
Aq. ad	ʒ j.

Misce.

* On 'Disease in Children,' 2nd edit. p. 124.

This dose every morning and evening for two days, then three times daily. After a week the quantity of zinc is increased to ¼ gr., and still later to ⅓ gr. to the dose, and the liquor atropiæ may be increased to 1 or 2 min. in the dose at the same time. At the end of the spasmodic stage, change the zinc in the mixture to alum sulphate in 2 gr. or 3 gr. doses. ℞ 18 will be found useful at this time. Morphia is a good remedy.

Change of air is the best remedy when the whoop has disappeared, and it may be usefully combined with iron and quinine and cod-liver oil. All complications are to be carefully watched for, and promptly treated on general principles.

MUMPS.—*Synonymes.*—Parotitis, Cynanche Parotidea.

Definition.—A contagious, epidemic inflammation and enlargement of the parotid gland, acute in its origin and course, accompanied by febrile symptoms, and followed in some cases by abscess in the gland, but usually subsiding in a week or ten days, without leaving any trace.

This disease is rare in infants, being most often seen from the fifth year onwards; it seldom occurs a second time in the same subject; is usually epidemic, and is most commonly seen in the spring. The virus is contained in the patient's breath, and males are more frequently attacked than females.

Symptoms.—Incubation.—Fourteen to twenty-five days.

First Signs.—Languor; malaise; loss of appetite; fever; shooting pains in the parotid, increased on mastication; swelling of the parotid, which may extend to the sub-maxillary glands or to the other side of the face; the swelling increases for four or five days, and by it the lobule of the ear is drawn outwards and forwards; it then remains stationary for some days, when it begins to subside, and is usually gone in ten or twelve days from the onset; the temperature reaches 103° F. or upwards, and quite often there is great sickness and depression. After subsiding on one side, it may pass to the other, and go through the same course there, or the sub-maxillary glands may be chiefly those implicated in

the attack, the parotid getting off comparatively free. Remember the tendency this disease has to subside in the parotid and attack the testicle in boys, or the ovary, vulva, or breast in girls, and this, too, usually on the same side as the parotid affected.

Sequelæ.—Deafness; chronic enlargement of the gland; or suppuration and facial paralysis. The deafness is either catarrhal or nervous, the former passing off in a short time; the latter permanent and beyond remedy.

Prognosis.—Good. Atrophy of the gland may follow a severe case.

Treatment.—Confine to bed while the temperature is raised; give a dose of calomel, followed by a diaphoretic (℞ 19) every three hours. Locally warm applications are best, as poppy-heads, or linseed, or spongio piline. Glycerine and extract of belladonna may be smeared over the parotid, and if the pain is severe, a 20 per cent. solution of cocaine may be painted on. Give plenty of milk, beef-tea, and custard, and, should metastasis occur, treat in the same way.

DIPHTHERIA. — *Definition.* — Is an acute, contagious disease, which induces great anæmia and prostration; it is characterized by inflammation of various mucous surfaces, and the formation on them of a more or less tough, leathery, false membrane.

Etiology. — *Predisposing Causes.* — Childhood from twelve months to five or six years; certain constitutional peculiarities, as delicacy of throat, etc.; the scrofulous diathesis; cold and moisture; and the effluvium from foul sewers or cesspools.

Exciting Causes.—Contagion, which may be carried about on clothes, etc., drawn into the lungs with the air, or swallowed in contaminated articles of food, water, milk, etc.; imperfect sewerage, filth, and bad drainage are also frequent causes. The membranous exudation is highly contagious; it is of a whitish-grey colour, yellow in some types, and black or brown in the malignant form. Lœffler's D. bacilli are to be seen in little bulbs or masses embedded in the false

membrane; the bacillus remains local, and does not enter the blood, like that of anthrax. It is highly probable that during the growth of these bacilli a ferment is produced which is capable of digesting proteids, certain albumoses being formed, which act in turn as virulent poisons on the system. These albumoses are formed locally, and are then absorbed into the blood. The paralysis following diphtheria is the result of degeneration of the peripheral nerves, caused by the albumoses; it is a peripheral neuritis.

Symptoms.—Incubation.—May vary from a few hours to seven or eight days. It is usually two days, and seldom exceeds four. Cases may be divided into the mild, severe, and malignant forms.

Mild Form.—The child complains of sore throat, or, if too young, refuses to swallow; temperature, 101° to 102° F.; frontal headache; is languid and out of spirits; there is generally some pallor. On examining the throat the fauces are red and swollen; the uvula is enlarged; and on one or both tonsils a grey, tough-looking patch will be seen, usually occupying the anterior aspect. This patch may be a continuous layer, or may be composed of spots of false membrane scattered over the surface; but these spots soon coalesce. The glands at the angles of the jaws are enlarged and tender in all cases, and this is an early symptom.

The temperature often falls in three or four days in this form; the appetite returns; the membrane disappears; and the child often seems but little the worse for its attack; but even in these mild cases after ill-consequences may follow.

Severe Form.—The membrane spreads widely over the pharynx and to the nose; there is severe constitutional disturbance; or the disease may travel to the larynx, and place the child at once in serious danger. In this form the racking frontal headache is a notable symptom; swallowing is very painful; the face is pale and distressed; the fever is 104° or 105° F.; vomiting may occur at each effort to swallow, and the false membrane is thick, tough, and very coherent; the

breath is offensive, and a thin fœtid discharge escapes from the nostrils and forms crusts; the swelling and tenderness of the glands is very great; hæmorrhages may take place from the mucous surfaces; and the prostration is marked. Albuminuria occurs in about two-thirds of all cases; it usually appears on the third or fourth day, but in severe cases it may appear in twenty-four hours.

Malignant Form.—This shows itself very soon in the attack by a rapid rise of temperature to 105° or 106° F., with convulsions; pulse very small and feeble; eyes sunken and the complexion jaundiced; epistaxis and other hæmorrhages are common; and often there are extensive eruptions of purpura; the cervical glands and cellular tissue swell to a great extent; the prostration is complete; and the child dies in a low muttering delirum.

Complications. — Pneumonia; pericarditis; endocarditis; thrombosis of the heart; and peripheral neuritis.

Diagnosis. — The tough-looking grey membrane in the throat, the redness and swelling of the fauces, and the enlarged cervical glands are characteristic. The presence of albumen in the urine would support the diagnosis, and should always be looked for.

Prognosis.—Must always be guarded, no matter how mild the case. Bear in mind the following points: The nature of the prevailing epidemic; the age, for the younger the child the less chance there is of recovery.

Treatment.—Isolate and disinfect, as before advised. Put the child to bed; and remember that, as this is a markedly asthenic disease, its nourishment must be carefully looked after, and be of an easily digested and supporting kind. The further treatment may be divided into local and general.

Local.—In the use of these remedies we try to fulfil three indications: (1) To arrest the spread of the membrane; (2) to promote its removal; and (3) to prevent septicæmia.

1. To arrest the spread of the false membrane, many caustics may be rubbed in or painted on, such as nitrate of silver,

strong hydrochloric acid, tincture of the perchloride of iron; but this method has passed into disuse nowadays, and given place to the next.

2. To promote the removal of the false membrane, pepsin and papain may be dusted on. Lactic acid and lime-water may be applied, either as a spray or gargle, in the proportion of one part of the acid to eight parts of lime-water; carbolic acid 20 drops, and lime-water ℥ j. is another form of gargle or spray; liq. potassæ 20 drops to the ℥ j. of water; boracic acid 30 grs. to the ℥ j. of water; benzoate of soda ʒ j. to the ℥ j. of water, are all excellent.

3. To prevent septicæmia from absorption of putrid matters from the throat, it will be necessary to keep the throat as free as possible from discharges.

Lœffler advocates the following:—

℞: Corrosive sublimate . . . . gr. j.
Aq. rosæ ad . . . . . ℥ viii.
Misce.

This may be sprayed into the throat frequently. Or—

℞: Corrosive sublimate . . . . gr. ii.
Glycerine ad . . . . . ℥ j.
Misce.

may be brushed over the membrane occasionally. Carbolic acid ʒ j. in 10 ozs. of rosewater makes a useful spray or gargle. To these might be added a long list of others, but none will be found better. When the nostrils are affected they must be syringed out frequently with the carbolic acid solution, in addition to three times daily with the corrosive solution.

General.—Strong beef-tea, beef-essences (Valentine's), eggs, milk, stimulants as brandy and champagne; keep a careful watch on the strength in this very depressing disease.

Give tincture of the perchloride of iron freely, in glycerine, and rely on it. I believe it is by far the best remedy in this disease. Liq. hyd. perchlor. is often given with it.

LARYNGEAL DIPHTHERIA, OR TRUE CROUP.—When diphtheria attacks the larynx, the child is at once in serious danger. As a rule, it is due to the extension of the disease from the pharynx, though cases may occur where it is confined to the larynx.

Symptoms.—The extension to the air-passages takes place suddenly, and is announced by stridulous breathing; hard and harsh, clanging cough; hoarse voice; difficult breathing; or there may be attacks of dyspnœa; with livid face; the mouth is kept open; and the expression is one of great anxiety. The dyspnœa affects both inspiration and expiration, and the cough gradually becomes hoarse and whispering. The increased efforts to get breath cause a drawing-in of the lower portion of the sternum and ribs. The dyspnœa occurs in frequent attacks, varying from five to fifteen minutes in duration, and each attack is more severe than the other, so that gradually the child passes into a semi-asphyxiated state, with feeble pulse, rapid breathing, clammy and cold perspirations. The hands are carried to the larynx, and the child makes efforts as if to remove from thence some obstruction. If tracheotomy or intubation be not now resorted to, the child passes from drowsiness to stupor, and sinks quietly or in a last struggle for breath. As a rule, in this disease, from the time dyspnœa supervenes until death is seldom longer than twenty-four hours, unless relieved by tracheotomy or intubation.

Prognosis. — If either operation be performed in time, and the lungs are not implicated, recovery is possible. I have never seen a true case of this disease recover, and in my experience the operation gives but very temporary relief.

Treatment. — The same indications as in the pharyngeal variety as to nourishment, isolation, etc., must be followed. Steaming will be more necessary, but tracheotomy or intubation is the only hope. Directly the larynx becomes involved, do not delay on any account; in fact, it has been advised that in all pharyngeal cases it should be performed immediately the membrane is seen, in order to prevent the poisoned air passing over the

larynx. Some relief may be given by emetics of zinc sulphate or hippo wine; but the only reason for giving them should be the objection of the parents to have tracheotomy or intubation performed.

ERYSIPELAS.—Is an acute inflammation of the skin, having a marked tendency to spread at the edges. Its general symptoms are severe.

Cause.—*In babies*, it is seen when puerperal fever is prevalent, and is likely septic in these cases. *In older children*, it is the same disease as we are acquainted with in the adult. It has its origin in some skin-wound, however slight.

Symptoms.—*In Babies*, a patch of redness is seen around the umbilicus, accompanied by violent attacks of crying and high fever; the infant vomits everything; the fontanelle is depressed; and slight jaundice is common.

In Older Children, it usually begins about the nose, spreads to the face and head, and is accompanied by high fever, 104° or 105° F., and marked depression. It is often complicated with serous inflammation.

Treatment.—Isolate. Protect the inflamed surface by dusting with flour, and cover with cotton wool; give iron in large doses, and plenty of strong nourishment and stimulants.

CHAPTER VIII.

DISEASES OF THE RESPIRATORY ORGANS.

COLLAPSE OF THE LUNG.—*Synonymes.*—Atalectasis Pulmonum, Apneumatosis, or Fœtal Condition of the Lung.

Definition.—A condition in which the alveoli of the lung have not become filled with air at birth, but remain empty and collapsed. This is called *Congenital Atalectasis.*

Another form is that in which, after the respiratory fnnction has become established, a portion of one or both lungs becomes

collapsed as a consequence of disease. This is called *Post-natal Atalectasis.*

1. **Congenital Atalectasis.** — *Causes.* — Premature birth; feeble condition of the child itself, or of the mother; separation of the placenta; tedious labour, producing long compression of the cord; frequent and violent contractions of the uterus, which arrest the circulation in the placenta; and the presence of mucus, blood, or other fluid in the air-tubes.

Morbid Anatomy.—A collapsed lung is airless, shrunken, and depressed below the ribs; does not crepitate, and feels tough and resistant, like liver substance; as it is devoid of air, it sinks in water.

Symptoms.—The child makes only faint efforts at breathing; its skin feels cold, and a thermometer in the rectum marks 97° F.; the fingers and toes are blue-coloured; and the cry is faint; it is unable to suck; the pulse is hardly perceptible, and the fontanelle is deeply depressed.

Auscultation reveals little air entering the chest, and at the bases and along the borders of the lungs vesicular sounds may be entirely absent.

Percussion will give some dulness at the bases and along the borders of the lungs close to the spine.

Cases of this severity live but a few hours, but many others, not so extensive, may, by energetic treatment, recover.

Treatment.—Artificial respiration; the warm bath; rubbing the back with whisky; dashing cold water on the chest, are the means used when the child is born apparently lifeless. In less extreme cases it is very necessary that the child be kept warm; therefore keep it in a warm room, and roll it in cotton wool. If unable to suckle, it must be spoon-fed, and it should get five drops of brandy in a spoonful of the warm milk every hour. Stimulating liniments and the mustard bath are also serviceable.

2. **Post-natal Atalectasis.** — *Causes.* — Pulmonary catarrh; premature birth; vomiting; diarrhœa; insanitary conditions; and improper feeding, all predispose to this condition; inter-

ference with the descent of the diaphragm by ascites; flatulence; or increase in the size of the abdominal organs; softening of the chest-walls, as in rickets, measles, pertussis, etc.; diphtheria; laryngitis stridulosa; abscesses in the vicinity of the larynx, all are capable of producing atalectasis.

Symptoms.—These vary according to the extent of the collapse. The impaction of a large plug of mucus in a bronchus will give rise to severe symptoms, such as sudden lividity, want of breath, and convulsions; but these severe cases are rare. What we most often see is that, during the course of a mild catarrh, the child suddenly becomes livid, or very pale; breathes quicker, and is very restless; its cough almost ceases, *and its temperature is below normal;* its features are pinched; its eyes hollow and dull; cold sweats break out; and percussion at the bases and along the posterior borders gives a dull note. To detect this, percuss lightly with two fingers on two fingers, instead of with one. Auscultation reveals bronchial breathing, crepitation close to the collapse, and absence or great diminution of vocal resonance.

Diagnosis.—Remember the following points: In the course of an ordinary catarrh you have the sudden onset of restlessness and distressed countenance; cough ceases; the complexion becomes livid; the nares act; the eyes become hollow; breathing is hurried and shallow, and the temperature falls below normal. This last point is most important as diagnosing collapse from pneumonia, in which you would have the temperature elevated. Pleurisy with effusion often gives rise to but few symptoms; in fact, in the child it is frequently latent.

Prognosis.—Bad, especially in rickety and weakly children, and when it comes on in the course of bronchitis.

Treatment.—Put the child at once in a hot mustard bath (one ounce of mustard to the gallon of water), and keep it in the bath till the nurse's arm or hand tingles. Dry carefully and roll it in cotton wool. Give a smart emetic of sulphate of copper, by dissolving two grains in an ounce of water, and giving a teaspoonful every five minutes. Apply to the chest

a stimulating liniment, as Stokes's, and give a stimulating expectorant, as R 22.

Be careful that the child gets sufficient nourishment, and let it have five drops of brandy, in milk, every hour. Don't allow the child to sleep longer than one hour at a time, but have it awakened for nourishment and let it be encouraged to breathe deeply.

BRONCHITIS.—Is a common and fatal affection in children, chiefly from its tendency to run into broncho-pneumonia. When confined to the larger tubes, it is not serious; but there is always the danger of its spreading to the smaller tubes (capillary bronchitis), when it becomes very serious indeed.

Causes.—Exposure to cold and wet; inhalation of irritating particles or gases, and dentition. It may be secondary in whooping-cough, measles, typhoid, scarlatina, diphtheria, small-pox, heart and kidney diseases.

Symptoms.—These begin with coryza, sneezing, and hard dry cough; in a few days the cough becomes loose, and is followed by the discharge of mucus; the temperature is rarely much above 100° F. in these mild cases, except at bed-time; the bowels are confined; and the tongue coated. Auscultation reveals sibilant râles, and very large, moist crepitations, chiefly heard in the front of the chest below the clavicles.

If the affection takes a more serious type, or spreads to the small tubes, you will have a temperature of 103° F. or so, and the cough, which is frequent, gives rise to considerable pain of a tearing nature behind the sternum; the child is restless and irritable; there is much thirst, and a good deal of gastro-intestinal catarrh; there is now considerable dyspnœa, with pinched features, and a look of distress; the face is pale and the lips livid; pulse is very rapid, 130 to 150; clammy sweats break out; the tongue is furred, and the appetite gone. If old enough, the child coughs up a yellowish and tenacious phlegm; if very young, the child swallows this. Percussion gives negative signs. Auscultation gives sub-crepitant rhonchi in abundance *over both lungs equally.* These are very serious cases.

A chronic form of bronchitis is common, and is usually seen

in scrofulous children. It often follows on measles and whooping-cough. It varies with changes in the weather, and disappears entirely during the summer months. A worse form is that which is associated with a good deal of emphysema, the chest becoming barrel-shaped, the skin dry, and the finger-tips clubbed; the face is livid and puffy-looking, and such subjects cannot engage in stirring games. It is quite usual in these cases to have chronic disturbance of the stomach and bowels, and sometimes the two seem to alternate, the one improving while the other gets worse.

Diagnosis.—From Collapse.—Bear in mind the dulness on percussion and sub-normal temperature in collapse.

From Broncho-pneumonia.—By the higher temperature and loss of the pulse-respiration ratio of this disease. The cough of pneumonia is short and hacking; that of bronchitis, loose and thick and often paroxysmal.

Prognosis.—Serious in young and rickety children, from the danger of collapse of the lung supervening.

Good in healthy children after the second year.

Serious in the capillary variety, even in strong healthy children, and very much worse in the rickety and weakly.

Bad symptoms are drowsiness, with blueness of the lips and finger-tips and fall of temperature to sub-normal (collapse of lung).

Treatment.—Let the child be kept in one room, the temperature of which is maintained at 62° F. Carefully avoid draughts, and give ℞ 19 every two hours.

Apply spongiopiline to the chest (back and front); give a calomel purge; and let the diet consist of milk, light soups, and barley-water. When the temperature falls to normal, change your mixture to ℞ 22. In the capillary variety, steam from a bronchitis-kettle is useful; and if the breathing becomes embarrassed, much relief will follow a stimulating emetic, as sulphate of copper (2 grs. to the ounce of warm water, a teaspoonful every five minutes) or 2 or 3 grs. of hippo powder in a little syrup, or half a teaspoonful of the wine.

Watch the strength, and give stimulants on the first signs of depression (depressed fontanelle). When the secretion becomes free, have resort to the stimulating mixture mentioned above, and later, if the temperature continues normal, give tonics of iron and quinine with cod-liver oil. The nourishment should be strengthening, as beef-essence, milk, and eggs, with the brandy-and-egg mixture of the B.P.

In chronic bronchitis, if practicable, send the child to some winter resort (Ventnor, etc.). If not, clothe in flannel next the skin, give plenty of good nourishing food, and avoid draughts and wet. Tar is a useful remedy where the secretion is profuse, and can be given in drop doses on a piece of lump sugar thrice daily. Inhalations of creosote, carbolic acid, or tincture of iodine, twenty drops to the pint, or of turpentine one teaspoonful to the pint, are useful; counter-irritation, with small blisters, or the tincture of iodine, is useful in some cases.

CROUPOUS PNEUMONIA.—This is an acute inflammation of the lung-tissue, occurring in children chiefly after the third year, the catarrhal variety being more common before that date. It is sometimes epidemic and infectious.

Causes.—Exposure to cold and wet; a low state of health from any cause, though a healthy and robust child may be attacked. Friedlander has discovered lately a micrococcus in the sputum; but it seems that, in order that it may give rise to pneumonia, a suitable soil must be forthcoming, as in those in a low condition of health or suffering already from a cold; it is incapable of setting up pneumonia in a healthy lung in a normal condition. The disease is common enough in winter and spring.

Symptoms.—The onset is sudden, and may be by a convulsion if the child is under three years; the temperature rises rapidly to 105° F.; there is headache, rapid pulse and breathing, pain in the side which is often referred to the abdomen, flushed cheeks, and a short dry cough; there may be vomiting and diarrhœa, and delirium may be an early symptom, especially if the pneumonia is apical; there is no actual

dyspnœa, but there is loss of the pulse-respiration ratio, which is an important symptom, the ratio being reduced from 1 to 3·5 to 1 to 2·5, or even 1 to 2; herpetic vesicles are common round the mouth; the tongue is dry and brown; the bowels constipated; and the urine scanty and high-coloured. This condition goes on for days, and generally between the sixth and ninth a sudden fall in the temperature announces the crisis, which in weakly children may be accompanied by collapse. Expectoration is often entirely absent.

Physical Signs.—Percussion will give dulness in the majority of cases over some region of the chest-wall, infra-clavicular, axillary, scapular, or at the base. Auscultation will give weak or distant breath-sounds; bronchial breathing; increased vocal resonance and fremitus; and you may have, in addition, pleural friction and various kinds of râles; if a large extent of one lung is involved, the breath-sounds in the other lung will be accentuated. Any part of the lung may be attacked; but the apex is much more commonly affected in the child than in the adult. These signs increase as the days wear on, but it is important to remember that the fine crepitation so characteristic of adult pneumonia may be, and often is, entirely absent. When present, the crepitation is heard only at the edge of the consolidation, *not over it.* Another important point is that these physical signs may not make their appearance for several days, there being nothing heard but tubular breathing, especially when the pneumonia is deeply seated. Rarely the classical signs are entirely absent. With the sudden crisis between the sixth and ninth days resolution sets in, and recovery is the rule. Exceptional cases terminate by lysis, or there may be a crisis and a second rise of temperature the next day. The disease may end in abscess or gangrene of the lung, and may in weakly children be entirely 'latent.'

Varieties.—1. Abortive, where the characteristic signs never develop, and the disease is at an end in two or three days.

2. Creeping or wandering, likened by Henoch to erysipelas

spreading over the surface of the lung. Such cases are chronic.

3. Cerebral, in which the nervous symptoms are prominent and the lesion often at the apex.

4. Gastric, where the gastro-intestinal symptoms are very marked for the first few days.

5. Pleuro-pneumonia, where the pleural signs are most marked, and the pain in the side acute; effusion often takes place in these cases, and an empyema commonly results.

Complications and Sequelæ.—Pleurisy; pericarditis; meningitis; bronchitis; nephritis; gangrene of the lung and abscess; jaundice; diphtheria; and hyperpyrexia.

Diagnosis.—Bear in mind the following points: Sudden onset; high temperature (105° F.); loss of the pulse-respiration ratio; pain in one or other side or in the abdomen; dulness on percussion, with increased vocal resonance and fremitus; feeble or tubular breath-sounds over dull area; and fine crepitation at the edge of, *not over*, the consolidation.

Prognosis.—Favourable, when it is primary and the child is over three years of age. Secondary pneumonia is very serious, especially when it follows the eruptive fevers or comes on in the course of kidney-disease.

Treatment.—Put the child to bed in a room kept at a temperature of 65° F. Give fluid nourishment, such as light soups, and plenty of milk and barley-water or kali. For medicines, give a diaphoretic with a little paregoric, as ℞ 19; or some recommend tincture of aconite in the early stage (one drop every two hours, and watch the effect). A calomel purge is useful at first.

For the pain in the side, the following have been recommended: two leeches; a small blister; equal parts of chloroform, belladonna, and aconite liniments applied on lint; spongiopiline; linseed-and-mustard poultice; the ice-bag; cold lotions. The warm applications will generally be found the best. One to three drops of 'nepenthe,' or 1 to 3 grs. of Dover's powder, is also good practice, to relieve the pain in the side.

Hyperpyrexia is best treated by cold sponging, the cold pack, or the cold bath; quinine may be given; but antipyrin, antifebrin, and phenacetin are not well suited for children.

Delirium and sleeplessness, by 'nepenthe,' Dover's powder, or liquor morphiæ and tepid sponging.

Dyspnœa and failure of the heart from distension of the right side, by withdrawing a small quantity of blood. When the temperature falls, the diet should be improved and tonics given. Stimulants are not often called for in primary cases.

CATARRHAL PNEUMONIA.—*Synonymes.*—Lobular Pneumonio and Brancho-Pneumonia. Is an acute inflammation of the bronchial lining membrane, which extends to the bronchioles and air-cells.

Causes.—This form of pneumonia is always preceded by bronchial catarrh, so that the causes which bring about bronchitis will be those also which tend to set up catarrhal pneumonia in the air-cells.

Measles and whooping-cough, inasmuch as they are always accompanied by a good deal of catarrh, are often the forerunners of pneumonia; it often follows diphtheria; and is readily set up in weakly and ill-nourished children, and in those who have had attacks of diarrhœa. Struma, rickets, dentition, and bad sanitary conditions predispose to it.

Symptoms.—A child has had a bronchial attack for some days, when suddenly the disease extends to the air-cells, pneumonia being set up. The following change in the symptoms takes place: the temperature rises suddenly to 104° F., sometimes to 105° F.; the cough changes its character, and becomes short and hacking; the nares act; the face is slightly livid; the pulse and respirations are hurried, and the child is manifestly much worse than when it had 'the cold.' It is noteworthy that such a child will permit free examination of the chest now, whereas, previous to the onset of the pneumonia, it struggled vigorously. There is evident dyspnœa, and some perversion of the pulse-respiration ratio, but not to such an extent as in the croupous variety.

Diarrhœa is often present, and sometimes vomiting.

Physical Signs.—Percussion rarely gives much dulness; but it may often be detected by using two fingers on the chest and percussing with two fingers; as this form of pneumonia is generally patchy, a considerable amount of consolidation may exist without dulness being made out.

Auscultation will reveal a weak respiratory murmur in the early stage, and bronchial breathing over the dull area later. General fine bubbling rhonchus is heard, which becomes finer, drier, and crepitating in character, especially *over the area* where the breathing was bronchial; this is important, because in croupous pneumonia the crepitus is heard at the edge of the consolidation. As the disease advances, these separate patches may coalesce, so that after some days percussion may reveal considerable consolidation, and auscultation a good deal of fine and dry crepitation both in inspiration and expiration, which is very superficial, as if generated just under the stethoscope. In favourable cases there is no crisis, but a gradual improvement in all the symptoms (lysis); often it takes on a sub-acute course, or this type may prevail from the beginning, as after measles, etc. These cases often continue for weeks, absorption taking place very slowly. This type of pneumonia is liable to leave behind it unabsorbed products in the lungs, which may become caseous, and lead to serious results afterwards.

Morbid Anatomy.—The lung shows some lobules in a state of collapse, and patches of a greyish colour slightly elevated are scattered throughout its substance. The alveoli are filled with large round granular cells, which are derived from the epithelial lining of the air-vesicles. These inflammatory products become absorbed in favourable cases by a process of fatty degeneration; often, however, the process becomes arrested, and the cells atrophy and become caseous. There are frequently small patches of pleurisy when the pneumonia has been superficial. These lesions are always found *in both lungs*, but usually in a more advanced condition in one lung than in the other.

The commonest micro-organism found is the *Fränkel-Weischselbaum diplococcus*, and next Friedländer's bacillus. Too much stress must not be laid on these organisms, but it seems highly probable that, under favourable conditions, they are capable of giving rise to inflammation of the lungs.

*Diagnosis.**

Catarrhal Pneumonia.	**Croupous Pneumonia.**
Child usually under three years.	Child usually over three years.
Often immediately preceded by measles, whooping-cough, or scarlatina.	Usually immediately preceded by good health.
Attack begins gradually, and usually with chilly sensations only.	Attack begins with one or more of the following: chills; headache; pain in the epigastrium, abdomen, or side; delirium; convulsions; and vomiting.
Temperature not so high, and rise gradual. Remissions of three to four degrees common. Fever very irregular.	Sudden rise of temperature to 105° F. in twenty-four hours. Remissions slight. Fever tolerably regular.
Breathing rapid and laborious; accessory muscles of respiration used. Paroxysms of dyspnœa.	Breathing rapid, but not laborious, and accessory muscles not called into play. No dyspnœa.
Pulse-respiration ratio, 1 to 2·5 or 1 to 3.	Pulse-respiration ratio, 1 to 2 or 1 to 1·5.
Consolidation varying in extent in both lungs. Râles heard over both lungs. Apex not involved.	Consolidation one-sided. Apex frequently involved.
Dulness seldom extensive; usually in more than one	Marked dulness over a considerable area not infre-

* 'Cyclopædia of Children's Diseases,' Keating, vol. ii. p. 635.

spot. No fine crepitant râles, but often coarse crepitation. Over spots where dulness is detected the respiration is weak, distant, or blowing.	quent. Fine crepitant râles on the edges of consolidation, and bronchial respiration, bronchophony, and increased vocal resonance over centre.
Duration indefinite, but much longer than that of the croupous variety.	Duration seven to ten days.
Lysis.	Crisis.
Often leaves permanent lesions. Very fatal.	Recovery almost always perfect. Recovery the rule.

In simple bronchitis the temperature is rarely high, resonance is not impaired. When the attack becomes chronic, bear in mind the possibility of the case being complicated with tubercle.

Prognosis.—Always grave, especially under two years, and in the rickety and delicate.

Treatment.—Place in a good-sized room kept at a temperature of 60° F.; carefully avoid draughts; steam may be admitted from a bronchitis-kettle; give milk diet and light soups. Apply spongiopiline back and front, and renew it every four hours; mustard-water may be used to damp the lint. For medicines, give hippo wine with a little paregoric, as ℞ 19; and when the râles become moist, give a stimulating expectorant, as ℞ 22, and apply stimulating liniments to the chest, as Stokes's liniment, and cover with cotton wool. A teaspoonful of brandy will now be useful three or four times daily, and the diet should be more generous. During convalescence a change to the seaside, and iron-and-quinine tonics will be indicated. Often the digestion is left impaired in these cases, and tincture of nux vomica, with dilute hydrochloric acid and a little pepsine wine, will be useful in restoring it.

Hyperpyrexia calls for cold sponging, the wet pack, or the cold bath.

PLEURISY.—*Definition.*—An inflammation of one or both pleural surfaces, which may be either acute or chronic, primary or secondary, circumscribed or general.

Causes.—Exposure to cold and wet; injuries; or rupture into the pleural cavity of abscesses, etc.; secondary pleurisy may arise from extension of inflammation from the lung, pericardium or peritoneum; or in the course of acute rheumatism, measles, scarlatina, typhoid, small-pox, phthisis, Bright's disease, congenital syphilis, and pyæmia.

Symptoms.—Chilliness; pain in the side, followed by cough,—note that the pain is often referred to the abdomen; diminished movement on the affected side; headache, vomiting, and furred tongue; quick pulse; temperature, 102° or 103° F.; respirations increased, but not out of proportion to the pulse, as in pneumonia; little or no prostration; often the disease is not ushered in by so pronounced symptoms, and the child is brought to the doctor for pallor, shortness of breath, and loss of appetite. Pain disappears when effusion takes place.

Physical Signs.—Inspection.—Some impairment of movement, and the cyrtometer shows the affected side to be larger (squarer); displacement of organs, heart, liver, spleen; superficial œdema on the affected side is occasionally present.

Palpation.—Obliteration or diminution of intercostal spaces; fluctuation, by tapping with the finger between two ribs, may be detected by a second finger placed on a distant part of the same space; vocal fremitus is lost, as a rule.

Percussion.—Complete dulness, and increased sense of resistance over the effusion. Note: In the upper intercostal spaces in front, along the side of the spine behind, and in the infra-axillary region, a tympanitic note is often elicited, due to the presence of underlying relaxed lung-tissue in the first and second, and to the conduction of the stomach-note in the last. The dulness is modified or disappears with change of position of the patient. At an early stage percussion may give rise to much pain over the seat of friction.

Auscultation.—Weak and distant breath-sounds, but quite

often they are of a bronchial or tubular character, with friction above the upper border of the effusion; vocal resonance greatly diminished as a rule, but it is often bronchophonic about the lower angle of the scapula, or ægophonic; when present, this last is an important sign. Friction is common, but differs from that heard in the adult by being quite like coarse crepitation; it is, however, very superficial, sounding as if generated just under the stethoscope. Make the patient cough, and if the sound you hear is intra-pulmonary, it will disappear; if due to pleural friction, it is unchanged.

When the fluid is large in amount, there may be considerable dyspnœa, especially if it is on the left side; the child will now be seen to lie on the affected side or on its back; its nostrils work, and the respirations are increased often to forty a minute. Where the fluid is smaller in quantity, little or no discomfort is complained of, but dyspnœa is evident on the least exertion.

Terminations.—The fluid becomes quickly absorbed, and the child is restored to health in favourable cases. Some retraction of the side may remain for a time where absorption is slow, but this disappears. In other cases the child's health remains below par; the fluid does not get absorbed, but forms thick layers of lymph over the pleural surfaces of the lung and chest-wall; in this way adhesions may be formed. The fluid may become pus, and this it is very liable to do in children. Dr. Ashby says, 'This is not a common result if the fluid effused is at first serum; an empyema is an empyema from the first, as a rule.' When the fluid has become purulent, absorption goes on very slowly or not at all. If not removed by operation, it points at some part of the chest-wall, and discharges itself. It may open into a bronchus and be coughed up.

Varieties.—(1) Dry or plastic; (2) Loculated; (3) Diaphragmatic (rare); (4) Tubercular—usually double.

Complications.—Tuberculosis; amyloid disease; pericarditis; bronchitis; pneumonia; emphysema; and peritonitis.

Diagnosis.

Pleurisy.	Pneumonia.
Onset moderately sudden, and symptoms not severe—chilliness and pain in the side, followed by cough.	Onset very sudden and symptons severe, convulsions, etc. Cough first, followed by pain in the side.
Temperature not high, 101·5° or 102° F.	Temperature very high, 104° or often 105° F.
Pulse-respiration ratio not disturbed.	Pulse-respiration ratio greatly disturbed.
Face is pale, and there is little loss of muscular power.	Bright crimson flush on the cheeks, and the muscular prostration is considerable.
Cough is dry and painful.	Cough occurs in short hacks, and the sputum, when brought up or not swallowed, is rusty.
Organs displaced.	Organs not displaced.
Dulness on percussion complete, with sense of great resistance.	Dulness not complete, and the sense of resistance almost nil.
Respiratory sounds much diminished, and friction heard at upper margin of effusion.	Respiratory sounds tubular, and fine crepitation heard at border of consolidation.
Vocal resonance greatly diminished.	Vocal resonance increased.
Vocal fremitus diminished or absent.	Vocal fremitus increased.
Ægophony present in many cases at the angle of the scapula.	Ægophony never heard.
The upper limit of dulness varies with the position of the patient.	The dulness is not modified by change in position.

The physical signs are found both at the back and front of the affected side.	The physical signs are limited to the front or back of the chest.
In case of doubt, introduce a fine needle, when you will draw off serum or pus.	No fluid is withdrawn.

To diagnose whether the effusion is serous or purulent, introduce the needle, which decides the case at once. A change in the complexion to a yellowish tint, and clubbing of the finger-tips, are looked upon as pointing to the fluid having become purulent.

Hydrothorax is almost always a part of general dropsy; there is kidney or heart disease; and the effusion is double.

Prognosis.—Primary idiopathic pleurisy is seldom fatal when the fluid remains serous; a change of the effusion to pus, and a high temperature, are bad signs, especially if the fever remains after tapping.

Treatment.—Put the child to bed at once in a warm room; give milk diet and light soups; let it have a diaphoretic every two hours, such as ℞ 19.

If the pain in the side is severe, a hypodermic of $\frac{1}{12}$ gr. of morphia may be given; or two leeches applied; or a small blister or a firm bandage applied; or the side strapped with plaster. A few grains of Dover's powder often give relief, and it will be well to open the bowels with a purgative. Give your diaphoretic mixture until the temperature falls, and then substitute one containing iodide of potash for it, in full doses of 3 grs. every six hours, steadily increased every day. At the same time, begin counter-irritation to the chest in the form of small repeated blisters or tincture of iodine. If there is no sign of the fluid getting less in a week or ten days, add 5 grs. of the tartrate of iron to the mixture. Tincture of bryonia, in 5-min. doses, should be tried to bring about absorption. The diet at the same time should be improved, and cod-liver oil given. If at the end of three weeks there is no diminution in the amount of fluid, introduce the needle, and, if you get serum,

aspirate to the extent of about 8 ozs. If you get pus, open the pleural cavity by incision, and drain it; continue your mixture. Paracentesis should be performed at any time during the stage of effusion, when there is embarrassment of the heart and dyspnœa, and also when one side of the chest is full, even without urgent symptoms.

FIBROID INDURATION OF THE LUNG.—*Synonymes.*—Cirrhosis of the Lung, Interstitial Pneumonia.

Definition.—Is a chronic thickening of the connective tissue elements of the lungs.

Causes.—Is always secondary to pneumonia, especially the catarrhal form, or to pleurisy, where the lung has been compressed for a long time. It may be tubercular.

Morbid Anatomy.—There is a great development of the fibro-nucleated tissue in the walls of the alveoli, the interlobular connective tissue, and the bronchial tubes. The process in time involves all the connective tissue of the lung, and the organ becomes very dense and contracted. The condition is usually confined to one lung; amyloid degeneration of the liver, spleen, or kidneys is common; and the liver may be found cirrhotic, and the kidneys granular.

Symptoms.—These are mixed up with those of pneumonia, and in many cases the presence of cirrhosis can only be surmised. Flattening and shrinking of the affected side, with impaired movement; the mediastinum is drawn to the affected side, and the heart is displaced. Percussion-note is dull, and sense of resistance fairly marked, especially during the course of an intercurrent attack of catarrhal pneumonia. Auscultation gives variable breath-sounds according to the amount of secretion present in the tubes. The cough is severe and spasmodic, and large quantities of offensive muco-pus are brought up. The respirations are increased (30 to 35 per minute); appetite is often good; pyrexia is not present, except when pneumonia complicates. The right heart becomes hypertrophied, and the veins generally are prominent; the fingers are clubbed, and the face swollen and dusky. Amyloid disease of the liver, spleen, and kidneys is found in chronic cases.

Diagnosis.—Impossible in the early stage. The retracted side and curved spine, displacement of organs, and the physical signs must be borne in mind. Violent paroxysmal cough, ending with the discharge of a quantity of fœtid pus, is characteristic. From chronic pleurisy, by the paroxysmal cough and copious purulent sputum.

Prognosis.—Uncomplicated cirrhosis may give rise to little trouble for a long time. The disease tends to increase steadily, and especially if catarrhal pneumonia supervenes.

Treatment.—Remove and prevent any irritation to the lung by colds, etc. Clothe in flannel, and give nourishing diet, with stimulants—port wine. If practicable, the child should pass the winter abroad. For medicines, quinine and iron should be given, or turpentine, to diminish the secretion (ten to twenty drops), three times daily. Creosote, carbolic acid, or tincture of benzoin may be inhaled frequently (twenty drops to the pint), and the child ought to be restricted in fluids as much as possible.

EMPHYSEMA.—*Causes.*—Whooping-cough, bronchitis, and catarrhal pneumonia; phthisis; pleurisy; laryngismus stridulus; and membranous laryngitis.

Morbid Anatomy.—There are two varieties: (1) Interlobular; (2) Vesicular.

In the Interlobular, the air occupies the space between the lobules and under the pleura. It is almost always produced by the bursting of an air-vesicle during a severe paroxysm of coughing.

In the Vesicular, the apices and anterior borders of the lungs are the parts commonly affected. When the chest is opened, the lungs remain distended, and fill the chest so as to hide the heart.

Symptoms.—In the interlobular variety there are no symptoms during life.

In the vesicular variety the affection becomes chronic. The child is smaller than its years would indicate; head large; neck short, with prominent veins; face pallid, with bluish tint

under eyes and mouth. The chest is enlarged antero-posteriorly, and sometimes the heart is depressed. On taking a deep breath there is little expansion of the upper part of the chest. Percussion gives general hyper-resonance and diminution or obliteration of the normal cardiac dulness. Auscultation gives tubular breathing and numerous sonorous râles. The child is much embarrassed in its breathing when a fresh catarrh is contracted; it cannot lie down in bed, and at night suffers greatly from cough and dyspnœa.

Diagnosis.—Remember the following points: chest distended in the upper regions; hyper-resonant on percussion; cardiac dulness diminished or obliterated; epigastric pulsation; displacement of the liver and spleen (rare); and the sonorous and sibilant râles.

Prognosis.—Not good, from the great tendency to recurring attacks of bronchial catarrh.

Treatment.—All threatenings of catarrh must have prompt treatment similar to that for bronchitis. For attacks of dyspnœa, give an emetic of hippo wine—a teaspoonful in plenty of hot water; put the feet and legs in a strong mustard-bath; apply mustard and linseed to the chest, and give ℞ 23.

In more severe cases, Himrod's powder, nitre paper, or nitrite of amyl may be inhaled cautiously. When the bronchial catarrh has subsided, give iodide of potash and tartrate of iron (see ℞ 18). The diet should be nourishing and easily digested, and, where practicable, the child should spend the winter abroad.

PHTHISIS.—*Definition.*—Is a disease caused by the invasion of a specific bacillus, which gives rise to local irritation and terminates in extensive destruction and induration of lung-tissue.

Causes.—Hereditary predisposition; scrofula; catarrhal pneumonia; measles; whooping-cough; scarlatina; and everything that interferes with the strength of the child, as bad food, bad ventilation, unsanitary dwellings, etc. Some look upon Koch's tubercle bacillus as the common cause in all cases.

Symptoms.—Acute phthisis, or 'galloping' consumption, is usually preceded by an attack of catarrhal pneumonia, and the early symptoms are the same as in this disease, only more severe, the catarrhal products undergoing rapid caseation and softening. Dyspnœa is an early symptom; the temperature is high—104° or 105° F. at night, falling to 100° or 101° F. in the morning; and there may be copious night sweats. Cough brings up a whitish expectoration at first, which later becomes yellow or greenish, and is nummulated; in it bacilli are usually found together with yellow elastic fibres. Hæmoptysis is not often seen. Percussion gives dulness at one or other apex or at both, but the signs are more advanced on one side than on the other.

Auscultation gives bronchial breathing and coarse crepitation, both with inspiration and expiration, and later, when cavities form, cavernous respiration, bronchophony and pectoriloquy.

Wasting is very rapid; the digestion is thoroughly upset; diarrhœa may be severe; and death is preceded by great prostration, restlessness, insomnia, anorexia, and sordes upon the teeth and lips. The disease rarely lasts longer than six months, often much shorter.

Diagnosis.—From croupous pneumonia, by the remission in the temperature in the morning; at the end of the first week, instead of a crisis, the symptoms continue and the other apex becomes affected; bacilli and elastic fibres are found in the sputum.

Prognosis.—This disease is almost universally fatal.

Treatment.—Lower the temperature by cold sponging, cold packs, or cold baths. Maintain the strength by hourly feeding, both day and night, with nourishing and easily digested foods, as milk, cream, custard, soups, and beef-essences, and give a teaspoonful of brandy every four, three, or two hours, according to circumstances. The profuse night sweats should be controlled by liq. atropiæ sulphatis min. ¼ at bed-time, and, as children bear this drug well, you can increase the dose with-

out fear, if it is not sufficient; or you may give the $\frac{1}{100}$ gr. of atropine hypodermically.

CHRONIC PHTHISIS.—There are two varieties: (1) Chronic Catarrhal or Pneumonic Phthisis; and (2) Chronic Tubercular Phthisis.

Symptoms.—1. **Chronic Pneumonic Phthisis.**—Usually after an attack of acute catarrhal pneumonia, it is noticed that the child has not recovered its strength; that the cough continues, with some feverishness at night; it looks pale, eats its food without relish, and is easily tired. Percussion gives dulness at one apex or elsewhere in the chest, with increase of resistance.

Auscultation gives bronchial breathing and crepitation. Vocal resonance is increased, and expiration prolonged. When softening sets in, the general symptoms are more definite, such as a temperature of 102° or 103° F. at night; cheeks flushed at night, pale in the morning; the face wears a distressed look; and there is sweating at night or in the early morning; wasting sets in; the child loses its good spirits; appetite and digestion fail; and diarrhœa is frequently present.

The cough is hacking and loose; the sputum is muco-pus or greenish pus, with bacilli and elastic fibres in it; hæmoptysis is quite rare in children.

Later the physical signs are increased to moist râles and blowing or cavernous breathing, and the opposite apex is usually now involved. Diarrhœa is often present, and if this complication persists, pointing to implication of the mucous membrane and the glands of Peyer's patches, rapid wasting and death result.

2. **Chronic Tubercular Phthisis.**—This form begins very gradually with loss of appetite, languor, and disinclination for any games. The child is pale in the daytime and flushes at night, and after some weeks begins to have a short cough, which gradually becomes more frequent and attracts attention. The temperature is raised to 101° or 102° F. at night; wasting begins, and proceeds steadily; the breathing is rapid, and Niemeyer considers this the earliest sign; the appetite is poor; and vomiting and purging are frequent.

Physical signs appear late and are often very insignificant, such as slight loss of resonance at the apex, with weak and harsh breath-sounds. A click is caught at the end of inspiration, which is better heard if the child gives a cough. As time goes on, the physical signs become more pronounced, and are now always present at both apices, but more marked on one side than the other, so that, after a time, the case presents much the same characters as those of catarrhal phthisis.

These two forms of chronic phthisis may be combined in scrofulous children who have suffered from long-standing disease of joints. The majority of cases are seen in children of six or seven years and upwards.

Diagnosis.—Of phthisis in general, be careful to get an accurate and full account of the whole illness from the beginning. The hectic fever and cough, sweating and loss of flesh, with consolidation at the apex, are suspicious, and should always suggest the disease; examine the sputum, and, if you get tubercle bacilli and elastic fibres, the diagnosis is made.

To distinguish between pneumonic and tubercular phthisis, remember the difference in the mode of onset—the one following catarrhal pneumonia, the other beginning insidiously and creeping on gradually; in the one the general symptoms are mild, in the other severe; in the one the physical signs reveal considerable mischief at the apex, in the other scarcely anything can be made out.

Dilated bronchus may simulate cavity, but it is usually at the base, cavity at the apex; dilated bronchus tends to get smaller, cavity to get larger; also examine the sputum, which will decide the diagnosis.

Empyæma.	**Chronic Phthisis.**
Begins with pain in the side, followed by cough.	Follows pneumonia, or creeps on very gradually.
Dulness complete, with sense of great resistance.	Dulness not complete, and sense of resistance not so great.

The dulness is found at both the front and back of the chest, and reaches down to the extreme base.	Dulness found more at the front, and usually at the apex.
Disease is limited to one lung, the other being healthy.	Nearly always affects both lungs.
Displacement of organs.	No displacement of organs.
Ægophony frequently heard.	Ægophony never heard.

Prognosis.—In pneumonic phthisis, if the case is seen early, the consolidation, under treatment, may become absorbed. When the signs point to softening having taken place, the case will end fatally, after a shorter or longer time, in proportion to the care and treatment it will receive.

In tubercular phthisis, the case generally goes steadily down the hill, although life can be prolonged by climatic and other treatment if begun early.

Treatment.—Prophylactic.—Children of phthisical parents should not be suckled by their mother, but a wet-nurse obtained. Plenty of fresh air and exercise, calculated to expand the chest, should be enjoined; special care taken to prevent colds, and, if they are contracted, promptly treated; warm clothing; and good nourishing and easily digested food, avoiding too much sweets and farinaceous matters. Measles and whooping-cough require especial care in their management during convalescence, and it is right to warn parents of the tendency these diseases have of calling into activity any lurking constitutional weakness. Warn the parents against the pressure of school duties, which is great nowadays. In short, everything that conduces to a sound state of health should be recommended.

When the disease is established, the treatment resolves itself into relieving symptoms and supporting the strength; where the parents can afford it, a change of climate is of great service.

ACUTE TUBERCULOSIS OF THE LUNGS.—*Causes.*—Hereditary tubercular predisposition, which is usually strongly marked; measles and whooping-cough often precede it; or a

condition of delicate health may have existed for some time previous to the outbreak of lung-trouble.

Symptoms.—There are two forms of the disease: (1) the Typhoid; and (2) the Broncho-pneumonic. The latter has been described under the head of Acute Phthisis.

In the typhoid form the onset is very gradual; the child is dull and listless, wastes, and is feverish at night, with some cough. Gastro-intestinal symptoms are common at this time, such as loss of appetite, furred tongue, and frequently attacks of diarrhœa without any assignable cause; soon more definite symptoms are added, and the cough becomes short, frequent, and hacking, especially so at night; auscultation reveals crepitations and loose râles at the apices, bases, or pretty generally over the lungs. Dyspnœa is a marked symptom in many of these cases, and is an important sign in the absence of fever and increased pulse-rate to account for it. The eyes should be examined with the ophthalmoscope, when miliary tubercles will be found in the choroid as small, rounded, yellowish bodies, scattered about the fundus. The hectic symptoms increase, the wasting is rapid, the strength quickly fails, and in some cases the disease may run its course in three weeks or a month, or linger on for two or three months. Tubercular meningitis is very liable to supervene and terminate the case with all the signs of this disease.

Diagnosis.—The disease with which it is most likely to be confounded is typhoid fever, and the diagnosis, at an early stage, is quite often impossible. Close observation of the case, with frequent examination of the chest, will be necessary, and a combination of symptoms, such as short hacking cough, hectic temperature, with crepitations heard over the lungs, wou'd point to acute tuberculosis. The dyspnœa is an important point, as it is absent in typhoid, and the presence of miliary tubercles in the fundus oculi would decide the diagnosis.

Prognosis.—This is all but hopeless. There may be a chance if the case is seen early, but it is very faint.

Treatment.—This can only be palliative, as drugs have no

curative effect on the established disease. Much can be done to relieve cough and reduce high temperature, by giving codeia in small doses, and by tepid sponging, or the cold bath; quinine may be given, but antipyrin and antifebrin require great care in their use, and, as a rule, are not well suited to these cases; digitalis and bark is a useful combination, and should have a trial. The strength should be maintained by strong soups, eggs, and milk, and the brandy-and-egg mixture given every three hours.

LARYNGISMUS STRIDULUS.—*Synonymes.*—Spasm of the Glottis, Child-crowing, Internal Convulsion, and Cerebral Croup.

This is a common affection, consisting of spasm limited to the respiratory muscles, which affects the glottis alone, or spreads to the diaphragm and other respiratory muscles.

Causes.—Is met with in newly born infants, or in children up to the second year. Rickets; foul air; hot, ill-ventilated rooms; and inherited neurotic taint, all predispose to this affection.

Exciting Causes.—Pressure of an enlarged thymus or of enlarged bronchial glands on the recurrent laryngeal nerve; chronic hydrocephalus; exostosis in the skull-cavity; and the pressure of a hard pillow on a softened occiput, have all been advanced as causes, but are now abandoned generally. More likely there is peripheral irritation somewhere, as a hard and tense gum, some disorder of the stomach or bowels; and Henoch places a chill followed by catarrh as the most frequent cause.

Symptoms.—The child becomes suddenly quite stiff, and stretches itself out to its full length; the head is drawn back, the face congested and livid, the eyes staring, and the expression one of fright. In less severe forms the child will stretch itself and give a crow or croak, and the attack is over. The spasm lasts but a few seconds, and the breath is drawn in with a loud crow; the child is frightened, and often cries, but, as a rule, soon falls into, and remains for some hours in, a

sound sleep. In more severe cases the spasm is repeated several times at short intervals. There is no pyrexia, and in bad cases the sphincters are relaxed. Carpo-pedal contractions are common, and in the most severe form of the affection the convulsive seizure extends to the diaphragm and other respiratory muscles, or the convulsion may become general. In infants the symptoms are as follows: the lips turn blue, and the face gets livid; the baby stretches itself out stiffly, and remains for a few seconds motionless, with flexed fingers and toes; in fact, it seems dead, and there is great consternation, but, after a few seconds, it draws a deep sigh, and the attack is at an end. Many of the most severe cases are not followed by a definite crow; in fact, the crow is most frequent in the mild and less severe cases.

Diagnosis.—The following table, taken from Ashby and Wright, p. 173, gives the points:—

Laryngismus Stridulus.	**Spasmodic Laryngitis.**	**Membranous Croup.**
Occurs in rickety children and under eighteen months of age.	Rarely occurs under two years; commonest two to seven years of age.	Occurs at all ages during childhood.
No fever, and no coryza or laryngeal catarrh.	Fever is present, with coryza and laryngeal catarrh.	Fever variable and usually some diphtheria of the pharynx.
Occurs at any period of the twenty-four hours, and often many times.	The attack occurs at night.	Mostly worse at night.
No cough; inspirations are stridulous.	Metallic cough; stridulous respiration; variable dyspnœa.	Metallic cough; stridulous respiration; progressive dyspnœa.

Carpo-pedal contractions or general convulsions not uncommon.	Convulsions rare.	Convulsions rare.
The attack lasts a few seconds, and frequently recurs.	Attack passes off in an hour or two; sometimes recurs.	Becomes steadily worse, though variations occur in its progress.
Occasionally fatal.	Rarely fatal.	Very often fatal.

To distinguish laryngismus from infantile tetanus, note that there is no fever, and that complete relaxation of the muscles takes place between the attacks or after a single one.

Prognosis.—Bad in new-born infants. In older children, take into account the strength of the child, and the presence or absence of rickets. In all cases, even the mildest, it is best to speak guardedly.

Treatment.—If the child is seen during an attack, endeavour to break the spasm by calling into action some other set of muscles; thus induce vomiting by passing a feather or the finger into the pharynx; dash cold water on the face, upper part of the chest, or down the back; or apply a sponge wrung out of hot water to the larynx; or apply smelling-salts to the nose. To prevent a return of the paroxysms, cold water sponging from head to foot three times daily, and plenty of fresh air, with abundance of clothing and flannel next the skin, are the best measures. Make a careful search for any source of irritation, such as tense and swollen gums, which should be lanced; examine the digestive and respiratory systems, and correct any faults in them, especially the first, for great errors are constantly committed in the feeding of infants. For drugs, musk and belladonna may be given in doses of $\frac{1}{3}$ gr. with 10 mins. of the tincture three times daily. Some prefer chloral and bromide of potash, soda, or ammonia, in doses of 2 grs. of the former, with 5 grs. of either of the latter, every four hours, to a year-old child. In very bad cases,

the inhalation of chloroform or nitrate of amyl should be resorted to, and in desperate cases artificial respiration. Faradization of the recurrent laryngeal nerve, and tracheotomy or intubation, may be called for.

SPASMODIC LARYNGITIS.—*Synonymes.*—Spasmodic Croup, False Croup, Inflammatory Croup, Catarrhal Croup, or Stridulous Laryngitis.

Etiology.—Age.—Is seen after the second year; rarely before this age; from two to eight years the commonest time; after eight it again becomes rare; when it occurs before the second year the child is generally rickety.

Sex.—More frequent in the male sex—two to one.

Epidemics and Seasons.—Epidemics of measles and scarlatina, seasons of damp and cold, and the winter and spring months favour it. It is often among the early symptoms of whooping-cough and measles.

Constitutional.—An hereditary neurotic tendency. It is seen as often (some think oftener) in the robust and healthy than in the puny and delicate.

Exciting Causes.—Gastric catarrh; indigestion; catarrhal inflammations; screaming; violent coughing; inhalation of irritating substances, as steam, smoke, cold air, and dust; sudden chilling of the body; and exposure to damp and cold.

Symptoms.—This affection consists of catarrh of the larynx, with the addition of spasm. In some children a very trifling amount of catarrh may set up the complaint, and in these cases we generally find the subject to be rickety. There are two forms: *the mild;* and *the severe.*

The Mild Form has very little accompanying catarrh; the attack usually breaks out about twelve or one o'clock at night, with a hoarse, barking, sonorous cough, and a loud whistling stridor in the breathing. Note that *the stridor is confined to inspiration, the expiration being short and comparatively noiseless.* The soft parts of the chest sink in at each inspiration; the nares act; and the eyes are staring and frightened-looking; the voice is hoarse and loud,—it is rarely weak, suppressed, or

whispering. The seizure lasts from ten minutes to half an hour or more, when it gradually subsides, and the child falls asleep; but it is common enough for it to have another, though milder, attack towards morning, or for one or two nights following. On the following morning there is noticed some general catarrh; some thickness of voice; and the cough has still a loud clang; but these pass off in a day or so. During the attack the temperature may be 102° or 103° F.; but it is usually normal, or nearly so, in the morning.

The Severe Form.—All the symptoms, as above described, are present in a more severe form, and the complaint does not pass off so quickly. There is general bronchial catarrh; the attacks come on in the daytime as well as at night; between the attacks the breathing is croupy and oppressed, and the voice and cough hoarse; there is considerable dyspnœa, with, in bad cases, lividity of the face, hands, and fingers; convulsive seizures may now come on, and collapse at the bases of the lungs may often be detected. Albumen in the urine is very rare.

Diagnosis.

Spasmodic Laryngitis.	**True Membranous Croup.**
Invasion is sudden, and the dyspnœa attains its maximum intensity *at once.*	The dyspnœa begins gradually, and attains it maximum by degrees.
The voice is rarely suppressed.	The voice becomes entirely suppressed.
The cough is loud and clanging.	The cough is muffled and whispering.
The stridor is confined chiefly to inspiration.	The stridor is as marked in expiration as in inspiration.
The sub-maxillary glands are not enlarged.	These glands are enlarged.
Rarely albumen in the urine.	Albumen in the urine common.

There is no false membrane coughed up or to be seen in the pharynx.	False membrane is usually coughed up, and is generally found in the pharynx.

When the disease is exceptionally severe, the points to be relied upon as excluding diphtheritic croup are: 1. The severe and sudden onset. 2. The comparative absence of stridor in the expiration. 3. The quality of the voice, which is never whispering or suppressed. 4. The age; for in a child under twelve months or over seven years the case is very unlikely to be one of spasmodic laryngitis.

Spasmodic laryngitis may be confounded with laryngismus stridulus (see latter disease); with retropharyngeal abscess, in which the breathing is embarrassed when the child lies down. Bending forward the head, by bringing the abscess over the larynx, greatly increases the dyspnœa; manipulation detects a round swelling in the back of the pharynx.

Œdema of the glottis is usually the result of a scald or burn; the distress is more continuous, without marked remissions, and the thickened epiglottis can be felt with the forefinger.

Prognosis.—This is favourable, even in the severe cases.

Treatment.—Put the child in a warm bath, 95° F., for ten to fifteen minutes; make the child vomit, by giving a teaspoonful of hippo wine in warm water; and give 3 grs. of chloral with 10 mins. of aromatic spirit of ammonia in syrup and water at once. In the morning give ℞ 19 every three hours; confine to a warm room, 65° F.; and open the bowels well with calomel. The diet should be light, as milk, soups, and fish; and pastry, sweetmeats, etc., are to be forbidden.

In the severe form, convert the cot into a tent-bed, and steam with a bronchitis-kettle, adding to each pint of the water a teaspoonful each of tincture of benzoin co., and compound tincture of camphor. The bath, emetic, etc., are here also indicated, and Graves of Dublin applied a sponge wrung out of very hot water to the front of the neck. Complications of

pneumonia and bronchitis should be carefully looked for and treated vigorously.

This affection is liable to become a habit, and it is advisable to prevent these attacks by having the child kept much in the open air, and giving a cold douche every morning; flannel next the skin should be worn from head to foot.

CHAPTER IX.

DISEASES OF THE CIRCULATORY ORGANS.

PERICARDITIS.—*Causes.*—Rheumatism; pleurisy and pneumonia by extension of the inflammation; scarlatina; Bright's disease of the kidneys; septicæmia; and tuberculosis.

Symptoms.—(1) Pain, precordial or epigastric; (2) a pericardial friction sound; (3) increased cardiac dulness, with disappearance or displacement of the apex-beat.

(1) The pain in children is usually ill-defined, and may be entirely absent; it may be reflected to the abdomen.

(2) The friction sound is very variable in character; often it is like the creaking of new leather. The patient should be examined in various positions, and often the sound is increased when the arms are raised above the head. Immediate auscultation will give the feeling that the sound is produced very near to the ear, and it is still audible if the ear be withdrawn a short way from the chest-wall. This superficial character of the sound is very important. The sound is double, and corresponds with the cardiac movements; it is heard well when the patient holds the breath; and it is usually not conveyed in the direction of murmurs. Friction sound may exist with a moderate effusion; but the rule is that it disappears as effusion takes place, and reappears as the fluid becomes absorbed.

(3) Cardiac dulness is increased laterally and vertically. When

the effusion is considerable, the dulness is pyramidal in form, with the apex directed upwards. The apex-beat disappears or is very feeble; or it may be raised and felt in the fourth or third interspace. 'With the patient in a sitting position, percussion at the angle of the left scapula will give an area of dulness about the size of a crown piece, over which the signs are increased vocal fremitus, bronchial breathing, and bronchophony. If the patient be directed to bend well forward or assume the knee-elbow position for a short time, the dulness disappears and gives place to a tympanitic sound; the lung signs also vanish' (Sansom). The constitutional symptoms vary; the temperature is 101° to 103° F.; the pulse is quickened; dyspnœa is often present, and may be distressing if the effusion is considerable and has come on rapidly. If rapid effusion comes on in a child, the subject of old heart-disease, death may be very sudden at this stage; indeed, the advent of pericarditis where old cardiac mischief exists usually means the beginning of the end.

Diagnosis.—Before effusion takes place, the important signs are precordial pain, friction sound, and thoracic respiration. After effusion has taken place, increased cardiac dulness, displacement of apex-beat upwards, dyspnœa, and irregular action of the heart on any exertion.

Prognosis.—This is favourable if the heart is healthy; it is very unfavourable when it supervenes on old-standing heart-disease, and may cause sudden death.

Treatment.—Absolute rest in bed, and avoidance of excitement and exertion of every kind, are the first essentials. The diet must be light and consist of milk and soups. The bowels should be kept open.

Local.—If the pain is severe, apply a blister with liquor epispasticus; mustard; or paint with liniment of iodine (I always apply the fly blister in these cases). If the child is plethoric, a few leeches will do good. Other modes of treatment are equal parts of extract of belladonna and glycerine painted on and covered with cotton wool; or spongiopiline

wrung out of very hot water and sprinkled with laudanum; or equal parts of the liniments of aconite, chloroform, and belladonna.

General.—Give 5 grs. of salicylate of soda with 20 drops of liquor ammonia acet. in syrup of orange and water every four hours, and at night 2 grs. of Dover's powder or 3 mins. of Battley to quiet the heart's action, relieve pain, and procure sleep. Tincture of digitalis will be indicated where signs of cardiac failure or dyspnœa supervene. When effusion has taken place and the temperature become normal, give iodide of potash 5 grs., with 10 mins. of tincture of cinchona in syrup and water three times a day for a week or ten days, and then substitute the tartrate of iron for the cinchona in 5-gr. doses. The iodide should be gradually increased. Mercurial ointment may be rubbed in night and morning.

If the effusion becomes extensive, the pericardium may require to be tapped. 'The point selected is usually the fourth or fifth interspace, half-way between the nipple line and the left edge of the sternum. Always use that form of needle in which the trocar can be withdrawn when the pericardial sac is entered, and direct the needle upwards' (Ashby and Wright).

ENDOCARDITIS.—*Definition.*—Inflammation of the lining membrane of the heart.

Causes.—Rheumatism; chorea; scarlatina; measles; typhoid; diphtheria; and Bright's disease. Rheumatism is accountable, for about 80 per cent. of all cases. Endocarditis is especially common between the ages of four and twelve years; and Steiner says that it is a useful rule in diagnosis to consider all heart-affections occurring under four years of age as of congenital origin.

Symptoms.—These may be slight or absent, and in rheumatism, chorea, scarlatina, and other affections with which endocarditis is known to be associated, the heart should be examined every day. Pain and dyspnœa may be present, and the temperature 101° or 102° F., but the only reliable symptom is the

murmur which, in the great majority of cases, is mitral systolic. This slight endocarditis is very liable to relapse, coming and going for an indefinite time, and these relapses are associated with manifestations of rheumatism, such as a fresh return of the joint-trouble, a new crop of fibrous nodules, or an eruption of erythema. Reduplication of the second sound, or the post-diastolic rumble, indicating commencing mitral stenosis, is another sign of endocardial inflammation. Anæmia is a constant accompaniment of endocarditis in children, and often advice is sought on account of the pallor alone.

When ulceration of the endocardium ('ulcerative or malignant endocarditis') takes place, the symptoms are of the hectic type. Precordial pain, extending to the left shoulder; temperature rising at night to 103° or 104° F., and falling in the morning; enlargement and tenderness of the spleen; and albumen in the urine, are the usual symptoms.

CHRONIC HEART-DISEASE.—As has been said, the symptoms pointing to the heart may be very slight or absent at first, but after a time, when the rheumatism has passed off, the regurgitation at the mitral orifice begins to assert itself. The earliest symptom now is breathlessness on even slight exertion; anæmia is soon noticed; and palpitation is seldom absent. Hæmorrhage from the nose (epistaxis) is often seen, and hæmoptysis is common in mitral stenosis. These patients often suffer from bronchial catarrh, the result of the congestion caused by the regurgitation. Embolism occasionally occurs. After a time the left ventricle becomes hypertrophied and dilated; the heart may attain an enormous size; and at last congestion and enlargement of the liver, congestion of the kidneys, with albuminuria and advancing dropsy, dyspnœa and bronchitis, bring about a fatal issue. The cardiac lesions occur in the following order of frequency: (1) mitral regurgitation; (2) mitral regurgitation with mitral stenosis; (3) mitral stenosis alone; (4) aortic obstruction and regurgitation combined; (5) aortic obstruction; (6) aortic regurgitation, very rare.

Prognosis.—If a mitral murmur be unaccompanied by signs

of hypertrophy or dilatation, it may ultimately disappear. If accompanied by hypertrophy, the valvular lesion will not get better. Serious breathlessness, lividity on exertion, marked anæmia, and loss of flesh, are bad signs. The prognosis is in relation to the nature of the heart-lesion (see above).

Ulcerative or malignant endocarditis is very fatal.

Treatment.—Everything that tends to excite the heart must be avoided. The child should be clad in flannel from head to foot. The diet should be nourishing and easily digested. When palpitations, breathlessness, and anæmia begin to give trouble, digitalis should be given, and Dr. Eustace Smith's prescription at this time is 1 dr. each of infusion of digitalis, senna, and calumba, three times daily to a child ten years old. If the anæmia is marked, he gives 4 or 5 grs. of the exsiccated sulphate of iron in glycerine after each meal. When dropsy sets in, diuretics must be given, and a valuable one at this time is the tincture of cantharides, five drops of the tincture three times daily.

CONGENITAL HEART-DISEASE.—*Causes.*—(1) Persistence of one or other of the fœtal openings, notably the foramen ovale. (2) Intra-uterine endocarditis. This usually affects the pulmonary or tricuspid valves; the aortic and mitral are less often affected. As a secondary effect is found a patent foramen ovale or ductus arteriosus, or the septum between the ventricles may remain open. (3) Anomalies of development, as absence or imperfection of the septum ventriculorum or transposition of the great vessels.

Symptoms.—1. *Patent Foramen Ovale.*—This allows of the passage of blood from the right to the left auricle, and is caused by repeated attacks of bronchitis preventing the valve closing There is a loud systolic murmur heard at the base, both in front and behind.

2. *Intra-uterine Endocarditis.*—If it occurs early in fœtal life it usually affects the pulmonary and tricuspid valves; if it occurs late in fœtal life, it usually affects the aortic and mitral valves. Cyanosis is mostly present, and is increased by exertion or

coughing. There is a loud rasping systolic murmur heard over the pulmonary area, which is not transmitted round to the back, and there may be epigastric pulsation, pointing to dilatation of the right ventricle. This is the commonest form seen in those who have survived infancy and childhood.

3. *Patent Septum Ventriculorum.*—This may be caused by obstruction at the pulmonary orifice. The left ventricle becomes greatly enlarged and hypertrophied in its efforts to carry on the circulation. There is a loud rasping systolic murmur, heard best at the lower end of the sternum, and conducted both into the axilla and round to the back.

The general symptoms of congenital heart-disease are *cyanosis.* This, which is seen in 90 per cent. of the cases, signifies lividity of the skin from the circulation of imperfectly aerated blood in the superficial capillaries. So distinctive is this symptom of congenital heart-disease, that the term 'morbus cœruleus' has been applied to it, and in the same way 'the blue disease' or 'blue babies.' The lividity is best seen in the cheeks, lips, eyelids, and the tips of the fingers and toes. The external temperature is reduced, and these children complain of feeling cold. Dyspnœa and cough are common, and they are usually feeble and small of growth. Clubbing of the fingers and toes is rarely absent, and convulsions are not rare. These children are very drowsy, and sleep a great deal.

Prognosis.—This is very unfavourable. The more marked the blueness, the worse is the prognosis.

Treatment.—This must be largely hygienic. Fresh air, the avoidance of cold and of all conditions liable to induce bronchial irritation, with a carefully regulated and easily assimilated diet, constitute the most essential elements. An occasional mercurial purge is useful, and the child should be clad in flannel from head to foot; a little additional warmth over the abdomen, by means of a pad of cotton wadding, is desirable. For medicines, digitalis comes first, used cautiously; iron and strychnine are useful remedies. Sir Walter Foster speaks highly of peroxide of hydrogen, given in 8-min. doses three times daily. Stimu-

lants will be called for, and brandy is the best. Complications, such as dropsy, must be treated on general principles.

CHAPTER X.

DISEASES OF THE BLOOD.

ANÆMIA.—1. Simple Anæmia.—The subjects of this affection are bloodless-looking children, and they are languid and easily tired; murmurs are common at the base of the heart and in the neck; there are no hæmorrhages, no albumen in the urine, and no enlargement of the spleen. The condition is well seen in the mucous membranes of the gums, lips, and eyes; it sometimes seems to run in families. The red blood corpuscles are diminished, but there is no corresponding increase in the white corpuscles. Such children are very apt to develop tubercle.

2. **Anæmia with Œdema.**—In infants and children under two years who are anæmic, it is very common to find them more or less swollen over the body, but it is best seen in the back of the hands and feet. Such cases are often very puzzling, as examination shows the urine to be free from albumen, and the heart to be healthy. In these cases, a history of diarrhœa or some other lowering disease will generally be forthcoming, the condition being due to the drain on the system and the impoverished state of the blood.

3. **Splenic Anæmia, or Anæmia Splenica.**—This is a condition of profound anæmia together with great enlargement of the spleen. It is seen in children up to two years of age, rarely after the second year, and is most likely caused by congenital weakness, chronic disorder of the digestive organs, improper feeding, and insanitary conditions. Syphilis is present in a certain number of cases, and evidence of rickets is rarely absent.

The symptoms are profound anæmia, seen well in the mucous membranes, and on palpation the spleen is found to be

enormously enlarged; it may be quite visible, and extend to, or below the umbilicus. There is no albumen in the urine, and no hæmorrhages except towards the close. There is often a hectic temperature.

The spleen, on *post-mortem* examination, is greatly enlarged, firm, and hard, and the microscope reveals nothing but simple hypertrophy. The red corpuscles are diminished, and the white corpuscles relatively increased.

Treatment.—All these forms of anæmia will require careful regulation of the diet, an abundance of pure air, and warm clothing next the skin. Having attended to these points, iron, arsenic, and cod-liver oil should be given in doses suited to the age and strength of the child.

4. Idiopathic or Pernicious Anæmia.—This is seen in children, but from what cause is not known; in some cases there is a history of very improper feeding and privation.

Its symptoms are the same as in the adult—weakness, pallor, and shortness of breath, coming on without cause. The anæmia is very evident; there may be slight pyrexia; and purpuric and retinal hæmorrhages, with optic neuritis, are sometimes present. The course is often acute—from one to three months.

Treatment.—Maintain the strength by every possible means. Arsenic is the remedy.

5. Anæmia Lymphatica, Hodgkin's Disease, Adænia, or Lymphadenoma.—These are the names applied to a disease characterized by enlargement of groups of lymphatic glands, together with enlargement of the spleen, progressive anæmia, and hectic fever. The etiology of this affection is very obscure, but it has been noticed to follow blows on the head or neck, suppuration of an ear, abscesses in the neck, etc.

Symptoms.—There is slight fever, wasting, and anæmia; but the first thing that attracts attention is the enlargement of the lymphatic glands, usually in the neck; next those in the axilla; and lastly the glands in the groin. With the enlargement of the glands there is found considerable increase in the size of

the spleen. One very striking character of these enlarged glands is that they remain isolated from, and freely movable upon, one another; they are not attached to the skin; and they are neither painful nor tender. The temperature is of the intermittent type, and may remain at 103·5° F. for some days together. The anæmia becomes very marked, and the child is very weak. Any glands in the body may now become affected, such as those in the mediastinum, giving rise to pressure symptoms on the trachea or large veins. The course of the disease is chronic, and leads to a fatal issue from increasing exhaustion. After death, the spleen is found enlarged and infiltrated with adenoid tissue; the lungs, liver, and kidneys are also infiltrated, only in less degree.

Diagnosis.—If the enlarged glands vary in size from time to time, and are accompanied with pyrexia of an intermittent type, lymphadenoma should be suspected; if the spleen becomes enlarged at the same time, or shortly after, it points strongly to Hodgkin's disease. If the glands show a tendency to suppurate, they are probably tubercular, and Birch-Hirschfeld points out that in lymphadenoma there is a certain amount of elasticity in the feel of these glands, as compared with the board-like hardness of the cheesy gland.

Treatment.—Improve the general health as much as possible by good food, sound sanitary conditions, cod-liver oil, and iron. Arsenic and phosphorus are the two drugs most relied on; the former may be given freely to children. Mercurial inunctions may have a trial.

6. **Leucocythæmia, or Leuchæmia,** is a rare disease in children, though it may occur at any age. Its etiology is obscure, but privation, insanitary conditions, and malaria no doubt predispose to it. It begins insidiously with pallor, wasting, and loss of appetite. The spleen is soon felt, or even seen, to be greatly enlarged and somewhat tender; the liver may be enlarged, and the abdomen is swollen. There is irregular pyrexia, and there may be enlargement of lymphatic glands. Examination of a drop of blood establishes the diagnosis, as

the white corpuscles are greatly increased in number; normally, there should be one white corpuscle to 250 or 300 red ones, but in this disease the proportion of white corpuscles to red ones varies from 5 to 50 per cent.

Prognosis.—This disease is always fatal.

Treatment.—Arsenic, phosphorus, cod-liver oil, and iron may be tried.

SCURVY.—*Causes.*—Bad and insufficient food, especially the want of fresh milk, fresh meat, and fresh vegetables. In babies, excess of starchy food and bodily neglect, coupled with the constant breathing of close, foul air. Attacks of gastric disturbance, such as vomiting and diarrhœa, greatly favour the outbreak of scurvy.

Symptoms.—Anæmia is a striking symptom, though often such babies are fat-looking; but they are very soft and flabby; the gums are spongy, and bleed on the slightest touch; the child is very tender to the touch and cannot be handled; very often one or other thigh is swollen, or the forearm just above the wrist; purpuric spots and extravasations into the skin are common; the teeth become loose and fall out, and the breath is highly offensive; hæmorrhage from the nose, kidneys, or bowels is common. There is usually a temperature of 101° or 102° F. in the afternoon; the appetite is poor; diarrhœa is common, and profuse perspirations are noticed. Weakness increases and becomes extreme.

Morbid Anatomy.—There are large extravasations into the tissues, especially of the thighs and forearms; the muscles are pale, and the bones are atrophied. Extravasation does not take place into the joints, as it does in hæmophilia. The abdominal and thoracic organs are usually healthy.

Treatment.—Give fresh cow's milk diluted with barley-water according to the child's age; meat-juice, raw pounded meat or raw pounded mutton should be given, and plenty of orange or lemon juice; abundance of fresh air and stimulants will be useful. The state of the mouth should be looked to, and cleanliness enjoined. Salt water or borax-water makes a good

wash, and the gums may be painted with glycerine of tannic acid. When convalescence has set in, iron, cod-liver oil, and change of air to the seaside improve matters very quickly.

PURPURA.—Of this affection there are two varieties: (1) Purpura Simplex; and (2) Purpura Hæmorrhagica. In the former the hæmorrhages take place beneath the skin only; in the latter they take place from the mucous membranes as well as under the skin.

Causes.—Insanitary conditions and insufficient food; it may come on after typhoid, scarlatina, or pneumonia. Iodide of potash may induce it, and it is more common in girls than in boys.

Symptoms.—The eruption may appear without any previous signs of sickness, or it may be preceded by slight fever, pain in the limbs, thirst, etc. The spots are circular, and of a brick-red or deep purple colour, not elevated, and not disappearing on pressure; they vary in size from a pin's head to half an inch or more in diameter. The spots are often associated with bruise-like marks due to subcutaneous extravasation, and these marks may be noticed to follow the slightest contusions. The spots come out in crops, and are most numerous on the limbs.

In the hæmorrhagic variety, in addition to the spots, the nose bleeds, and there may also be bleeding from the mouth, ears, lungs, stomach, kidneys, and bowels. Renal hæmorrhage is the most common one, and, though the naked-eye signs of blood are not present in the water passed, the microscope will reveal blood corpuscles.

When swelling and pains in the joints are complained of, the affection is called 'purpura rheumatica' or 'peliosis rheumatica.' In some cases the pains may be those of true rheumatism, but they are most likely due, in the majority of cases, to slight bleedings into or around the joints; the pains remain longer in one place than is usual in the rheumatism of children, and Baginsky says that 'heart complications do not occur.' The course of the disease is very irregular; there is generally anæmia and confined bowels; the ankles may get

puffy; and headache is often complained of. In severe cases meningeal hæmorrhage may occur, giving rise to convulsions, or the child may die from syncope or exhaustion.

Prognosis.—This is favourable in the large majority of cases, but the disease may be very acute, and death take place rather suddenly from syncope or convulsions.

Treatment.—Rest in bed, and free purgation if the child is robust, with turpentine and castor-oil (see ℞ 24). Iron and arsenic should now be given (see ℞ 25). Other lines of treatment are by dilute sulphuric acid and quinine; and some rely on ergot by the mouth, never by hypodermic injection; extract of hamamelis (♏ v.—xx.), gallic acid (grs. v.—x.), or acetate of lead (gr. ¼—1). Special hæmorrhages should receive special treatment. The child's food should be nourishing and easily digested, and his clothing warm; an abundance of fresh air is important.

HÆMOPHILIA.—This is a congenital tendency to bleeding, which shows itself shortly after birth and continues through life. There may be a distinct cause for the starting of the bleeding, or it may come on without apparent cause, and it is peculiar how difficult it is to stop the bleeding, even from the scratch of a pin.

The males in a family suffer far more than the females, and the peculiar point about the affection is that the tendency is transmitted through the mother, although she herself escapes.

Symptoms.—These generally show themselves about the time the child begins to creep about, when the slightest knock or bump is promptly succeeded by an ecchymosis. If the hæmorrhage is spontaneous, it is usually from the nose, gums, cheeks, or lips. In young children towards puberty, it is from the stomach, bowels, or kidneys, and the bleeding is most obstinate. The bleeding is a capillary-oozing.

A curious feature is the joint affection, which is common; the larger articulations (and chiefly the knee-joint) are noticed to be swollen and tender, and the temperature is raised; there is fluctuation in the joint, the lesion being due to articular

hæmorrhage; it may be spontaneous or the result of a blow. These children pass through the exanthemata without manifesting unfavourable symptoms, and chest affections are not attended with special dangers.

Prognosis.—This is always serious, and the bleedings most to be dreaded are those from the nose and after the extraction of a tooth.

Treatment.—Protect from all injuries, and especially avoid extracting teeth. The bowels should be carefully regulated, and constipation avoided. The diet should be light, easily digested, and nourishing, white flesh being preferred to much butcher's meat; all flesh meat should be stopped if hæmorrhage threatens, and a mercurial purge, followed by a saline, given. Gentle exercise in the open air is useful, but violent games are better avoided. Local bleedings should be treated on general principles. Warm clothing next the skin is essential.

CHAPTER XI.

DISEASES OF THE NERVOUS SYSTEM.

TETANY.—This name is given to a rare and peculiar neurosis, characterized by tonic spasms of the muscles of the extremities; it is also called Tetanilla, and Tonic contraction of the extremities.

Causes.—Age.—Is most common between the first and third years. *Sex.*—More common in males than in females; digestive derangements; diarrhœa; the irritation of teething and worms; the passage of uric acid calculi, or during attacks of pneumonia and typhoid. In young children, evidences of rickets are rarely wanting, and it is then often associated with laryngismus stridulus and eclampsia.

Symptoms.—The disease sets in with tingling or burning sensations, followed by tonic contractions of the hands and

feet. The hand is strongly flexed at the wrist, and the thumb inverted into the palm, the fingers covering the thumb tightly. The foot is strongly extended, and the toes flexed, the whole assuming the aspect of talipes equino-varus. The knees are often semi-flexed, and the thighs adducted. The contractions are painful, and any attempt to extend the joints gives rise to loud crying. The spasms intermit, but they usually last a good while. In severe cases, the muscles of the forearm and calf are affected, and Dr. Cheadle has noticed the muscles of the face to be involved. In these also there is little remission of the rigidity, and it persists during sleep and chloroform anæsthesia. Sensation is not affected; the reflexes are normal; the temperature is normal; and intelligence is not interfered with.

Diagnosis.—From cerebro-spinal meningitis, by the absence of fever, vomiting, and cerebral symptoms.

From tetanus, by the absence of fever, and the spasm of the masseters, which is an early symptom in tetanus.

Prognosis.—Favourable; it rarely endangers life.

Treatment.—Remove the cause, such as lancing inflamed gums, expelling worms, rectifying gastro-intestinal troubles, and relieving constipated bowels; enjoin plenty of fresh air and cold sponging, with iron tonics, etc.; warm baths and hot laudanum fomentations may be used, and internally chloral and bromide of soda. Dr. Cheadle reports a most obstinate case cured with Calabar bean, beginning with $\frac{1}{30}$ gr., and gradually increased up to $\frac{1}{8}$ gr., and later to $\frac{1}{3}$ gr. three times daily.

TETANUS.—This disease is characterized by intense irritability of the spinal cord and motor nerves.

Causes.—This disease in infants is just the same as tetanus in the adult, and is caused by absorption into the system of the specific bacillus of Nicolaier from dirty dressings applied to the navel.

Symptoms.—These begin from the fifteenth hour to the fifteenth day after birth; generally on the third, fourth, or fifth day, rarely later than the tenth. The first thing that the mother notices is that the baby cannot suck, and, if the mouth is

examined, it will be found more or less firmly fixed from spasm of the facial and jaw muscles. The contractions soon become general, and extend to the muscles of the neck, back, and limbs; they come on in paroxysms, last a variable time; and in the majority of cases there is no complete relaxation. The interval between the paroxysms becomes shorter and shorter, and death ends the scene in a day or two, being preceded by rapid emaciation and often by jaundice.

Diagnosis.—This disease can hardly be mistaken. Remember that it begins in the muscles of mastication, and gradually spreads to the neck and trunk.

Prognosis.—It is nearly always fatal.

Treatment.—To prevent the disease, scrupulous cleanliness should be used in dressing the navel.

When it has set in, all sources of irritation, whether external or internal, should be removed. The child should be placed in a darkened and quiet room, and a dose of calomel or castor-oil, or a copious enema, should be given. Regular feeding is essential, and if the baby cannot swallow, or any attempt to do so brings on the spasm, put it under chloroform, and introduce the nourishment through a catheter passed into the œsophagus. In this way 3 or 4 ozs. of ass's milk, or equal parts of cow's milk and barley-water, may be administered. Chloral may be given mixed with the milk in 4-gr. doses, and seems to be the best drug. Many other drugs, such as opium, belladonna, bromide of potash, cannabis indica, have been used; warm bottles and spinal ice-bags are worth trying, and, if the spasms become severe, chloroform will always relieve them.

CONVULSIONS.—*Causes.*—*Predisposing.*—Hereditary neurotic tendency; rickets; anæmia; exhaustion from any cause.

Exciting.—Peripheral irritation, such as burns, scalds, and wounds, or a pin in the clothing that jags; irritation in the alimentary tract by indigestible articles of food, hardened masses of fæces, and worms; dentition; ear-ache, or a foreign body in the ear; retention of urine; sudden chill when the body is heated; frights; congestion and anæmia of the brain;

the poison of measles, scarlatina, small-pox, uræmia, and malaria. Convulsions are also common in all affections of the brain and its membranes.

Symptoms.—Convulsions may come on suddenly and without warning, or be preceded by nervous phenomena. They may be general or affect only a small group of muscles, as one limb, or there may be twitchings about the mouth and eyelids.

Usually the movements are general, and affect both sides; the eyes are always involved, and turned upwards. Sound sleep, as a rule, follows the attack, and the child may be depressed or drowsy for a day or so; occasionally some loss of motor power in a limb is noticed if the seizure has been severe, but this passes off unless some severe central lesion is present.

Diagnosis.—In every case make careful search for signs of disease of the brain or its membranes. If the child be young and well-nourished, the attack is likely to be reflex, and will not signify; if the child be wasted and weakly, general tuberculosis or tubercular meningitis is to be dreaded. Paralysis remaining after the fit points to the cause being central; so do squint, drowsiness, and contractures.

Prognosis.—This is good where the cause is reflex; it is very bad where the cause is central.

Treatment.—If the cause is reflex and the child robust, place it in a warm bath and pour some cold water over the head. If the temperature is high, add cold water or ice to the bath, and cool it rapidly. If the cause is central, the bath will do no good, and may do harm. If there is an overloaded stomach or bowels, give an emetic in the one case, or a purgative in the other. Lance the gums if they are tense, and, if the attack persist, give a whiff or two of chloroform or nitrite of amyl. Bromide of soda and chloral should be given for a few days after the attack. When the attacks cease, the digestion and general health of the patient should be attended to, and a good portion of the day spent in the open air. Cod-liver oil and iron tonics are now indicated.

EPILEPSY.—*Definition.*—Is a disease characterized by tonic and clonic convulsions, which may affect a part only or the whole of the body.

Causes.—Heredity—one or both parents may be epileptic, or they may be neurotic, and have suffered from chorea or hysteria when children; habitual intemperance in the father or mother, or both. Terror and fright are exciting causes; as are also blows or falls on the head.

Symptoms.—The Mild Form, or 'Petit Mal.'—The attack is preceded by irritability of temper, or the child may be dull and stupid. An aura is not so common a feature as in the adult. There may be no convulsion or spasm, and all that is noticed is that, if walking, the child stumbles, the face becomes pale for a few seconds, and he forgets what has happened. The urine is not discharged in these cases, and the cry is absent. There is some stupor and drowsiness, and some peculiarity of behaviour is noticed afterwards; again, the child may be working at his books, when he suddenly stops, his pupils are dilated and he has a vacant stare; after a few seconds he resumes what he was doing.

The Severe Form, or 'Grand Mal.'—The attack may begin with a cry or scream, or this may be absent, the child falling without any warning, as if knocked down; he is unconscious, with pale face; and twitchings of the face, arms, legs, or whole body are noticed; or the twitchings may be one-sided. The tongue may be severely bitten in these seizures. The urine and fæces are often voided; unconsciousness is complete. The attack lasts a variable time, and when consciousness returns everything that has taken place is a complete blank. Death may take place in one of the attacks. They are usually preceded by the petit mal form.

Diagnosis.—From Syncope.—This occurs in weakly and anæmic children, or in those suffering from exhausting diseases; there are no twitchings, and insensibility is not complete. Syncope is preceded by faintness; epilepsy is not.

From Hysteria.—The tongue is not bitten; the child does

not hurt itself; there is no interference with respiration; the pupils are not dilated, and the conjunctivæ are quite sensitive; the prick of a needle or a sharp galvanic shock produces pain.

Nocturnal eneuresis is often an early symptom, and, when it occurs, careful inquiries should be made.

Prognosis.—Bad where the attacks date from infancy and there is a bad family history. Well-developed attacks which occur infrequently are more hopeful than modified seizures which continually return.

Treatment.—The diet should be simple and easily digested. Plenty of out-door exercise of a mild kind; only a moderate amount of brainwork should be permitted, and warn against all kinds of excitement, over-fatigue, and late hours. Careful watching is required, when there is a fire in the room, when near ponds, rivers, etc., and at night, lest the child be suffocated in bed.

The bowels should be carefully looked after, that constipation may be prevented, and bromide of soda or potash given in large doses, gradually increased. Warn the parents that this drug sometimes produces a papular rash. Dr. Eustace Smith * gives two drops of liquor strychniæ with twenty drops of tincture of belladonna twice daily, and at night a draught of 30 grs. of bromide of potash. He increases the strychnine by one drop and the belladonna by three drops every two weeks.

Counter-irritation may be tried, either by means of a seton in the neck or by blisters.

CHOREA.—*Synonyme.*—St. Vitus's Dance.

Definition.—Is a neurosis characterized by involuntary movements, chiefly of the arms, legs, face, and tongue.

Causes.—Hereditary tendency to 'weak nerves;' girls are more subject to it than boys—three to one. It is most frequent between the sixth and twelfth years, and one attack predisposes to another. Rheumatism frequently and typhoid occasionally predispose to it.

* 'On Diseases in Children,' p. 292, 2nd edit.

Exciting Causes.—Fright; mental overwork; intestinal irritation, from worms, etc.; and heart-disease.

Pathology.—The following theories have been advanced:—

1. Kirke's theory, that it is caused by minute emboli washed off the valves of the heart and lodged in the brain.

2. Dickinson's theory, that the conditions in chorea depend upon a widespread hyperæmia of the nervous centres, not due to any mechanical mischance, but produced by the rheumatic condition or by various forms of irritation, mental and reflex.

3. Sturges's theory, that the disease is purely functional, arising, in the majority of cases, from some strong nervous impression.

4. Haydon's theory, that it is due to a vaso-motor paresis caused by a profound emotional impression.

Symptoms.—These begin either gradually or suddenly. In the first the child is dull, nervous, and cries without sufficient cause; she begins to fidget, and scrapes her feet on the floor when she sits; she works with some part of her dress, or is noticed to be unhandy and drops articles she is carrying; these increase, and the disease becomes fully established, with constant twitching of the muscles, so that the child is never a minute at rest. The face-muscles attract most attention, from the extraordinary grimaces made; the tongue is protruded with a jerk, and as quickly drawn in again, or stuck into one cheek; all the movements are intensified when the child is conscious of being watched. During the height of an attack even the commonest actions are impossible: speech is interfered with; the child cannot button or unbutton her clothes or feed herself. When the child goes to sleep the movements cease, but in very bad cases sleep is almost impossible. Sensory disturbances may be noticed, such as painful spots in the course of the nerve-trunks; hyper- or anæsthesiæ may be present, and the sight may be impaired.

The movements may be confined to one side (hemichorea), and in these cases, when sensation is impaired, it is on the

same side as that on which the muscles are affected; therefore the seat of the disease must be central, and not in the cord, for if it were so, sensation would be impaired on the side opposite to the affected muscles (Broadbent). There is always a certain amount of muscular weakness, but it may assume great prominence so as to simulate paralysis: slight twitches, however, may be made out on close observation, and often these become more pronounced as the paresis passes off. There is another form of muscular weakness which appears as the chorea is getting better; this is serious, and usually permanent, being due to degenerative changes in the spinal cord.

A mitral systolic murmur develops during the attack in a large number of cases; it is usually organic. The temperature is normal, unless there is endocarditis or other complication; the duration of the disease is very variable from one to many months, and death from chorea is very unusual.

Diagnosis.—This is usually very easy; it is to be borne in mind, however, that movements very similar are seen in some cases of tumour of the brain, but they are confined to one side.

Prognosis.—Uncomplicated cases always recover.

Complications. — Rheumatism, acute or subacute; heart-disease; paralysis of one arm (paralytic chorea) and peripheral neuritis.

Treatment.—Rest in bed, and avoidance of any mental effort or excitement, are indicated; careful regulation of the bowels, and regular feeding with simple and easily assimilated food; much sweets and farinaceous articles are to be avoided. The child should be amused, and encouraged to restrain the movements.

Arsenic should be given in increasing doses, beginning with 5 mins. of Fowler's solution, three times daily, and increasing it by 2 mins. every week until the child sickens, when it should be stopped for a couple of days and a dose of oil given; then resume it. The drug may be given hypodermically, with equal parts of glycerine, beginning with ten drops, once daily. To procure sleep in bad cases, chloral alone, or chloral and

bromide of soda, should be given in sufficient doses. When the attack is declining, the child may be put on equal parts of compound iron mixture and decoction of aloes. Sulphate of zinc is a good remedy for plethoric children. In very bad cases it may be necessary to feed the child with the nasal or œsophageal tube; and at bedtime, to procure sleep, give a full dose of morphia, either by the mouth or hypodermically. Jaccoud, in such cases, advised spraying the whole length of the spine with ether twice daily. Such cases require the sides of the cot to be padded, or the bed may be placed on the floor.

During convalescence a change to the seaside is very useful.

HEMICHOREA.—Is applied to cases in which one side of the body is alone affected, or where one side is much more affected than the other. The majority of cases of true hemichorea are of the latter kind. Where the movements are strictly confined to one side, the affection is generally post-hemiplegic, as seen in cases of tumour of the brain pressing on the internal capsule or pyramidal tracts.

Irregular movements are seen in a paralyzed limb, the result of cerebral hæmorrhage, to which the term 'athetosis' is given; but they differ from choreic movements by being slower, and they occur in muscles which are in a state of tonic spasm. Gowers calls this 'mobile spasm.' If chorea comes on about puberty, the excitement may be very pronounced, and the delirium violent. These cases are often associated with a good deal of hysteria, and are called 'chorea insaniens' or 'maniacal chorea.'

CEREBRAL HÆMORRHAGE.—In new-born babies, after a difficult and prolonged labour, meningeal hæmorrhage is not uncommon, and it is then called 'post-partum meningeal hæmorrhage.' Blood or serum exudes from the congested capillaries, or rupture of a small vessel may take place. The consequences of this accident are that the development of the brain is interfered with, and the child is mentally weakened or may be idiotic; the lower extremities are weak and stiff, or there may be well-marked hemiplegia ('birth-palsy').

Cerebral hæmorrhage occurring after birth is generally due to severe convulsions resulting from whooping-cough or the poison of scarlatina, measles, or pneumonia: or these causes may be absent, the child being feverish and drowsy for a day or so, when convulsions come on, followed after a short time by hemiplegia. Inquiries should be made as to any injury, such as falls or blows. The paralysis remains stationary for some weeks, and then improvement begins. The face-muscles regain their power, and, later, the muscles of the leg. The arm, as a rule, is injured for life, and contractures come on at the elbow, wrist, and thumb. The paralyzed arm grows more slowly than the other one, so that it is smaller, and is noticed to be always cold. The leg assumes more or less of the equino-varus shape, and may be shorter than its fellow. The mental faculties are impaired in a varying degree, and epilepsy may supervene.

Morbid Anatomy.—In birth-palsy a general effusion of blood is found over the vertex or base, or both In children after the third year, clots will be found at the vertex, base, or in the central white substance. Softening follows, with atrophy of the adjacent brain-substance.

Symptoms.—Convulsions, followed by paralysis and ending in rigidity, is usually the sequence of events.

Treatment.—In the post-partum variety, the treatment is preventive, by expediting delivery and so avoiding asphyxia. In the other variety, endeavour to prevent recurrence of the convulsions by giving bromide of soda and chloral freely. The head should be shaved, kept high, and an ice-bag applied; at the same time, a smart calomel and jalap purge may be given. If the child be unconscious, apply a mustard plaster or leaf to the nape of the neck. If the heart is acting violently, add three drops of the tincture or twenty of the infusion of digitalis to the sedative mixture. Later, when recovery is commencing, give iron tonics and strychnine or nux vomica, and the paralyzed limb should be subjected to massage and electricity. Remember the tendency of paralyzed limbs to be cold; therefore roll them in cotton wool.

Prognosis.—All cases improve somewhat, as a rule, but the tendency is to mental weakness, idiocy, and epilepsy.

CEREBRO-SPINAL MENINGITIS.—This disease occasionally is seen in childhood, but it is more frequent in early adult life. Its symptoms are those of inflammation of the membranes covering the brain and spinal cord. The onset is sudden, with convulsions, severe headache, violent vomiting, and contraction of the pupils; the head is retracted, and pain in the back of the head and extending down the spine is a prominent symptom; various skin-eruptions are common. The disease is very fatal before puberty. The treatment consists of leeches and the ice-bag to the back of the head, neck, and spine, with calomel and opium internally.

TUBERCULAR MENINGITIS.—*Definition.*—Is an inflammation of the pia mater set up by the presence of tubercles on the vessels at the base of the brain. It is commonly seen between the second and seventh years of life.

Causes.—Predisposing.—Hereditary predisposition; measles; whooping-cough; typhoid sometimes; insanitary conditions; and poverty. The disease is seen in all ranks of life.

Exciting.—The deposit of tubercle in the pia mater and blood-vessels of the base of the brain; falls and blows on the head; severe frights, and excessive mental exertion: softening cheesy matter in any part of the body, as from caseous glands, unabsorbed pneumonic deposits, and chronic empyæma, etc. The bacilli may be conveyed also in food, as from cow's milk and breast-milk, or they may be inhaled.

Symptoms.—There are two forms of the disease: (1) Primary; and (2) Secondary.

1. **Primary Tubercular Meningitis.**—The early or premonitory symptoms are ill-defined, and may precede the actual onset for some months. There is general malaise, with gradual failure of appetite and of flesh and strength. The child is dull; it sits or lies about in preference to taking part in the games of its schoolmates; is stupid at its lessons; and often shows a change in character, becoming easily offended, etc.;

the bowels are costive; there is slight feverishness at night, with more or less frontal headache. From this time the disease is usually divided into three stages, viz. (1) the stage of irritation, or excitement; (2) the stage of transition; and (3) the stage of coma.

(1) *The Stage of Irritation, or Excitement.*—This stage begins with cerebral vomiting, headache, and obstinate constipation; the tongue is furred usually; the appetite is lost; and often a transient red flush on the cheeks, coming and going without apparent cause, is seen at this time. There is intolerance of light and sound, and the child has a distressed look; the abdomen becomes flabby, and has a peculiar soft, doughy feel; the pulse is quick and regular; the temperature 100° to 101·5° F.; and the breathing is irregular and sighing. The child often wakens from a quiet sleep with a shrill, piercing cry, called 'the hydrocephalic cry.' In this stage the pupils are contracted.

(2) *The Stage of Transition.*—The symptoms become more marked. The headache is severe; the child lies with its eyelids closed, squeezed together, and the brows contracted; it often grinds its teeth; the pulse is now slow and intermittent; the temperature a degree or so lower than in the first stage, and the respirations are irregular and sighing, as before; the pupils are now dilated; there is often slight strabismus, nystagmus, or ptosis, and double optic neuritis is the rule. The finger-nail or a pencil drawn lightly over the abdomen, chest, or thighs brings out a bright red line, 'the tache-cerebrale' of Trousseau. The vomiting ceases, but the bowels remain obstinately confined, and the abdomen is markedly retracted (the boat-shaped abdomen). Towards the end of this stage, convulsions, muscular twitchings, paralyses, and spastic contractions are common; the temperature rises; the pulse quickens; and the urine and motions may be passed involuntarily, or retention of urine may take place.

The Stage of Coma.—The temperature again rises, and may become very high; the pulse becomes quick and regular, but

the irregular and sighing breathing continues; the drowsiness increases to coma; the eyelids are half closed; the pupils are widely dilated and insensible or unequal, and there may be squint or nystagmus; the muscles are soft and flabby; and wasting is extreme and rapid. Many variations from this regular course are seen; thus, there may be diarrhœa throughout, and vomiting may be absent or occur only once or twice; the pulse may be regular, and the intolerance of light and headache almost *nil*. These exceptions are seen usually in young children, and especially in babies. In babies, the retraction of the head is a valuable sign. The fontanelle is full, and often bulging, and the superficial veins on the forehead are unusually prominent. This retraction of the head is also seen in babies suffering from a simple meningitis during dentition. It is worth noting that the coma of this stage sometimes clears off for a time, but the pupils remain widely dilated, as before.

2. **Secondary Tubercular Meningitis.** — This form of the disease is very common in babies, but may be often seen in older children. The history reveals illness for a good while before any special symptoms pointing to the head are noticed; therefore in these cases nutrition is greatly interfered with, and the child is wasted. A convulsion is often the first indication of meningitis, after which the pupils are dilated, sluggish, or unequal, the joints rigid, and the child left in a state of stupor. The convulsions are often repeated; the pulse is small and quick; the breathing irregular; and the abdomen retracted. In this form the symptoms are very variable, and close observation will be necessary to make out its true nature.

Morbid Anatomy.—Grey granulations are found scattered over the pia mater at the base of the cerebrum, and observation shows that they follow the course of the smaller blood-vessels. These granulations, by the aid of the microscope, are seen to project into the lumen of the vessels, or in very small vessels to occlude them completely, and this is the cause of the congestion and subsequent effusion. The ventricles are dis-

tended with fluid, and the parts around are in a softened state. Other organs in the body will be found diseased, the commonest being caseous glands, and the lungs are very often the seat of tubercle.

Diagnosis.—Remember the following sequence of events: vomiting; constipation; headache; slow, irregular pulse; retracted abdomen; contracted pupils; sighing breathing; intolerance of light and sound; and the fact that the child looks distressed. In the secondary form of the disease the earliest symptom usually is vomiting; but a convulsion followed by a squint is often seen. A syphilitic basic meningitis is sometimes seen, which gives rise to the same symptoms as tubercular meningitis; but there will generally be other evidences of syphilis from which we can form a diagnosis.

Prognosis.—Absolutely fatal. I have never seen a case recover.

Treatment.—The child should be placed in bed in a quiet and darkened room; ice-bags may be applied to the head and warmth to the feet; the bowels should be opened with calomel. If syphilitic, give the usual specific remedies—perchloride of mercury and iodide of potash; bromide of potash or soda may be given; and for nourishment, milk and light soups. Leeching, blistering, and setons are now discarded for palliative measures.

INTRACRANIAL TUMOURS.—The following table is taken from Keating's 'Cyclopædia of Children's Diseases,' vol. iv. p. 551. The age of the cases was under nineteen years. The table shows the great preponderance of tubercular tumours, but it will be noticed that gliomas, sarcomas, and cysts are not uncommon. Again, the cerebellum seems the favourite seat, and next to it the pons, crura, basal ganglia and lateral ventricles, and cortex. Cysts are most frequent in the centrum ovale and cerebellum, and gliomas in the cerebellum and pons. As to the cause of the tumours, little is known, but a fall or blow may determine the onset of symptoms:—

INTRACRANIAL TUMOURS.

Situation.	Tubercle.	Glioma.	Sarcoma.	Glio-sarcoma.	Cyst.	Carcinoma.
1. Cortex cerebri	18	6	1	...	...	1
2. Centrum ovale	6	1	5	1	15	1
3. Cerebral axis—						
(*a*) Basal ganglia and lateral ventricle	14	3	5	...	1	1
(*b*) Corpora quadrigemina and crura cerebri . . .	16	1	3	...	...	...
(*c*) Pons Varolii . . .	19	10	5	2	1	...
(*d*) Medulla oblongata . .	2	...	...	...	1	2
(*e*) Fourth ventricle . . .	1	1	1	...	...	1
(*f*) Base of brain . . .	...	...	1	1	1	1
4. Cerebellum	47	15	10	1	9	3
5. Multiple tumours . . .	34	...	3	...	2	...
Total	157	37	34	5	30	10

Symptoms.—Headache (persistent) in infants; shown by contraction of the brows, throwing the hand up to the head, rolling the head from side to side; cerebral cry; and intolerance of light and sound.

Vomiting.—Coming on without cause, and in the intervals of feeding; not preceded by sickness.

General Convulsions.—There may be but one convulsion at the onset, or it may be repeated frequently.

Optic Neuritis.—Is especially common when the tumour affects the cerebellum. The discs are swollen; the veins distended and tortuous; and atrophy follows. It is usually double, though it always appears first in one eye, and is rarely equally intense in both.

Giddiness and the reeling gait are common, especially if the pons or cerebellum is affected.

Slow and irregular pulse, and Cheyne-Stokes respiration, are also common symptoms.

Diagnosis.—Tumour of the brain in the child is nearly always tubercular, therefore remember the following points: The tumour may be diagnosed as tubercular when there is an hereditary predisposition to tubercle, and especially if tubercle or cheesy degeneration of glands can be detected elsewhere in the body. Tubercular tumours are most frequent in the cerebellum, or distributed as multiple tumours; therefore if you have cerebellar symptoms or multiple lesions, the diagnosis will be strengthened.

Prognosis.—Almost universally fatal. There is just one gleam of hope, and that is that the tumour may be syphilitic.

Treatment.—Where there are any grounds for suspecting syphilis, vigorous constitutional remedies should be used without delay; otherwise the treatment resolves itself into relieving symptoms, such as vomiting, headache, etc., by giving hydrocyanic acid, iced milk or peptonized milk, and bromide and chloral, with the ice-bag or blisters for the latter. A quiet and darkened room is grateful.

INFANTILE PARALYSIS.—*Synonymes.*—Acute Atrophic Paralysis, Acute Anterior Poliomyelitis.

Causes.—Early life, four-fifths of the cases occurring before the third year; the warm months of the year; over-exertion; chilling of the surface when the body is heated, as sitting on damp grass, etc.; injuries, such as falls and blows; and dentition. It may develop as a sequel to measles, scarlatina, acute diarrhœa, pneumonia, or during rheumatism and chorea. It may be congenital.

Symptoms.—Four stages of the disease are usually described.

1. *The Initial Stage.*—During which there may be feverish symptoms for some days before any paralysis is noticed. The temperature is 101° to 102° F.; and there may be spasms, drowsiness, delirium, or even convulsions. Or, again, there may be no symptoms during this stage, or only those which are usually attributed to dentition or some gastric disorder.

In a certain number of cases, the history given is that the child was put to bed the night before in its usual health, and in the morning an arm or leg (or both) was noticed to be paralyzed. There is no relation between the severity of the symptoms in this stage and the amount of paralysis which follows, and it is worthy of note that the paralysis reaches its height at once.

2. *The Stationary Stage.*—The paralysis, having attained its height in the previous stage, remains stationary for a time, varying from two to eight weeks. The extent of the lesion varies; it may be widely distributed or affect but one limb; hemiplegia is very rare. The reflexes, both superficial and deep, are lost; sensibility is normal, as a rule; there is no pain, no rigidity of joints, no loss of control over the sphincters of the bladder and rectum, and no tendency to the formation of bed-sores. The paralyzed muscles do not respond to the faradic current, but do to slow interruptions of the constant current—'reaction of degeneration.' Interference with the nutrition of the limb is not long in showing itself, so that the part is cold, and often looks purple or livid; the temperature is lower; its muscles waste; and the whole limb becomes smaller in all its dimensions than its fellow.

3. *The Stage of Regression*, or improvement, sets in in those muscles whose faradic contractility was not entirely lost. Improvement may go on for several months, and in rare cases all the affected muscles may recover; but the rule is that a certain number are left permanently paralyzed.

4. *The Chronic Stage.*—In which no further improvement is to be looked for. The muscles waste and undergo fatty degeneration; contractures take place, and the limb ceases to grow. The wasting is accompanied by relaxation of the ligaments, and sometimes by dislocations of joints.

Paralytic contractures are characteristic results of this disease. The contractions occur in those muscles which have escaped or were only slightly affected, and, as their action is unopposed, deformities result in the following order of frequency, according to Adams: (1) talipes equinus; (2)

equino-varus; (3) equino-valgus; (4) calcaneus or calcaneo-valgus; and (5) talipes varus.

Pathology.—The lesion is a purely spinal one, the brain being unaffected. There is acute inflammation of or hæmorrhage into the anterior cornua of the grey matter of the cord, but the cervical and lumbar enlargements suffer most severely. The inflammatory products press upon and lead to both temporary and permanent damage to the large multipolar ganglion-cells in the anterior cornua. After a certain time, absorption of these products takes place, with the result that certain muscles recover, and, finally, the anterior horns waste and shrink so that the nerve-fibres and ganglion-cells are destroyed; this is caused by sclerosis, according to some authorities. The paralyzed muscles waste, and their fibres finally become replaced by connective tissue or fat; the bones waste also.

Diagnosis.—The characteristic features of this disease are—

1. Abrupt onset, which may be accompanied by feverish symptoms, or these may be entirely absent.

2. The paralysis reaches its height at once, or in a few hours.

3. No loss of sensation; no rigidity; and no loss of control over the sphincters.

4. Loss of the superficial and deep reflexes; loss of response to the induced current; and later, the reaction of degeneration is present.

5. The arrest of growth in the affected limb and the deformities.

The disease most likely to be confounded with poliomyelitis is cerebral paralysis. The following table, modified from Jacobi, shows the different points:—

Poliomyelitis.	Cerebral Paralysis.
Paraplegic, the rule.	Hemiplegic, the rule.
Intelligence, free.	Intelligence, depressed.
Disposition, lively.	Disposition, apathetic or cross.
Convulsions, rare; duration of symptoms, a few hours.	Convulsions, the rule; symptoms prolonged for several days or weeks.

Sensibility, not affected.	Sensibility, affected at first.
Reflexes, superficial and deep, lost.	Reflexes, increased.
No rigid contractions of upper extremity.	Extensive and rigid contractions of the upper extremity very frequent.
Atrophy of paralyzed muscles and arrested development of the limb, very marked.	Atrophy, very slight.
Faradic contractility, diminished or lost; reaction of degeneration.	Electrical reactions, normal.

In acute inflammation of the spinal cord, or myelitis, the loss of power is complete, and there is marked loss of sensation and paralysis of the rectum and bladder, with alkaline urine; the reflexes are increased, and bed-sores form readily.

In spasmodic spinal paralysis, contractures are present; the reflexes are *increased*, and the muscles do not atrophy.

In pseudo-hypertrophic paralysis, the course of the disease is progressive and very slow; the temperature of the limb is not affected; the reflexes gradually disappear, and faradic contractility remains so long as any muscular fibres are left.

In diphtheritic paralysis, there is a history of sore throat. The paralysis is less general, and passes from one group of muscles to another; the pharyngeal muscles are affected as well as those of the limbs; and faradic contractility, though lowered, is not completely lost.

Birth-paralysis is observed immediately after delivery, and affects the face and arm, not the lower extremities.

Prognosis. – Great improvement is the rule; complete recovery is very rarely or never seen. In the muscles in which the paralysis is likely to be permanent, faradic contractility disappears at an early date—usually before the end of the first week or during the second. Muscles which retain some degree of faradic contractility on the seventh or eighth day, may be

expected to regain their power, but every muscle which does not so react after the lapse of a fortnight from the onset of the disease, is likely to be permanently disabled.

Treatment.—If the case is seen early, look for and remove any source of irritation, such as inflamed gums due to advancing teeth, worms, etc. The child must be kept in bed in a quiet room, and given milk diet and light soups, and the bowels relieved with a dose of calomel.

Internally.—Ergot should be given, in the form of the fluid extract, five to ten drops to a child two years old, three times daily, or ¼ gr. of Bonjean's ergotine may be injected subcutaneously every day while fever lasts, as recommended by Dr. Althaus; it may also be given by suppositories. When the initial symptoms have subsided, iodide of potash may be given, 1 to 2 grs. three times daily.

Externally.—Counter-irritation to the spine by small blisters of liquor epispasticus, mustard plasters, etc., should be used, and in plethoric children a few leeches or the spinal ice-bag. These applications should all be made chiefly over the cervical and lumbar enlargements of the cord. *The cervical enlargement* extends from the upper limit of the cord to the first or second dorsal vertebra, and is largest opposite the fifth or sixth cervical vertebra. *The lumbar enlargement* begins at the tenth dorsal vertebra, is largest opposite the twelfth dorsal, and from this point becomes gradually smaller (Quain).

No local treatment to the paralyzed muscles should be commenced until some recovery of power is noticed, when the faradic current should be used daily together with massage. Begin with massage first, then a very weak current, so as not to frighten the child. Encourage the patient to use its muscles as much as possible; keep the paralyzed limb or limbs warm; and endeavour to maintain a high state of general good health by iron and other tonics. Strychnine, either by the mouth or hypodermically, may be given at this time.

PSEUDO-HYPERTROPHIC PARALYSIS. — *Causes.* — The essential causes are unknown. It is most frequent between

the ages of two and eight years, and Niemeyer says it may be congenital. It is much more frequently seen in boys than in girls. It has a tendency to run in families, and, like hæmophilia, appears to be transmitted through the mother without being herself affected.

Symptoms.—The child either shows the first symptoms about the time it should begin to walk, or these may not be observed for some years after the child has walked. Weakness in the muscles of the legs is usually the first indication. 'The child is late in walking, walks clumsily, falls with ease and rises with difficulty' (Gowers). At first the muscles of the calves are enlarged, firm, and hard; next to them come the infra-spinati, the glutei, and the lumbar muscles. The child walks with a peculiar waddling gait, and is very soon tired. When standing alone he separates his legs widely, his shoulders are thrown backwards, and the abdomen is prominent, so that a vertical line let fall from the back of his neck clears the buttock, thus producing the deformity known as 'ensellure,' or 'saddle-back.' If placed on the floor, his efforts made to get up are very striking; the child either cannot rise without assistance, or he pushes himself off the floor and then places both hands on his legs, next on his thighs, just above the knees, and finally catches hold of any object at hand, a chair or the table, for further help; in fact, as it has been expressed, 'he climbs up himself.' After a variable time, the enlarged muscles contract, the earliest to shorten being the gastrocnemii, then the glutei, the lumbar muscles, and lastly the muscles of the arms. Deformities from these contractures take place, such as talipes equinus; lordosis from weakness of the hip and spinal muscles; and, finally, the child is bedridden and helpless. 'Symmetrical talipes equinus rarely takes place before the sixth year, and is a constant symptom of this affection' (Duchenne).

Electrical Reactions.—The reaction to both the faradic and galvanic currents is unaffected at first, but later becomes very much weakened or entirely lost. The reaction of degeneration is never present. The superficial and deep reflexes, at first nor-

mal, are gradually lost; sensibility remains normal; and control over the sphincters is never interfered with. The temperature of the parts is lowered; the general health is not disturbed by feverish symptoms at any stage of the disease; the mind usually remains clear till the end, but occasionally the intelligence is feeble, or the child may be idiotic.

The disease drags on in a slow way, and death usually takes place before puberty is reached. The end is often precipitated by an attack of bronchitis or pneumonia.

Pathology.—The disease is caused by an increase in the connective tissue and fat of the muscles, the former giving them their hard feel, the latter accounting for their size. The connective tissue contracts and strangles the muscular fibres, which gradually disappear and give place to fibrous bundles and fat-cells. No morbid changes are to be found in any part of the nervous system.

Prognosis.—The disease is steadily progressive, and usually leads to a fatal result; phthisis is a common cause of death.

Diagnosis.

Progressive Muscular Atrophy.	**Pseudo-Hypertrophic Paralysis.**
Nearly always begins in the upper limbs, and invades subsequently the trunk and lower limbs.	Begins in the lower limbs, and rarely reaches the face.
Is rare before puberty.	Is almost exclusively a disease of childhood.
The reaction of degeneration is present.	Never present.
Fibrillar contractions are always present.	Very rarely seen.
Trophic changes are frequent.	They do not occur.
There is degeneration of the anterior horns as well as the white matter of the cord.	The cord is normal.

Microscopic examination of a portion of muscle shows no increase of connective and fatty tissue.	There is great increase of the connective tissue and fat.
Heredity is not a marked feature.	Is very strongly marked.
Poliomyelitis Anterior.	**Pseudo-Hypertrophic Paralysis.**
Onset is sudden, and the paralysis reaches its height at once.	Onset very gradual, and the paralysis is progressive.
Atrophy of the limb is rapid and extreme.	Hypertrophy is the rule.
The reaction of degeneration is present.	Never present.

Treatment.—The general health should be maintained in the best possible state, and those remedies given which tend to improve nutrition, such as iron, cod-liver oil, arsenic, and strychnine. Electricity, massage, and kneading of the affected muscles, and gymnastic exercises should be used steadily and perseveringly from the very beginning.

MYELITIS.—An acute transverse inflammation of the cord. Is sometimes seen in children, but it is rare before the tenth year.

Causes.—Exposure to cold; injuries, as blows and falls; excessive muscular exercise; and severe fright. It has been seen after typhoid.

Symptoms.—These begin with a feeling of 'pins and needles' in the feet, or there may be pain referred to the back, and often looked upon as rheumatic. This pain is soon followed by paralysis, which gradually increases for twenty-four or forty-eight hours, by which time it has reached its height. There is loss of sensation, loss of motion, and incontinence of urine and fæces. The degree of paralysis varies according as the inflammation is severe or otherwise. At first the reflexes may be

entirely absent, but they return, and after a time are increased if the lesion is above the lumbar enlargement. If the lumbar enlargement is involved, the motor paralysis is complete. The sphincters are powerless, and the muscles waste. If the cervical enlargement is involved, the arms are paralyzed, the pupils may be affected, and also the muscles of respiration.

Diagnosis.—See Infantile Paralysis.

Treatment.—Absolute rest in bed, either on the side or face. Counter-irritation to the spine, with mustard, or blistering fluid. The spinal ice-bag or leeches may be used. Give ergot as directed under Infantile Paralysis. Prevent bed-sores by careful nursing. When the acute symptoms have subsided, begin massage and electricity, and give iodide of potash and strychnine.

HYDROCEPHALUS.—*Definition.*—Is an abnormal accumulation of fluid within the cranial cavity. It may be acute or chronic.

Acute Hydrocephalus.—This is usually caused by tubercle in the brain, and the term is practically synonymous with tubercular meningitis (see p. 130).

Chronic Hydrocephalus.—May be congenital or acquired, internal or external.

Causation.—The congenital form is usually an internal hydrocephalus, that is, the fluid collects in the ventricles, and these cases cause much obstruction to delivery. Intrauterine inflammation of the lining of the ventricles is the likely cause. These infants are usually stillborn, or die soon after delivery; they may linger on for a year or two.

The acquired form may follow an acute meningitis. It may be caused by a tumour pressing on the veins of Galen; by enlarged glands in the neck; it may be a part of a general dropsy caused by cardiac or renal disease, or it may develop in children from rickets and anæmia.

Morbid Anatomy.—In internal hydrocephalus, the ventricles are found greatly dilated with a clear fluid of sp. gr. 1005, containing chloride of sodium and a trace of albumen. In external

hydrocephalus, the fluid is smaller in quantity, but of the same composition; it is much rarer. Signs of meningitis are rarely wanting.

Symptoms.—Noticeable enlargement is preceded often by convulsions, drowsiness, and some fever (meningitis). As the fluid accumulates, the head expands, and may attain enormous dimensions; the sutures are separated, and the fontanelles may join; the bones are thinned; the fontanelles bulge; and fluctuation can be readily detected. The child is wasted, and the face wears a pinched look, which contrasts strongly with the great size of the head. The forehead is very prominent; the head is spherical; the eyes look prominent, and nystagmus is common. Intelligence varies, but usually the child is mentally backward. Attacks of laryngismus stridulus are very frequent; convulsions are not rare; and paralyses, contractures, and twitching movements may all be present. The case may go on to idiocy.

Prognosis.—Always unfavourable.

Treatment.—Is highly unsatisfactory. If syphilis can be made out, mercury and iodide of potash should be given; indeed, they should be given in any case. Half an ounce to an ounce of fluid may be withdrawn by a fine trocar inserted through the anterior fontanelle; strapping the head has been tried.

FACIAL PARALYSIS.—Paralysis of the portio dura of the seventh nerve is not uncommon in children, and may be seen at birth or afterwards.

Causes.—Pressure on the nerve with the forceps, or prolonged impaction of the head in the pelvis, in both of which the lesion may be bilateral (obstetrical paralysis).

After infancy, the nerve may be pressed upon (1) inside the skull, by extravasation of blood or by tumour in the brain; (2) in the Fallopian canal, by fracture of the skull or carious disease of the petrous bone; (3) after leaving the temporal bone, by blows or falls, parotitis, exposure to cold, or rheumatism. The two commonest causes are exposure to cold and caries of the petrous bone—the first in children over three years, the second in children under that age.

Symptoms.—When due to a cold draught of air, the first symptom is that the mouth is drawn to one side when the child cries or laughs. The side of the face is affected, and is devoid of the natural wrinkles and expression; the eyelids fail to meet perfectly, and the angle of the mouth is lowered a little; on looking into the throat, the soft palate hangs, and the uvula is arched towards the same side; food collects between the gums and the cheek; speech is impaired; and whistling is imperfect and difficult. This is often called the 'rheumatic' form. After exposure to cold, it may be preceded by some feverish symptoms for a day or two, but is often unattended with symptoms of any kind.

When due to caries of the petrous bone, there is an offensive discharge from the meatus, and hearing is impaired. If the cause be inside the skull, signs indicating that other nerves are involved, as squinting and paralyses, will be added.

Treatment.—When due to cold, apply a couple of leeches or a small blister over the nerve as it passes out of the stylo-mastoid foramen. Keep the side of the face warm with cotton wool, and give 5 grs. of salicin or salicylate of soda three times daily. In a fortnight change to strychnine, 2 mins., gradually increased with iron and decoction of aloes, or iodide of potash in increasing doses. Electricity, both galvanic and faradic, should be used in all cases except where the cause is central.

Massage should be commenced as soon as all inflammatory symptoms have subsided. To encourage parents in its use, a liniment may be ordered to be rubbed in three or four times daily. When arising from ear-disease, the case is one for a specialist.

CHAPTER XII.

DISEASES OF THE URINARY SYSTEM.

INCONTINENCE OF URINE.—*Synonyme.*—Eneuresis.

This affection is not uncommon. It may occur at night only, during the day only, or both night and day.

Causes.—When it occurs at night only, the cause is generally to be found in some irritation of the bladder reflected from a phimosis or adherent prepuce; threadworms in the rectum; very acid or alkaline urine; stone in the bladder; cystitis, or hip-joint disease. It is generally found in the children of neurotic parents, and often a family history of epilepsy can be obtained. Enlarged tonsils and post-nasal adenoids, by producing a semi-asphyxiated state during sound sleep, may give rise to it. It may also be caused by late and unwholesome meals, and the free drinking of fluids a short time before bedtime. It may be associated with general delicate health, with severe frights or other shocks to the system, or with masturbation. In this form boys are more frequently affected than girls, and it is worth noticing that nocturnal incontinence may be the only manifestation of epileptic attacks in the night.

When the incontinence takes place both night and day, the case is more serious. The bladder may be absent or too small; the incontinence may be an overflow from some obstruction (calculus, etc.); there may be imperfect development of the neck of the bladder; the urethral muscles may be deficient from imperfect innervation, due to paralysis, spina bifida, etc.; or the meatus may be contracted.

Treatment.—Look for and remove the cause, if you can. Circumcise for phimosis; enlarge the meatus by incision, if it is contracted. Counteract any acidity or alkalinity of the urine, and remove the cystitis if it exists. The diet should be restricted to milk and light soups; condiments should not be

allowed, nor anything that will make the urine irritant. Late suppers should be prohibited, and no fluid allowed for an hour or so before bedtime. The bedclothes should be light, and, if there is a habit of lying on the back, an empty spool may be tied on opposite the middle of the spine. The child should be made to pass water just before lying down, and should be lifted once or twice again through the night to micturate.

Raising the foot of the bed, so that the child lies with its pelvis higher than its head, or, in other words, placing its bladder so that the urine will not be in contact with the trigone, has been resorted to with success. Injecting a large quantity of fluid, so as moderately to distend the bladder, may also be tried Electricity should have a trial, one pole being applied to the spine, and the other one held over the pubes, or placed in the perineum. Cold sponging and shampooing are also useful for increasing the muscular tone.

Of drugs for this affection, belladonna is *facile princeps.* It must be given in full doses, and 10 mins. three times daily to begin with for a child three or four years old should be rapidly increased until there are some evidences of its physiological effects, such as dryness of the mouth and throat and dilation of the pupil. If the urine is highly acid, 5 grs. of bicarbonate of soda may be combined with it (see R 31). Liq. atropiæ sulph., two drops at bedtime on a piece of sugar, is a good remedy, and sometimes succeeds when belladonna fails. Ergot is another good remedy in ten-drop doses three times daily, and success has been reported from the use of bromide of soda or potash, benzoate of ammonium, camphor, chloral, borax, cantharides, digitalis, or strychnine.

In obstinate cases, the bladder should be sounded for calculus, or irritability of the neck of the bladder may be treated with a strong solution of nitrate of silver, as recommended by Holmes. If there is much cystitis, 5-gr. doses of boracic acid in milk, three or four times daily, is a good remedy.

ACUTE AND CHRONIC BRIGHT'S DISEASE.—Any inflammation that attacks the secreting structure of the kidney,

whether such inflammation be catarrhal or interstitial, partial or general, is essentially Bright's disease more or less.

1. **Acute Bright's Disease.**—*Synonymes.*—Tubal Nephritis, Parenchymatous Nephritis.

Causes.—The poison of scarlatina; exposure to cold and wet; diphtheria; typhoid; erysipelas; rheumatism; phthisis; and lardaceous disease.

Symptoms.—Headache and vomiting, with restlessness and a temperature of 102° or 103° F., are the early symptoms of nephritis; the urine is scanty and high-coloured, and the pulse is hard, small, and quick; the face becomes puffy about the eyelids first, and on examination of the urine albumen is found in varying quantity; examination with the microscope shows blood-corpuscles and hyaline casts; after a few days, the dropsy extends to the feet and legs, and is often early seen in the scrotum. Sometimes the dropsy disappears quite suddenly, but the albuminuria remains; this is unfavourable, as it indicates a chronic type of the disease. There is usually some disturbance of the heart's action, its sounds being thick, and the apex-beat displaced outwards; again, once in every eight or ten beats there is often noticed a one-beat stagger or shuffle; the left ventricle may be found dilated after death in severe cases. Albuminuric retinitis is present in a fair number of cases.

Complications.—Violent and repeated convulsions; persistent vomiting; anasarca; hydrothorax and œdema of the lungs; broncho-pneumonia; peritonitis; pleurisy with effusion; and peri- and endocarditis.

Diagnosis.—This is not difficult, as the symptoms are very definite, such as headache, vomiting, puffiness under the eyes, and albuminuria. The differentiation of the chronic forms will be considered later.

Prognosis.—This is always serious. Bad signs are the persistence of the dropsy and albumen in any considerable quantity; persistent scantiness of urine; much pallor; the occurrence of erythematous eruptions; and the existence of

albuminuric retinitis. Remember that sudden death may occur from rapid dilatation of the left ventricle, especially when the disease is a sequel of scarlatina.

Treatment.—Rest in bed *between blankets* is the first essential; encourage the skin to act freely by the daily warm bath; give plenty of demulcent drinks; and let the food consist of milk, and milk only, as long as the albumen in the urine is present. This is a most important point. When the albumen disappears, a very guarded return to meats and soups will be necessary. The bowels should be kept freely open, and those medicines given which produce watery stools, such as the compound powder of jalap, or Hunyadi Janos or Franz Joseph waters. For medicines, give a simple diaphoretic, such as ℞ 19. Where the urine is very scanty and highly albuminous, and dropsy is general, more active measures are called for. In these cases, the wet pack two, three, or more times daily is highly useful. A thin blanket is wrung out of hot water, and the child rolled in it from chin to feet; next a dry blanket is applied, and the whole covered lightly with a mackintosh sheet. After an hour or so, the pack is removed, and the child is dried and rolled in a warm blanket. Watch the temperature while it is applied. Warm water and vapour baths are good measures but in my experience much less efficacious than the pack. For medicines, the purgatives before mentioned should be used, and the following is a good diuretic: ℞ 26 for a child ten years of age. When the temperature becomes normal, give iron in the form of perchloride. It may be combined with liquor ammonia acet. and dilute acetic acid (℞ 14). This combination is called Basham's chalybeate diuretic.

The complications are often serious, and they arise quickly. Their treatment is as follows:—

Convulsions.—Place the child in a wet pack; give a drop of croton oil, and hasten its action by means of copious warm enemata. 20 grs. of bromide of soda should be injected into the bowel, or 10 grs. given by the mouth, if the child can swallow. In desperate cases pilocarpine hypodermically—$\frac{1}{15}$ to

$\frac{1}{12}$ gr. may be tried—and the ice-bag applied to the shaven scalp. Leeches to the loins and mastoids are better practice than venesection in children. Benzoate of ammonium in 10-gr. doses has been recommended by Dr. Barrs.

Vomiting.—Ice to suck; iced milk and kali in teaspoonfuls at a time; iced champagne; hydrocyanic acid and bismuth; drop doses of the tincture of iodine in a teaspoonful of water.

Dropsy.—The abdomen, when much distended, should be tapped with a Southey's trocar and long tube; the thorax may be dealt with similarly.

Suppression of Urine.—Brisk purgatives; dry cupping of the loins; diuretics and plenty of bland fluids to drink.

Pulmonary Œdema.—Free purgation; digitalis, and plenty of stimulants.

Cardiac Dilatation.—Digitalis, strophanthus or caffeine and strychnine, with plenty of stimulants.

2. **Chronic Bright's Disease.**—The 'large white,' the 'small contracted,' and the 'amyloid' kidney are found in children.

(1) *The Large White Kidney.—Symptoms.*—The course of this disease is usually very chronic; the child gets better for a time, and then some slight cold brings back all the old symptoms. There is usually well-marked anæmia, the child being puffy and pasty-looking. The heart is often dilated, and the urine always contains more or less albumen. The kidneys are enlarged, sometimes enormously so.

Pathology.—In the large white fatty kidney, the tubular structure is found chiefly involved. The kidney is enlarged, and its capsule can be readily detached. The cortex is much swollen, smooth on the surface, and pale in colour. The convoluted tubes are twice their normal size, and their epithelial lining is swollen and granular-looking.

(2) *The Granular Contracted Kidney.—Symptoms.*—This form is rare in children. Thirst, and the secretion of large quantities of urine, are early symptoms, and often suggest diabetes. Albumen may be absent from the urine, or only trifling in amount. There may be œdema and urgent dyspnœa.

Pathology.—In the contracted granular kidney, the organ is reduced in size; the capsule is thickened and adherent; its surface is nodular, and its colour deep red. The cortex is thin; the medulla is atrophied, and its substance dense. The connective tissue is greatly increased, which thickens the capsule and compresses the capillary tufts and convoluted tubes.

(3) *Amyloid Kidney.—Symptoms.*—Anæmia and marked pallor, œdema and general dropsy, especially if the liver is affected. The urine is pale and increased in quantity; albumen is generally present; and transparent hyaline casts may be seen under the microscope. Advancing weakness and exhaustion, and uncontrollable diarrhœa, precede death.

Pathology.—In this form the kidney is enlarged, and has a waxy look. It is caused by chronic suppurations and ulcerations, diseases of bones and joints, syphilis, scrofula, and phthisis.

Diagnosis.—This may be conveniently tabulated as follows, taken from Aitchison's 'Medical Handbook,' pp. 136, 137:—

Acute or Chronic Bright.	Cirrhotic Bright.	Waxy Bright.
Develops insidiously; or there is chill, fever, and lumbar pain. Sometimes presence of an obvious cause.	Develops slowly, without chill; cause not so obvious.	Develops slowly, and cause very obvious; evidences of waxy disease in other organs.
Œdema, and in chronic form great dropsy.	Little dropsy.	Little dropsy usually.
No hypertrophy of heart in the acute; heart-sounds modified in the chronic.	Great hypertrophy of the heart and great tension in the blood-vessels.	No hypertrophy or tension.

Uræmic symptoms common.	Uræmic symptoms not so common.	Uræmic symptoms rare.
Urine diminished.	Urine increased.	Urine increased.
Urea diminished.	Urea diminished.	Urea normal.
Urine contains blood.	Urine contains no blood.	Urine contains no blood.
Specific gravity of urine at first high; low in the chronic form.	Specific gravity low.	Specific gravity low.
Urine dark, and deposits urates.	Urine pale, and no sediment.	Urine pale, and no sediment.
Albumen abundant.	Albumen small in amount.	Albumen small in amount.
Epithelial, granular, and blood-casts predominate; hyaline and fatty-casts; in the chronic form also tube-casts.	Hyaline casts predominate; no blood-casts; tube-casts are few in number.	Waxy casts predominate; no blood-casts; tube-casts few in number.

Treatment.—Maintain the general health in the best possible state by allowing only such food as is easily digested and nourishing. During any exacerbation of symptoms, restrict to milk alone, and treat as directed when the disease is acute. Exposure to cold and wet must be very carefully guarded against, and, where possible, the winter should be passed in a dry warm climate. Flannel should be worn next the skin, and care taken to keep the feet warm. In the amyloid or waxy disease, every effort should be made to counteract the chronic suppuration which is generally present, even to the extent of excision of a joint or amputation of a limb.

CHAPTER XIII.

GENERAL DISEASES.

ACUTE TUBERCULOSIS.—*Definition.*—Is an acute, febrile, general disease, which arises, in the majority of cases, as a consequence of special hereditary predisposition.

This disease is seen in children of all ages, but in very young subjects it is usually widely distributed, while in older children special cavities are more likely to be selected.

Causes.—Hereditary predisposition, which is usually very strong; lowering complaints and insanitary conditions; measles; whooping-cough; typhoid fever; the presence of softening, cheesy matter in any part of the body as a chronic empyema, softening, caseous glands, and cheesy pneumonia. Where the predisposition is strong, a severe shock to the system, as from a blow or fall, may determine the outbreak.

Symptoms.—These may begin gradually or suddenly. In the majority of cases the onset is gradual, the child passing imperceptibly from health to sickness. The child is less brisk and lively than usual, and, instead of playing about, prefers to act the part of an onlooker in those games it was its custom and delight to join in; its appetite is poor; it looks pale, and is getting thin; the conjunctivæ have a bluish colour, and there is a dark discoloration under the eyelids. The temperature at this time is of the hectic type, 101° F. to 104° F. at night, and normal in the morning, and, instead of rising after the night's rest rosy and cheerful, is seen to be pale and distressed looking. At this time, slight œdema of the feet and legs is often seen, and a trace of albumen may be found in the urine. Examination of the abdomen shows it to be rather flattened than distended; there is no tenderness and no enlargement of either liver or spleen. An eruption of spots, larger than those of typhoid, and more rosy in colour, is noticed in some cases. In

very young children, the above symptoms progress, and the child dies from exhaustion, which is often accompanied by diarrhœa. In older children, it is usual for local symptoms to arise, and so these cases very often are brought to a rather sudden termination by the onset of tubercular meningitis or acute pulmonary tuberculosis.

Sometimes the kidneys and bladder are affected, or it may be the stomach, liver, intestines, or spleen.

The duration of the disease in young children is usually six weeks or two months; in older children it may be much shorter if special organs are attacked.

Morbid Anatomy.—The grey granulation is found in nearly all the organs and tissues of the body. It is a firm, grey, translucent, projecting nodule, varying in size from a pin's head to a millet seed. In children its colour quickly changes to yellow, and it becomes opaque. The granulations follow the ramifications of the finer arteries; they are seen growing into their lumen, and in some cases blocking them completely.

In the Intestines, the granulations are found mostly in the small intestine, lying in the submucous tissue, and in the acute form of this disease rarely give rise to ulceration.

In the Liver, they are developed on the smallest ramifications of the hepatic artery, and are seen under the serous coat.

In the Spleen, all kinds of granulations may be found, and even large cheesy masses, increasing its size very much.

The Kidneys and Bladder may be studded with the granulations.

The Bronchial and Mesenteric Glands are always enlarged and cheesy, or they may be in a state of softening.

Diagnosis.—From Typhoid Fever.—This is often impossible at first, but the following points are important: Tuberculosis has no definite onset; its temperature is very variable, and may reach 104° F. in the evening, often falling to normal in the morning; the abdomen is not swollen and tympanitic; and the spleen is natural in size. The expression is quite calm and composed in typhoid, but it is haggard and distressed in tuberculosis.

The following is an important grouping of symptoms in this disease, viz. : a very gradual passage from health to sickness ; loss of appetite and spirits ; wasting and pallor ; fever at night ; a distressed look and œdema of the lower limbs.

Prognosis.—This disease is fatal.

Treatment.—Where the tendency to tubercle is known to be a family failing, very special measures should be taken to keep the health of the children in the best possible state. Such children should sleep in well-ventilated rooms, should have plenty of out-door exercise, and be warmly clad. They should not be taught too early, and no forcing in this direction allowed. The mother should not suckle her baby, but a healthy wet-nurse be substituted. All digestive and bronchial troubles should receive prompt treatment and attention, and convalescence from the exanthemata made as complete as possible. It is good practice to advise a month or two at the seaside every summer for such children.

When the disease has declared itself, the treatment is resolved into dealing with complications as they arise, such as digestive troubles, diarrhœa, bronchitis, and the like. No medicine has any effect on the disease itself.

RICKETS.—*Definition.*—Rickets is a disease of infancy, characterized by impairment of nutrition, alterations in the bony skeleton, with weakness of muscles and ligaments, and by nervous disorders.

Causes.—*Predisposing.*—Cold and damp climates, especially where there are sudden changes of weather; overcrowding; syphilis; and a delicate state of health of the mother during pregnancy. It is very doubtful whether it is hereditary or not.

Exciting.—Impure air and want of sunlight ; unsuitable food during the first year of life, such as starchy food and too much cow's milk; gastro-intestinal catarrh ; deficiency of phosphates in the milk.

Symptoms.—The symptoms proper to rickets are preceded by digestive derangements (vomiting, diarrhœa, etc.), fretfulness, flatulant colic ; and there may be slight fever at night, with rest-

lessness and frequent micturation. The onset is marked by three special symptoms, viz. (1) sweating about the head and neck; (2) throwing off the bedclothes at night; (3) tenderness over the body generally, on being handled.

The sweating is profuse, and occurs chiefly during sleep. The throwing off of the bedclothes gives rise to catarrh of the bronchial tubes, of the stomach, or of the bowels.

The earliest manifestation of the disease is seen in the beads at the junction of the ribs with their cartilages; next we have the round spots of thinning in the parietal and occipital bones, called 'craniotabes' by Elsässer,—they are found from the third to the eleventh month; symmetrical swellings form on the frontal and parietal bones, and the top of the head is flattened, or the skull may be elongated fore and aft, or be markedly 'dolichocephalic;' the edges of the sutures are thick and irregular, and the veins over the scalp are prominent; the teeth are late in appearing; they come out in wrong order, or are cut 'cross,' and they very soon decay.

The thorax is grooved as follows:—

1. The chest has a broad, shallow depression, beginning outside the nipple on each side, and extending obliquely from above downwards and outwards, and situated just behind the beads.

2. A transverse groove running from the junction of the body of the sternum with the ensiform cartilage on either side outwards to the posterior axillary border; this is Harrison's sulcus. The costal cartilages and sternum are carried forward from increased convexity.

The spine is often bent, the natural posterior curve being increased.

The clavicle often shows a swelling about its middle due to green-stick fracture and callus.

The upper limbs have the lower ends of the radius and ulna enlarged, and both these bones and the humerus are bowed outwards.

The lower limbs show much the same changes as the upper, the ends being enlarged and the shafts bowed outwards.

The ligaments suffer from nutritional changes due to interference with their blood-supply, and yield, causing looseness of joints.

The muscles are thinned and poorly nourished.

The liver is depressed, and in some cases enlarged.

The spleen is enlarged in a certain number of cases, and may attain a great size.

Nervous disturbances are common, such as laryngismus stridulus, which is nearly altogether restricted to rickety children.

Convulsions are very common.

Tetany, when it occurs in infancy, is almost invariably due to rickets.

Morbid Anatomy.—The composition of the bones is interfered with thus—

Normal.		**Rickets.**	
Inorganic constituents	= 65 °/₀	Inorganic constituents	= 35 °/₀
Animal matter	= 35 °/₀	Animal matter	= 65 °/₀

The liver, spleen, and lymphatic glands are enlarged; there is a deficiency of the calcium salts, and the bony spaces between the trabeculæ are filled with juicy material. Hypertrophy of the brain and chronic hydrocephalus are often present.

Prognosis.—This is not serious in itself, but is so chiefly from such complications as bronchitis; broncho-pneumonia; collapse of the lungs; whooping-cough; laryngismus stridulus; and splenic anæmia.

Treatment.—Proper and suitable feeding is the first essential; next keep the digestive system in good working order, and counteract any tendency to vomiting or diarrhœa; cod-liver oil is of great service, and may be given in emulsion form. Kassowitz recommends phosphorus—$\frac{1}{123}$ gr. dissolved in almond or olive oil.

Plenty of fresh air and especially sea-air; cold or tepid baths, ending up with the cold douche, and followed by vigorous

friction; salt-water baths, massage with the oiled hand, and warm flannel clothing next the skin, are highly important adjuncts to other means.

The phosphate of soda with tartrate of iron (see ℞ 32) is very useful, or the syrup of the iodide of iron may be given (℞ 20). During the early stages of rickets, care should be given to supporting the back, and where there is much tenderness of the bones generally, the horizontal position will be best.

Congenital Rickets.—*Synonymes.*—Fœtal Rickets, Fœtal Cretinism, and Achondroplasy. In rare cases, children are born with enlarged epiphyses, deformed bones, and beaded ribs; they are usually still-born, or survive only a few hours. The limbs are very short, and the fingers stunted. In the skull the membrane-formed bones are well developed, but the cartilage-formed portions are stunted.

Acute Rickets.—*Synonyme.*—Infantile Scurvy.

Symptoms.—This disease is usually seen from six to eighteen months of age. Those affected are wasted, flabby, and very anæmic, and have been brought up under circumstances favourable to the development of rickets. There is much evident pain on any movement; the gums are spongy, and bleed readily; and purpuric spots are common on the skin; the lower limbs are excessively tender, shiny, and tense, and cylindrical swellings are seen about the epiphyses; hæmorrhage from the kidneys is frequent. Drs. Cheadle and Barlow both incline to the opinion that these are cases of scurvy, brought on by improper feeding, and especially the absence of milk from the diet. Others look upon them as exaggerated cases of the anæmia so common in severe rickets.

Late Rickets.—This term is applied to the onset of rickets after the age of two years. It is very rare.

SYPHILIS.—This disease in childhood may be either (1) Acquired or (2) Hereditary.

1. **Acquired Syphilis.**—*Causes.*—The virus may be conveyed by a wet-nurse or by the act of vaccination. The wet-nurse infects generally through a sore nipple or sore mouth, but it is

necessary for the baby to present an abraded surface, and this it may readily do by means of a sore lip. It may further be inoculated with the discharges from the genitals of the nurse, conveyed to it on the hands. The coryza of a syphilitic infant will infect the breast of a healthy wet-nurse, and so also will the ulcers and fissures about the mouth; but they will not infect the mother's breast: this is Colles' law, and it follows from it that no syphilitic infant should be suckled by any one except its mother.

With regard to vaccination, it is important to remember that an interval of a month or six weeks must elapse between the time of vaccination and the formation of a chancre at the seat of inoculation (Hutchinson). It often happens that vaccination is followed in a week or so by symptoms of syphilis; but there is no chancre at the seat of inoculation, and they therefore cannot be looked upon as cases of vaccino-syphilis. In these cases evidences of syphilis in one or other parent will rarely be wanting.

2. **Hereditary Syphilis.**—In this form the fœtus receives the poison at some period of intra-uterine life. There is no primary sore. The effects of the poison on the fœtus are variable; thus if both father and mother are suffering from syphilis at the time of conception, the mother will usually miscarry at a variable time, and give birth to a dead and shrivelled fœtus; the placenta will be found diseased in these cases. Again, the infant may be born at full term, but dead, or it may live a few hours; it is small and shrivelled, has a feeble hoarse cry, and the fingers and toes are blue. It may be born at full term, apparently well-nourished, but with evidences of syphilis on it, such as pemphigus, etc., or, lastly, it may be born healthy and well-nourished, without any visible evidence of the disease anywhere. The more recent the disease, then, in the parent or parents, the more strongly marked will its evidence be in the child. The father may infect the fœtus through the spermatozoa; or the mother may become infected by the husband, and she, in turn, infect the fœtus through the placental blood,

but this is rare after the seventh month of intra-uterine life. The mother may inoculate the fœtus during labour. The following is A. Baginsky's summary of the etiology of congenital syphilis (taken from Ashby and Wright, pp. 394, 395):—

1. If the father and mother are both syphilitic, a syphilitic infant is generated, or the mother may miscarry; the more severe and recent the syphilis is in the parents, the more likely is the fœtus or infant to suffer severely.

2. If the father is syphilitic and the mother healthy, the infant may be syphilized at the time of conception, and this may happen when the father is affected by tertiary as well as secondary syphilis. Under these circumstances, the mother may be syphilized either through the spermatozoa or from the fœtus through the placental circulation; she may apparently escape, but such women cannot be inoculated.

3. If the mother only is syphilitic, the children may escape; certainly mothers with tertiary symptoms may bring forth sound children.

4. If the father and mother are healthy at conception, and the mother becomes affected during pregnancy, the fœtus becomes infected through the placental circulation; an infection during the act of birth is possible.

Symptoms.—If the disease is manifest in the child at birth, the symptoms are severe. The child is emaciated; it snuffles, and has a hoarse cry. Pemphigus appears on the palms and soles; there are fissures and ulcers at the corners of the mouth and nostrils; and the child survives a few hours or a day or two.

A very large proportion, however, of syphilitic children are born apparently healthy, but they show symptoms generally during the second month. These are often preceded by restlessness, fever, diarrhœa, or dyspepsia, or the outbreak may be determined by one of the exanthemata; thus the rash of measles may subside, leaving the syphilitic eruption in its place.

Wakefulness at night is one of the earliest symptoms; the child cries, and cannot be pacified. This is likely due to pains in the bones.

Snuffles.—The baby is supposed to have got 'the cold' in its head; it breathes in a noisy fashion, and a discharge of an irritating nature causes fissures and excoriation around the nostrils.

Skin-eruptions appear about the same time as the snuffles, and may be erythematous or papular, or there may be mucous patches about the anus, genitals, or mouth. The colour of the rash is bright red at first, but soon begins to fade, and it assumes a coppery or lean ham colour, at the same time becoming polished-looking and shining. The commonest rash is 'syphilitic roseola.'

Larynx.—The mucous membrane of the larynx is affected, being swollen and often ulcerated, and there is, as a consequence, the hoarse cry of syphilis.

Skin.—The skin becomes pale, sallow, yellowish, or earthy in tint (café-au-lait), is dry, inelastic, and hangs in folds.

The hair of the scalp and eyebrows sometimes falls out, and the nails become shrivelled and fall off.

Lesions of Internal Organs.—In the lungs of infants dead-born, or dying soon after birth, gummata and fibroid induration may be found. Virchow has described a white hepatization which is a chronic pneumonia. The liver often contains gummata. The spleen is enlarged and indurated; it may contain gummata. The bones are affected both early and late in the course of the disease. The coryza is followed by caries of the nasal bones, and falling in of the bridge of the nose. The long bones are affected with periosteal nodes, and these often, breaking down, lead to caries. The ends of the long bones—the humerus, femur, radius, and tibia—are affected near their epiphyses with a syphilitic epiphysitis. The teeth of the first set are cut early, and soon decay. The teeth of the second or permanent set are misshapen, and the upper central incisors are dwarfed, peg-shaped, and have a central notch in their cutting edge (Hutchinson's teeth). The eyes become affected, commonly about puberty, with interstitial keratitis, iritis, and choroiditis.

Relapsed Syphilis.—This is the name given to those cases

where the symptoms following birth have been so slight that the disease was overlooked; during the second or third year condylomata, ulcers about the mouth or anus, or various skin-eruptions, make their appearance.

Diagnosis.—This is not difficult, and most reliance is to be placed on the snuffles, the eruptions, the hoarse cry, and the colour of the skin. After the eruption of the permanent teeth, the notched and pegged upper central incisors are pathognomonic.

Treatment.—Treatment begun during pregnancy is often successful in preventing the taint from being transmitted to the fœtus; but it must be begun early. In the large majority of cases, however, we are first consulted about the coryza, and I always give 1 gr. of hyd. c. cret. with ½ or 1 gr. of Dover's powder, every night at bedtime, and continue this for three months. If there is much cachexia, give syr. ferri iod., 5 mins., three times daily, and cod-liver oil after food. In Vienna mercury and tannic acid are given if there is any tendency to diarrhœa. Mercury may be rubbed on the abdomen or applied on the binder in the form of the ointment; but this is a very dirty method, especially where great cleanliness is not likely to be observed. A better method is the mercurial bath, made by dissolving 10 grs. of the perchloride of mercury in 2 gals. of warm water; the child may be kept in this for five minutes every day, and the amount of the mercurial as well as the length of time in the bath may both be gradually increased. Care should be exercised that none of the water gets into the baby's mouth. While these remedies are in use, take a look at the gums every day, and if they become spongy or the mouth shows any signs of stomatitis, stop all forms of mercury for a time. Great cleanliness should be enjoined, and the nares and anus kept free from all discharges; it is a good plan to smear a little yellow oxide of mercury ointment over and about these orifices. Iodide of potash is often given in conjunction with mercury, to which there is no objection.

The diet should be carefully managed so that the digestive

functions may be kept in the best working order. It should be of the most generous kind. Abundance of fresh air and warm clothing are essential.

RHEUMATISM.—*Causes.*—*Exciting.*—Exposure to cold and wet; chilling of the surface when the body is heated; scarlatina; and excessive muscular exercise.

Predisposing.—Hereditary tendencies; sex,—it is more common in females during childhood; age,—it is rare before the fourth year, and becomes common after the sixth.

Symptoms.—These may begin suddenly with chilliness, and sometimes vomiting; the appetite is lost; there is much thirst; and the temperature is elevated to 102° F. or so; pain is complained of in one or more of the larger joints (the knee, elbow, wrist, or ankle, most commonly); the joint is swollen, red, and painful, and the disease shows a peculiar tendency to flit about from one joint to another, not infrequently returning to the one originally attacked; there is little or no perspiration, the profuse sour sweating so common in the adult being rarely seen in the child. Anæmia is constantly seen, and relapses are common.

There are many variations in the above symptoms which require notice, and, first, as to the joint affection.

This is often so slight as to escape notice altogether, the child having, perhaps, only a little puffiness of one ankle or wrist, and making little or no complaint. Examine the heart in these cases, when you will seldom fail to find a systolic murmur at the apex.

In other cases, the rheumatic inflammation is limited to the tendons, as in stiff neck (torticollis), or it may affect only the hamstring tendons at the back of the knee. In the latter, it is very striking the unwillingness the child displays towards standing, and, when it makes the effort, it cannot put the heel to the ground, and cries with the pain at the back of the knee. Sometimes this form of rheumatism supervenes during the night, and the child, on getting out of bed in the morning, can only walk on its toes.

The associations of Rheumatism are highly important; by their presence mild cases are rightly diagnosed, and the true nature of the illness made manifest; they are as follows:—

Heart-Disease.—Endocarditis.—In the majority of cases, this appears with the swelling and pain in the joints, but quite often it is the only evidence present of the rheumatic state. It is subacute, attacks chiefly the mitral valve, and declares its presence by a soft blowing murmur at the apex, systolic in time. In consequence of the mildness of the symptoms in many cases of rheumatism in childhood, this endocarditis is constantly overlooked. Reduplication of the second sound at the apex, or a post-diastolic rumble, is another sure sign of endocarditis.

Pericarditis.—This, again, may be the sole evidence of the rheumatic state, and, like endocarditis, from the mildness of the joint symptoms, may be overlooked. It is rarely acute, and is more liable to appear in second than in first attacks of rheumatism. It has a tendency to become subacute, chronic, and intermittent, breaking out anew with each fresh manifestation of rheumatism. It is most common when the heart has become hypertrophied and dilated. Its symptoms are cardiac pain; restlessness; dyspnœa; and distress.

Pleurisy.—Most common on the left side; is seen in about 10 per cent. of cases of rheumatism in childhood.

Pneumonia.—This is frequently overlooked, owing to the pain of examining the back of the chest. Loss of pulse respiration ratio, with a temperature of 104° or 105° F., should suggest its presence. There are three forms of it in rheumatism. (1) The limited form, where it is associated with pleurisy; (2) the more extensive form, associated with mitral disease and pericarditis; and (3) the embolic form, also associated with valvular affections.

Bronchitis.—Occurs in 9 per cent. of cases, according to Lébert.

Tonsillitis.—This may occur before, during, or after an attack of rheumatism. Sometimes it ushers in an articular rheumatism, or it may occur without any joint affection in

rheumatic subjects. About 30 per cent. of all cases of tonsillitis in childhood are rheumatic.

Fibrous Nodules.—These vary in size from a pin's head to an almond, and are found chiefly about the joints, especially at the back of the elbow, about the patella, the malleoli, the vertebral spines, the crista ilii, the clavicles, the temporal and occipital ridges, etc.; they are not tender; they appear in crops varying in number up to thirty or so. They are pathognomonic of rheumatism, and appear concurrently with peri- and endocardial inflammation.

Chorea.—This is an associate of rheumatism in a very large number of cases—about 57 per cent. "It may occur at any point in the series of rheumatic symptoms; when it is extreme and combined with severe endo- or pericarditis, it is of great gravity. Nearly all fatal cases of chorea are thus associated, and are rheumatic" (Cheadle).

Erythema.—Of these, Erythema marginatum and urticaria, or nettle-rash, are the most common; Erythema nodosum is not so common. Purpuric erythema, the Peliosis rheumatica of Schönlein, may appear quite apart from other symptoms. It is probably caused by thrombosis of small subcutaneous vessels, which is favoured by the hyperfibrous condition of the blood in rheumatism.

Thrombosis and *Embolism* are predisposed to by the highly fibrinous condition of the blood.

Night Fevers, *Headaches*, and *Incontinence of Urine* are stated to be especially associated with the rheumatic state in children, by Dr. Goodhart.

Diagnosis.—This is usually easy in a typical case. You will do well to diagnose all cases as rheumatic where the symptoms are very slight, such as pain confined to a single joint, or in a tendon or its sheath, or even where there is merely some stiffness; and the important point to bear in mind is that these slight cases are genuine rheumatism, and bear with them all the possibilities of cardiac inflammation. When endocarditis is present, it is almost always rheumatic—80 per cent.; and,

if you get fibrous nodules, they are conclusive. The family history should be carefully inquired into in every case.

Prognosis.—This must always be given cautiously, and the condition of the heart taken as your basis. If the heart is healthy, then an attack of rheumatism in a child is not serious. If the heart becomes affected during the attack, much may be done to limit the amount of mischief, but always remember the tendency of the attacks to die down and light up again, each attack carrying the damage a little further than before. The copious and repeated evolution of fibrous nodules is a very bad sign.

Treatment.—Begin with a dose of calomel; keep the child strictly confined to bed with a flannel night-dress, and between the blankets. Roll all painful joints, tendons, etc., in cotton wool, and, if any particular part is very tender, apply a lotion of bicarbonate of soda and Battley's solution on lint (see ℞ 27).

Apply a blister over the apex-beat, and for an inch around it, with blistering fluid, and give salicylate of soda, or salicin, in 5 to 8 gr. doses every three hours (see ℞ 28 and ℞ 29). Salicylate of soda has a depressant action; it should be given cautiously, and salicin substituted for it after two days or so. Bicarbonate of soda goes well with the salicylate, and they are often combined (see ℞ 30); enough should be given to keep the urine slightly alkaline. Dr. Cheadle recommends that the salicylate should be stopped when peri- or endocarditis comes on, and the bicarbonate given in larger doses; quinine should be given at this juncture, and the hydrobromate is less liable to sicken than the sulphate; it may be given alternately with the alkali.

The associates of rheumatism, especially endo- and peri-carditis, must be anticipated, and the heart receive careful examination at frequent intervals. They should be treated on general principles.

The diet must receive careful attention, and nothing but milk and light soups given while the temperature is elevated. When the temperature falls, a more generous diet may be

allowed. Starches and sweets should not be allowed for some time, and rest in bed for at least ten days after all symptoms are gone should be enjoined.

Children of rheumatic parents, and especially those who have had rheumatism, should be carefully warned against and protected from overheating, chill, and fatigue.

Hyperpyrexia is very rare, and should be met with quinine and the cold bath.

SPONTANEOUS GANGRENE.—This is a peculiar affection of the skin, which is seen in children; and the subjects of it are not always feeble.

Causes.—Insanitary conditions; poor food; cold and damp; convalescence from depressing diseases, especially after measles, and less frequently after scarlatina, typhoid, variola, and varicella. It sometimes appears in a child that is otherwise in sound health, and here the cause is obscure. Raynaud, who first described a symmetrical gangrene of the fingers and toes, attributes it to spasm of the arterioles, followed by migration of blood-corpuscles and transudation into the skin. This symmetrical gangrene of the fingers and toes is known as 'Raynaud's disease.'

Symptoms.—There are two varieties of the affection, viz. (1) the disseminated; and (2) gangrene, limited to the extremities.

1. In the disseminated variety, nodules or patches make their appearance on the legs, thighs, buttocks, or anus, which are dark-livid in colour, hard and tender to the touch. Their eruption is usually preceded by general poorliness, headache, and vomiting, when the patches are large and numerous; but if they are few and small, the general health is not affected. Under this head must be considered what is called 'Local Asphyxia.' In this a finger or toe, the whole hand and arm, or the foot and leg, suddenly becomes painful, and, on being examined, is seen to be purple in colour; it is cold to the touch. After some hours the pain subsides, the colour begins to lighten, and the part gradually recovers its natural

heat. Of the same nature is the numbness, coldness, or blueness of the extremities seen in some children after sea-bathing.

2. When the gangrene attacks the extremities—'Raynaud's disease'—there is irritability, loss of appetite, headache, and general malaise for a few days, after which the child complains of pains in the toes or fingers, and on examination the ends are seen to be deep purple in colour, cold to the touch, and with their sensibility blunted. The disease may now subside and spread no further, but, on the other hand, it may extend to the foot or even to the whole limb. It may be either dry or moist. In both these varieties recovery is sometimes followed by an attack of paroxysmal hæmaturia.

Prognosis.—This is always serious, but the most favourable kind is where it is dry and confined to the fingers and toes.

Treatment.—Improve the general health as much as possible by giving as much nourishment as can be digested—meat, raw and pounded, eggs, milk, and well-cooked vegetables; the brandy-and-egg mixture should also be given.

In disseminated moist gangrene, poultices should be applied until the slough separates, when further spreading should be prevented by a free application of strong nitric acid. After this the part is to be dressed with iodoform.

In gangrene of the extremities, dry heat, by wrapping the parts in cotton wool, should be applied. Iron and quinine tonics, or a mixture of ammonia and bark, should be ordered.

Mr. Cripps speaks highly of opium given in small doses frequently.

APPENDIX.

MILK-STERILIZERS.—By sterilized milk is meant milk which is sterile, or free from germs of any kind whatever. Soxhlet has invented a sterilizer, by which the child's supply of milk for the whole day can be prepared at one time, and kept in separate bottles till required. Other sterilizers bear the names of Escherich and Siebert.

BARLEY-WATER.—This is made by placing one tablespoonful of barley-meal in a pint and a half of pure water, and letting it simmer gently for an hour, when it is strained.

WHEY.—The ordinary 'rough-and-ready' way of making whey, by gently heating (not boiling) sweet milk and buttermilk in equal proportions, and draining off the whey when the mixture curdles, will do very well; but the more scientific way to make it is to warm a pint of milk to blood heat, and add a teaspoonful of artificial rennet; break up the curd thus formed, and, after it subsides, decant and boil the whey.

OATMEAL-WATER.—This is made by simmering gently for one hour a tablespoonful of oatmeal in a pint of water; make up to one pint.

ARROWROOT-WATER.—Two teaspoonfuls of arrowroot added to one pint of water; simmer for five minutes, stirring it all the time.

RAW-MEAT JUICE.—Mince finely the best rumpsteak, and add cold water to it in the proportion of one part of water to four of meat; stir well together, and let it soak for half an hour, cold. The juice should then be forcibly expressed through muslin, by twisting it (Cheadle).

Another method is to finely mince a pound of the best rump-

steak; place in an earthen vessel, with sufficient cold water to well cover it; add some lump sugar, and let it stand for four hours. Strain through muslin (Ashby and Wright). 2 or 3 ozs. of the juice may be given in twenty-four hours to a child from five to eight or ten months.

RAW-MEAT PULP.—This is prepared by scraping the best rumpsteak with a knife. It may be given to children ten or twelve months old, the juice being more suitable for younger children. It may be spread between thin slices of bread.

ANTIPYRETIC METHODS.—Quinine.—This drug may be given either by the mouth, rectum, or hypodermic syringe.

By the Mouth.—Use the acid hydrobromate. This salt is very soluble, 10 grs. of it dissolving in 1 dram of water; moreover, it is less liable to cause sickness than the sulphate; 2 to 10 grs., according to age, may be given, and repeated as necessity requires.

By the Rectum.—The neutral bisulphate should be chosen, and remember to give beforehand an injection either of soap and water or glycerine. The dose by the rectum should be double that given by the mouth.

By the Hypodermic Syringe.—The neutral hydrobromate should be used: 4 grs. dissolve in 1 dr. of water; ½ dr. of this solution may be injected, and repeated if necessary.

Antifebrin may be given in 1-gr. doses under two years of age; 2 grs. from two to four years of age, and repeated if necessary. It requires careful watching.

Antipyrine may be used in the same way as the preceding, but the dose should be double that of antifebrin.

Phenacetin may be given in the same dose as antifebrin. They all require to be watched.

Sponging.—This is a grateful and ready means of reducing moderate temperatures. The arms may be sponged and dried, then the body and face, and next the lower limbs. The water may be tempered at first with a little warm added, if the child is very weak and nervous. Regular daily sponging should be used in the specific fevers, pneumonia, etc.

THE WET PACK.—This is applied by wringing a sheet out of cold water, rolling it round the body from chin to foot, and over it a warm dry blanket. If the temperature does not fall in half an hour, renew it, and so on till your object is attained. Watch the pulse, and be ready with stimulants; should the pulse show

signs of failing, remove the pack. The cold pack is very useful in scarlet fever, measles, small-pox, and pneumonia.

BATHS.—The child may be put in the bath at 100° F., and the temperature of the bath rapidly reduced by the addition of ice or cold water. An ice-bag may be applied to the head, or cold water poured over the head at the same time. The child should be kept in the bath till shivering is produced. Watch the pulse, and have stimulants handy. The cold bath is very useful in the hyperpyrexia of typhoid, pneumonia, measles, and small-pox; but it is too depressing in scarlet fever and diphtheria.

Enemata of iced water are useful in reducing temperature, and may be tried before resorting to the stronger methods of the bath and pack, or in conjunction with them.

Ice-bags or ice-poultices may be applied to the head, chest, or abdomen. They are used a good deal at present in the treatment of acute croupous pneumonia.

HOT PACKS.—Wring a blanket out of hot water, and apply it round the body from chin to foot; roll a dry, warm blanket over this, and a thin mackintosh sheet over all. It may be renewed in one hour. This is the best remedy in the general dropsy of chronic Bright's disease, especially when the urine is scanty, and loaded with albumen.

MUSTARD BATH.—1 oz. of mustard should be made into a paste with some hot water, and then gradually stirred into 1 gal. of water at 100° F. This bath is used in collapse from any cause, such as in the acute diarrhœa of young children, pneumonia, etc. It is also useful in the early stages of scarlet fever and measles, when the eruption is imperfectly developed or its appearance is delayed from any cause.

EMETICS.—**Ipecacuanha** is the favourite for children, and may be given in 5-gr. doses of the powder, or teaspoonful doses of the wine, with plenty of hot water, till vomiting is produced.

Copper.—2 grs. of the sulphate may be dissolved in 1 oz. of water, and a teaspoonful given every ten minutes. This is a good emetic.

Alum.—Half a teaspoonful mixed in honey or syrup is useful in severe whooping-cough.

Apomorphia.—May be given subcutaneously in $\frac{1}{30}$ to $\frac{1}{20}$ gr., but it is too depressant for very young children, and requires watching.

GAVAGE, or FORCED FEEDING.—This may become necessary in cleft palate, severe diphtheria, or paralysis of the pharynx. A piece of indiarubber tubing is passed far into the pharynx; an ordinary glass syringe filled with milk or other nutrient is attached to the tubing, and small quantities injected into the œsophagus at a time. Another method is by passing an indiarubber catheter through the nose into the pharynx and œsophagus, and injecting milk, beef-tea, or other nourishment.

STOMACH-WASHING.—This is indicated when decomposing curd is vomited. An indiarubber catheter is passed into the stomach, and connected with tubing, to which a funnel is attached. A few ounces of warm 2-per-cent. solution of borax is introduced into the funnel; the funnel is raised, which allows the fluid to flow into the stomach, and then lowered and inverted to allow of its return; this is repeated until the fluid returns clean and sweet.

THE PULSE.—Very slight causes influence the pulse in childhood, so that during this period it is of less value in diagnosis and prognosis than during adult life. According to Vierordt, a complete circulation takes—

In newly born infants .	12 seconds	(134 pulse-rate).
At two years . . .	15 „	(107 „).
At fourteen years . .	18·6 „	(87 „).
In adults	22 „	(72 „).

THE TEMPERATURE.—For most purposes this had better be taken in the fold of the groin, as it is very difficult to keep the thermometer in the axilla; for exact observations, in the rectum is undoubtedly the best, but care must be taken, first, that the thermometer be not broken by any sudden movement of the child, and second, that the whole thermometer be not driven into the rectum in the same way.

BODY WEIGHT.—At birth the average child weighs 7 lbs. There is a loss of 4 ozs. to 7 ozs. for the first two or three days, after which there should be a steady gain. It is important to weigh the infant every week, especially if it is being artificially fed, as this gives the surest information that the food it is getting is agreeing or otherwise.

DENTITION.—The teeth appear in the following order:—

Temporary Set.

The lower two central incisors from the sixth to the eighth month.
The four upper incisors ,, eighth ,, tenth ,,
The lower lateral ,, } ,, twelfth ,, fourteenth ,,
The upper and lower front molars }
The upper and lower canines ,, eighteenth ,, twentieth ,,
The posterior molars twenty-fourth ,, thirtieth ,,

These remain unchanged for several years, during which time the permanent set are becoming developed, so that at six years of age there are a greater number of teeth in the jaws than at any other age, both sets being present, except the wisdom teeth.

Permanent Set.

Molar, first	. .	cut at 6 years of age.
Incisors, central	.	,, 7 ,,
,, lateral	.	,, 8 ,,
Bicuspids, anterior	.	,, 9 ,,
,, posterior	.	,, 10 ,,
Canines . .	.	,, 11–12 ,,
Molars, second .	.	,, 12–13 ,,
,, third .	.	,, 17–25 ,,

Dentition is delayed by rickets, and it is generally believed that the teeth appear early in children the subject of congenital syphilis.

INCUBATION PERIODS.

Scarlatina	from twenty-four hours to three days : never exceeds seven days.
Erysipelas	seven days.
Diphtheria ,,	two to seven days : rarely exceeds four days.
Measles ,,	four to fourteen days.
German measles ,,	eight to twenty-five days.
Small-pox ,,	nine to fifteen days.
Chicken-pox ,,	fourteen days.
Mumps ,,	fourteen to twenty-five days.
Typhoid fever ,,	seven to fourteen days.
Whooping-cough ,,	twelve to fourteen days.

A child who has been exposed to infection should be disinfected

and then isolated, and should not be allowed to go to school until the full period of incubation, of whatever disease he was exposed to, has passed.

DURATION OF INFECTION.—A child may return to school after—

Scarlatina.—When desquamation is complete: six, eight, or ten weeks.

Measles.—When desquamation is complete: three or four weeks.

German Measles.—In fourteen days from the disappearance of the rash.

Small-pox.—In six weeks after all crusts have disappeared.

Chicken-pox.—In one week after the crusts have disappeared.

Diphtheria.—After recovery: not less than three weeks from the beginning of the illness.

Mumps.—In a fortnight after all swelling has gone.

Whooping-cough.—When the cough has lost its spasmodic character.

PRESCRIPTIONS.

THE doses given are suitable for a child a year old, except where otherwise stated.

1. ℞: Liquoris arsenicalis . . . . ♏ ½
   Sodii bicarbonatis . . . . grs. iii.
   Spts. chloroformi . . . . . ♏ iii.
   Aquæ ad . . . . . ʒ i.
   Misce.
   Sig.: One teaspoonful three times daily.

2. ℞: Sodii bicarbonatis . . . . grs. ii.
   Tr. rhei . . . . . ♏ iv.
   Spts. ammon. aromat. . . . . ♏ iii.
   Syrupi . . . . . ♏ x.
   Aquæ ad . . . . . ʒ i.
   Misce.
   Sig.: One teaspoonful three times daily.

3. ℞: Hydrarg. c. cret. . . . . gr. i.
   Sodii bicarbonatis
   Pulveris rhei, āā . . . . . grs. ii.
   Misce.
   Sig.: A powder when required.

4. ℞: Acidi hydrochlorici dil. . . . ♏ iv.
   Vini pepsinæ . . . . . ♏ x.
   Aquæ cinnamomi ad . . . . ʒ i.
   Misce.
   Sig.: A teaspoonful three times daily.

5. ℞: Spts. ammon. aromat. . . . . ♏ iii.
Tinct. opii . . . . . ♏ ½
Tinct. rhei . . . . . ♏ iii.
Spts. chloroformi . . . . . ♏ iii.
Aquæ cinnamomi ad . . . . ʒ i.
Misce.

Sig.: A teaspoonful three times daily.

6. ℞: Pulv. Doveri . . . . . gr. i.
Sodii bicarbonatis . . . . grs. iii.
Bismuthi carbonatis . . . . grs. iii.
Misce.

Sig.: A powder each night. For a child of three to five years.

7. ℞: Tinct. nucis vomicæ . . . . ♏ ½
Tinct. belladonnæ . . . . ♏ v.
Infusi sennæ . . . . . ♏ xx.
Infusi gentianæ comp. ad . . . ʒ i.
Misce.

Sig.: One teaspoonful three times daily before meals.

8. ℞: Pulv. ferri sulph. exsiccat. . . . grs. ii.
Pil. aloes et myrrhæ . . . . grs. iii.
ft. Pill.

Sig.: One pill each night. For a child of six to nine years.

Sir Andrew Clark's Pill.

9. ℞: Podophylli
Ext. belladonnæ, āā . . . . gr. ⅙
ft. Pil.

Sig.: One pill at bedtime. For a child of five to eight years.

10. ℞: Argenti nitratis . . . . . gr. ⅛–⅓
Acidi nitrici . . . . . ♏ iv.
Tinct. opii . . . . . ♏ iii.
Glycerini . . . . . ♏ x.
Aquæ ad . . . . . ʒ i.
Misce.

Sig.: One teaspoonful three times daily. For a child of five to eight years.

11. ℞: Ext. hæmatoxyli . . . . grs. iii.
Tinct. opii . . . . . ♏ iii.
Vini ipecacuanhæ . . . . ♏ iv.
Mist. cretæ ad . . . . . ʒ i.
Misce.

Sig.: A teaspoonful three times daily. For a child of five to eight years.

12. ℞: Acidi gallici . . . . . grs. iv.
Acidi sulphurici dil. . . . . ♏ v.
Tinct. opii . . . . . ♏ iii.
Glycerini . . . . . ♏ x.
Aquæ ad . . . . . ʒ i.
Misce.

Sig.: A teaspoonful for a child of five years, three times daily.

13. ℞: Pulv. cretæ aromat. . . . . grs. v.
Bismuthi carbonatis . . . . grs. x.
Tinct. opii . . . . . ♏ iii.
Aquæ cinnamomi ad . . . . ʒ i.
Misce.

Sig.: One teaspoonful for a child five years old, three times daily.

14. ℞: Tinct. ferri perchloridi . . . ♏ x.
Acidi acetici dil. . . . . ♏ x.
Liq. ammoniæ acetatis . . . ♏ xx.
Spts. chloroformi . . . . ♏ x.
Aquæ ad . . . . . ʒ ii.
Misce.

Sig.: Two teaspoonfuls three times daily. For a child of ten or twelve years.

15. ℞: Tinct. nucis vomicæ . . . . ♏ ½
Sodii bicarbonatis . . . . grs. iii.
Glycerini . . . . . ♏ x.
Aquæ cinnamomi ad . . . . ʒ i.
Misce.

Sig: One teaspoonful three times daily.

16. ℞: Sodii phosphatis . . . . . grs. x.
Spts. chloroformi . . . . ♏ v.
Infusi rhei ad . . . . . ʒ i.
Misce.

Sig.: A teaspoonful three times daily. For a child of three or four years.

17. ℞: Sodii bicarbonatis . . . . grs. x.
Tinct. nucis vomicæ . . . . ♏ iii.
Spts. chloroformi . . . . ♏ v.
Infusi calumbæ ad . . . . ʒ ii.
Misce.

Sig.: Two teaspoonfuls three times daily. For a child of eight to twelve years.

18. ℞: Potassii iodidi . . . . . grs. iii.
Ferri tartarati . . . . . grs. v.
Glycerini . . . . . ♏ x.
Aquæ ad . . . . . ʒ i.
Misce.

Sig.: One teaspoonful three times daily. For a child of five years.

19. ℞: Vini ipecacuanhæ . . . . ♏ iii.
Spiritus ætheris nitrosi . . . ♏ v.
Tinct. opii camph. . . . . ♏ v.
Liq. ammon. acetatis . . . . ♏ x.
Syrupi. . . . . ♏ x.
Aquæ ad . . . . . ʒ i.
Misce.

Sig.: One teaspoonful every three hours in water. For a child of three to five years.

20. ℞: Syr. ferri iodidi . . . . . ♏ v.
Aquæ ad . . . . . ʒ i.
Misce.

Sig.: One teaspoonful three times daily.

21. ℞: Syr. hypophosphatis (Fellows) . . ♏ x.
Aquæ ad . . . . . ʒ i.
Misce.

Sig.: One teaspoonful three times daily.

22. ℞: Ammon. carbonatis . . . . gr. i.
Vini ipecacuanhæ . . . . ♏ iii.
Spts. ammon. aromat. . . . ♏ iii.
Syrupi scillæ . . . . . ♏ x.
Infusi senegæ . . . . . ♏ x.
Aquæ ad . . . . . ʒ i.
Misce.

Sig.: One teaspoonful every three hours.

23. ℞: Tinct. lobeliæ eth. . . . . ♏ x.
Glycerini . . . . . ♏ x.
Aquæ ad . . . . . ʒ i.
Misce.

Sig.: One teaspoonful every third hour. For a child of three years.

24. ℞: Ol. terebinthinæ . . . . ʒ i.
Ol. ricini . . . . . ʒ ii.
Syr. limonis . . . . . ʒ ss.
Mucilaginis tragacanth. . . . ʒ i.
Aquæ menth. pip. ad . . . . ʒ i.
Misce.

Sig.: The draught to be taken in the morning. For a child of six or eight years.

25. ℞: Liquoris arsenicalis . . . . ♏ iii.
Tinct. ferri perchloridi . . . ♏ x.
Spts. chloroformi . . . . ♏ vi.
Aquæ ad . . . . . ʒ ii.
Misce.

Sig.: Two teaspoonfuls three times daily in water. For a child of six or eight years.

26. ℞: Potass. acetatis . . . . . grs. v.
Spts. ætheris nitrosi . . . . ♏ x.
Tinct. digitalis . . . . . ♏ iii.
Syr. scillæ . . . . . ʒ i.
Infusi juniperi ad . . . . ʒ ii.
Misce.

Sig.: Two teaspoonfuls in water every four hours. For a child of eight or ten years.

27. ℞: Sodii bicarbonatis . . . . grs. x.
Liq. opii sedativ. . . . . ♏ x.
Aquæ ad . . . . . ℥ i.
Misce.

Sig.: The lotion to be applied frequently.

28. ℞: Sodii salicylatis . . . . . grs. v.
Syr. aurant. . . . . ♏ x.
Aquæ ad . . . . . ʒ i.
Misce.

Sig.: One teaspoonful every three hours. For a child of five or six years.

29. ℞: Salicin. . . . . grs. x.

Sig.: A powder to be given every six hours. For a child of eight to ten years.

30. ℞: Sodii salicylatis
Sodii bicarbonatis, āā . . . . grs. vi.
Syrupi aurant. . . . . ♏ xv.
Aquæ ad . . . . . ʒ i.
Misce.

Sig.: One teaspoonful every three hours. For a child of five or six years.

31. ℞ : Sodii bicarbonatis . . . . . grs. v.
Tr. belladonnæ . . . . . ♏ x.
Spts. chloroformi . . . . . ♏ v.
Aquæ ad . . . . . ʒ i.
Misce.

Sig.: One teaspoonful three times daily. For a child of three or four years.

32. ℞ : Sodii phosphatis . . . . . grs. x.
Ferri tartarati . . . . . grs. v.
Syr. aurant. . . . . ♏ xx.
Aquæ ad . . . . . ʒ i.
Misce.

Sig.: One teaspoonful twice daily.

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