sis is of an intense degree, and yet no traces of any morbid lesions are found about the heart at the *post-mortem* examination. The foramen ovale, on account of this same fallacious supposition, has also received altogether too much attention, and it was a matter of no consequence, when a probe could be passed from one auricle into the other, whether the valve was perfect or not.

The only test-bearing reason for the cyanosis is to be found in an imperfect oxidation of the blood in the lungs, combined with a stasis in the peripheral venous system. But this process may be produced by various conditions; either an impediment exists at the left side of the heart, and conjointly with this there is stagnation of the blood in the pulmonary veins, or the supply of blood to the lungs is diminished in consequence of a stasis in the right side of the heart, and hence less blood is arterialized, or the circulation meets with impediments in the lungs, the effects of structural lesions, or, lastly, the inhaled air is poor in oxygen, and in that case the blood is likewise but imperfectly oxidized. The blood may also become so altered in consistency that its flow will thereby be retarded, and this is especially applicable to the inspissation of the blood in cholera. Thus we see that the causations of cyanosis are tolerably numerous, and are by no means solely to be sought for in mechanical alterations of the heart.

The degrees of cyanosis vary exceedingly, and fluctuate between a slight bluish discoloration of the lower eyelids and a bluish redness of the whole body, and all supervening congestions produce an aggravation of the existing cyanosis. Too high and too low temperatures, excitement, crying, laughing, bodily exertions, are therefore the most frequent causes of this aggravation.

When children with congenital malformations of the heart survive the first few years, various other symptoms of disturbance of the circulation become superadded. Almost all of them suffer from imperfectly-developed pectoral muscles and pigeon-breast. The extremities are always cold and moist, very much like the skin of a frog, the tips of the fingers swell up bulbous, over which the nails, curved like claws, project; the cutaneous veins are preternaturally large; the patients are unable to exert themselves in any manner, whether to run or climb, or to cry continuously, for all these efforts cause them severe pain in the præcordia, dyspnœa and palpitations. Hæmoptysis, also, in rare instances, is observed in larger children; epistaxis, on the contrary, is a symptom which occurs tolerably often, and as a rule gives momentary relief. Finally, general dropsy of the cellular tissues and of the serous sacs, with which albuminuria becomes associated, terminates the distressful existence of these children.

The physical examination of congenital cardiac malformations is

attended by extraordinary difficulties. Hypertrophy of the heart is almost unexceptionably demonstrable, and is usually due to a marked enlargement of the right side of the heart. In this condition the heart's impulse is felt over a larger space, and stronger than usual. Distinct cardiac murmurs can seldom be elicited by auscultation; in most instances a confused sound is only heard instead of the one or the other, or even in place of both cardiac sounds. Prolonged loud murmurs allow one to conjecture the existence of a marked abnormal communication between the cardiac moieties, a perforation of the septum for example; a strong systolic murmur heard most distinctly over the pulmonary artery indicates a constriction of this vessel, one of the most common malformations that occur. Sometimes, however, the auscultatory phenomenon is not adaptable to the one or to the other evil, and no nearer approach to an accurate diagnosis can be made than of congenital defect in general. The periods of the first and second dentition, according to statistical compilations by *Friedberg* and *Aberle*, are especially dangerous for children with congenital defects of the heart. Out of 139 cases, 53 died in the first year, 51 between the second and eleventh year, 30 between the eleventh and twenty-fifth, and 5 only attained to an age of over forty-four years.

Treatment.—A direct treatment, of course, is altogether out of the question; we have to limit our efforts to the prevention of all possible injuries, and to institute an appropriate dietetic *régime*. The restrictions concerning the necessary rest are easily enforced in these children, for they are soon taught by experience how injurious and painful any accelerated action of the heart is to them. As regards the diet, no particular precautionary measures need be prescribed; all heating and alcoholic drinks, however, must be absolutely prohibited. Warm clothing is extremely advantageous in these cases, and a flannel shirt should therefore be particularly recommended to be worn next the skin. All antiphlogistic treatment, with calomel, leeches, cantharides, etc., must under all circumstances be avoided, for dropsy and the fatal end are perceptibly accelerated by it. Active congestions, which in these cases are liable to occur extremely often, must be relieved by the external application of cold, acidulous drinks, and strict diet.

If the children come asphyxiated into the world, the methods of animation already recommended for asphyxia should be resorted to, but in these cases they almost always prove fruitless.

(2.) Endocarditis, Pericarditis, and Rheumatismus Acutus.—We include here three morbid pictures in one frame, which anatomo-pathologically have no similarities whatever to each other; clinically, however, they can scarcely be separated, if it is desired to avoid the

numerous repetitions which must occur in describing the individual alterations separately. Added to this, these morbid conditions are extremely rare in children, and it hardly seems necessary to give a very exhaustive account of them.

Symptoms.—We commence with the symptoms of acute rheumatism, and then allow the most frequent complications, endo- and pericarditis, to follow:

Rheumatismus acutus.—Acute rheumatism of children differs but little from that of the adult, only its course is shorter, and the affection, as a rule, less intense. The youngest child that I have had to treat, for well-marked acute rheumatism, with endocarditis, was one year and nine months old, and after three months succumbed to disease of the heart. This is a very rare case, for in all the text-books it is stated that children of six years and over are only liable to this disease. Many affections, which by the laity are denominated by the vague name of "growing fever" (Wachsfieber), belong to this condition.

Intense fever is always present at first, the skin becomes burning hot, the thirst great, the pulse enormously accelerated, and great restlessness and sleeplessness supervene. This intense fever at the utmost lasts eight to ten days; it then gradually subsides, and only when pernicious complications have become superadded, particularly affections of the heart, will it continue for an indefinite time and without interruption. In most instances the patients are very pale and collapsed, have a remarkably sad, painful expression of countenance, and a lethargic appearance; they keep the affected joint in the utmost possible state of quiescence, while the free extremities, on account of the intense fever-heat, are incessantly restless and agitated.

The essentiality of the disease consists in a swelling of the various joints, predominantly those of the lower extremities, which are affected in the same manner as in the adult. Touching and still more the moving of the diseased members is extremely painful, and the patients, with an expression of the utmost anxiety in their countenances, will guard over and admonish against every approach to the painful joint. The swollen parts are always reddened at first; the redness, however, disappears before the tumidity does. The knee-joints are most frequently affected, next in order of frequency follow the joints of the ankles, then those of the upper extremities, and lastly the spinal column.

These swellings of the joints never pass over into suppuration; they abate completely, and disappear without leaving any traces of the disease behind them; in some instances a slight weakness and painfulness, on using the extremity, will be the only evidences of the

previous existence of the malady. The pathognomonic sign of the affection is its wandering, or its alternating, from one joint to the other. Only extremely rarely is the process completed with the simultaneous implication of several joints; usually, in a few days after the swelling of the joints first affected has declined, new ones will be attacked with the same severity and run a similar course, and this may be succeeded by a second and even a third accession.

The general symptoms correspond to the severity of the fever. The appetite is very much abridged, or completely gone, the stools are retained, the urine is dark-colored, rich in uric acid, and voided in small quantities only. The patients perspire very much, and are thickly studded with miliaries.

The diagnosis of acute rheumatism is very easy, since it almost wholly attacks older children, who are already able to give a rational account of their sufferings. It can only be confounded, in its incipiency, with the prodroma of an exanthema, or with typhus fever, where also very severe pains in the knee and ankle joints occasionally occur. The latter, however, are recognized by the facts that the joints do not swell, and that slight pressure or passive motion does not particularly aggravate the pain, which is always the case in acute rheumatism. If it is at all possible to confound the disease under consideration with scrofulous arthrocace, with tumor albus, then this can only happen in its incipiency, and the error can continue but a few days, as no wandering of the malady from joint to joint occurs in the latter affection, and its course is of a totally different and chronic form.

Simple acute rheumatism, without any complication, has a duration of fourteen days at the utmost. But when it is complicated with cardiac affections, as is the case with at least one-third of all the cases affected, its duration will then be indefinitely prolonged, and a fatal end may occur even after a sickness of many years. Under the head of complications (a.) Endocarditis and (b.) Pericarditis deserve a special consideration.

(a.) *Endocarditis.*

Pathological Anatomy.—The excellent investigations of *Luschka* have established the fact that the endocardium is composed of the same number of layers as the vessels. The superficial surface is formed by a thin stratum of pavement-epithelium, which must be regarded as the direct continuation of that of the vessels. Then follows a layer of extended longitudinal fibres; next, one of very fine elastic fibres, which frequently interlace with each other, analogous to the contractile coat of the vessels; and, finally, a layer of connective tissue unites this elastic coat with the muscles of the heart. The vessels and nerves are

found almost entirely in this connective tissue, and are but little in contact with the elastic fibres, which accounts also for the circumstance that a true exudation can only take place in the former. The exudation, however, soon forces the super-lying coats aside, and makes its appearance in the cavity of the heart, on the other side; it also attacks the subjacent layers of the cardiac muscle, so that a slight degree of myocarditis always accompanies endocarditis. Red spots, according to *Luschka*, are at first observed on the endocardium; the superficial surface as yet is still perfectly smooth; this smoothness, however, soon disappears, the superficial surface becomes rough, and now the exudation under the microscope exhibits entire and destroyed epithelium-cells, exudation-corpuscles, and fibre-elements. The roughened places on the endocardium soon arrest some fringes of fibrine, from the onward-flowing current of blood, and thereby acquire a flocculent appearance. This endocarditic exudation, according to *Bamberger*, may undergo the following metamorphosis:

(1.) The exudation may be completely absorbed; this, however, only seems to be possible in very thin layers that have not yet penetrated through the epithelium.

(2.) In most instances it does not disappear entirely, but produces permanent alterations upon the inner surface of the heart. The most common morbid appearances of this kind met with are white condensed places, a condition that has been called tendinous spots (Sehnenflecke), which are always disposed to atrophy, and undergo cicatricial contraction, and now, in case these occur on the valves or in their immediate vicinity, will cause them to shrink or alter their attitude and insertions. Thus, endocarditis is the main cause of subsequent cardiac disease. In other cases, the endocarditic exudation has the disposition to degenerate into polypoid extuberations, and then will possess many points of resemblance to pointed condylomata, and, in consequence thereof, have even been falsely regarded as true manifestations of syphilis.

(3.) It has become evident, mainly through *Virchow's* indefatigable researches, that some of the already coagulated portions of the exudation may also be torn off from the endocardium, and washed away by the current of the blood, and in this manner thrombosis form in different parts of the body. The most common sites of these thrombi are in the spleen, next in the kidneys and brain. Death almost invariably ensues from such a displacement of the thrombi.

Symptoms.—When the endocarditic exudation is so deposited that it cannot materially influence any of the valves, it will not be possible to ascertain its existence by a physical examination; moreover, the functional phenomena are so variable and so imperfectly described, even

by large children, that it seems almost impossible to form a diagnosis. Generally, however, extuberations form upon the valves, and then distinct physical alterations ensue.

The left side of the heart is affected much oftener than the right; and the mitral valve, in fact, most frequently of all. Not only the deposits upon the valve itself, but also those in the vicinity of the columnæ carnæ and columnæ papillares, are capable of producing a distortion of the valve, or causing it to atrophy, and thus effect its insufficiency. We therefore have, as the most common physical signs, a systolic murmur, in place of the first sound of the heart, heard with the *greatest distinctness* at the apex of the heart, *less distinctly* over the aorta, and *not at all* over the carotids. The right side of the heart soon becomes consecutively enlarged, so that the dulness in the præcordia extends over a larger space, and the heart's impulse is felt correspondingly stronger, and over a larger area. If the extuberations around the ostium venosum of the left ventricle * become very numerous, a stenosis will then also take place at this ostium, and thus produce a diastolic murmur; this condition, however, seems to be exceedingly rare.

The semilunar valves of the aorta may likewise become involved in the endocarditic process, and, through shrinking and perforations, become insufficient. But, the more common phenomenon observed on these valves is, their becoming covered with vegetations, and thus giving rise to a stenosis at the ostium arteriosum. A systolic murmur is likewise heard in this case, but it is most distinct over the aorta, and is plainly propagated into the carotids.

The right side of the heart is much more rarely attacked by endocarditis than the left, and the murmurs which occur there must be interpreted in the same manner as in the case of the left ventricle, but, in this case, the stagnation of the blood in the veins of the neck is much more pronounced than in valvular disease of the left ventricle.

The functional symptoms of endocarditis vary exceedingly. The pain is seldom regularly present, or very severe; oppression of the chest, anxiety and incessant restlessness, so far as the acute rheumatism will allow, are much more constant. Still, all these symptoms are more pronounced in pericarditis than in endocarditis. Palpitation of the heart is always present, and is increased on exertions, such as crying and bodily exercise; and a peculiar nervous dyspnœa, or shortness of breath, invariably comes on at the same time, which at first reveals no demonstrable mechanical causes; later on, however, it is satisfactorily explained by the stagnation of the blood in the left auricle.

Children laboring under endocarditis always have fever, and, if they have already got rid of the fever which accompanied the acute

* Auriculo-ventricular opening.—Tr.

rheumatism, will again be attacked by violent febrile symptoms on the appearance of this complication. They last for an indefinite period, often for many weeks; to their intensity, and not to the commencing cardiac defects, is the serious emaciation of these children in greater part due. Furious delirium occasionally comes on, and when conjointly with this the spleen is also enlarged, a condition that is very apt to occur in a marked degree when emboli form in it, then this group of symptoms may very readily be taken for that of typhus fever. Secondary symptoms, produced by the displacement of emboli, are, on the whole, extremely rare in children. I have so far only once found embolic formations in the spleen and kidneys; the child was eight years old, and he died from endocarditis.

The diagnosis of endocarditis is almost always attended by the greatest difficulties; and this fact must especially be taken into consideration here, that not every blowing murmur of the heart indicates endocarditis, for children laboring under febrile diseases very often and very quickly get anæmic murmurs, which disappear spontaneously as soon as convalescence commences. This is particularly observed in cases where abstraction of blood, even only locally, has been practised; and, as this remedy is often also resorted to on account of the rheumatic pains, anæmic murmurs are therefore apt to supervene as the effect of acute rheumatism.

In addition to a blowing murmur, a more extensive impulse, an enlargement of the heart demonstrable by greater dulness on percussion, acceleration of the pulse, and dyspnœa, are requisite for the purpose of correctly diagnosticating an endocarditis. The terminations of this disease are entire recovery, complicated sequelæ, or death. Complete recovery from a tolerably well-developed endocarditis must, in fact, be accounted as one of the greatest rarities, because the residue of the exudation commonly produces alterations of the valves, and herewith cardiac disease. Death seldom takes place at the climax of the disease by exhaustion or the formation of emboli; in most instances the patients waste away under incessant fever, accidental diarrhœa, or bronchitis, or perish by lobular pneumonia. The cardiac affections which originate from this disease often develop themselves, after many months, by the shrinking of the exudation, and exercise more and more influence upon the circulation, till finally the cardiac sequel, as such, makes itself manifest, and after a shorter or longer duration brings about a fatal end.

(b.) *Pericarditis.*

Pericarditis has been diagnosticable with certainty only since the discovery of the pericarditic friction-sound by *Collin*, in 1824. But

the diagnosis even at the present day is still extremely difficult and imperfect, as will be perceived from the following remarks:

Pathological Anatomy.—A general and a circumscribed pericarditis, according to the extent of the affection, is spoken of. But pericarditis possesses the utmost disposition to spread, and the general is therefore more frequently met with than the circumscribed. The morbid lesion may just as readily begin on the parietal as on the visceral coat; and on either an injection, immediately followed by plastic exudation on the surface, takes place early in the course of the disease.

Different forms of pericarditis are distinguished according to the nature of the exudation.

(1.) The fibrinous exudation. In this form, the external surface of the heart and the pericardium are thickly coated with a shaggy, yellowish-white membrane, and are either entirely or partially united with each other. This exudation is capable of becoming organized, and in it capillary vessels soon become developed, which are often the means of occasioning small extravasations. Conjointly with this organized membrane there is always a greater or lesser quantity of fluid effusion, which, on account of the presence of dissolved shreds, and flat gelatinous particles of lymph, appears yellowish, turbid, and flocculent. Generally, this fluid portion of the exudation is subsequently absorbed, when the firm inflammatory membranes will be everywhere in contact with each other, and now either become firmly and intimately united with each other, or, when the plasticity is but slight, they will be ground off against each other, and almost entirely disappear. The condition denominated tendinous spots (Sehnenflecke) must be regarded as a residue of these processes, and the extraordinary frequency with which they are met in autopsies might readily convince us that partial pericarditis is often overlooked. Ossification of the exudation—a condition that is occasionally observed in the autopsies of adults—is not known, to my knowledge, in the Pædiatrica.

(2.) The purulent ichorous exudation. When the fluid effusion, conjoined with the fibrinous membranes, is of large quantity, and has a purulent consistence, the pericarditis is denominated purulent. No actual boundaries, however, exist between this and the preceding form, for in both alike liquid and membranous effusions occur together. It may very readily happen that a pericarditis, which primarily must have been described as purulent, after a while, when the liquid part of the exudation has been absorbed, becomes fibrinous. In newborn children, on the contrary, the ichorous pyæmic pericarditis is almost exclusively met with. This form will be described more minutely

in connection with pyæmic pleuritis. It never occurs by itself, but always in common with pleurisy or peritonitis, and is distinguished by being tolerably thin, of a brownish-red color and ichorous odor, and also by the flakes of lymph suspended in it not being yellowish-white, but of a grayish-brown color. Phlebites of the umbilical veins and putrescence of the navel, as will be shown further on, are generally found in these cases.

(3.) The tuberculous exudation. Tuberculous pericarditis—notwithstanding so many children perish from tuberculosis—is a very rare condition. The tubercles on the pericardium are mostly larger than miliary tubercles in the lungs, and are sometimes found isolated, but sometimes again so close together that they form a rough, hilly membrane, the tuberculous character of which is not perceived at first sight. Macroscopically, however, they are easily recognized by the friability and the greater ease with which they are lacerated than the agglutinated membranes; *microscopically*, by the tuberculous detritus.

Symptoms.—The pathological picture of pericarditis, commonly delineated in the text-books, applies but imperfectly to children, for the phenomena are so variable that, strictly speaking, a description with universally adaptable symptoms must in reality be entirely renounced. They are often very mild, and completely masked by the other concomitant diseases—acute rheumatism, pyæmia, Bright's disease, and tuberculosis; again, they are often very striking, and manifest themselves by great oppression of the chest, severe pain, dyspnœa, rapid pulse, fainting, delirium, and cyanosis. The physical examination always supplies the most important cardinal points.

On inspecting the denuded chest, the heart at the commencement of pericarditis is seen to beat harder than usual against the expanse of the thoracic walls, and occasionally a slight irregularity of the rhythm is already observable. Later, when the exudation increases in amount, and particularly when the fluid part thereof greatly preponderates, the heart becomes displaced toward the left and upward, and will beat correspondingly against the thoracic walls more toward the left and higher up. But if the effusion becomes still greater, then the most characteristic sign comes on, namely, the *heart's impulse can neither be seen nor felt.* The pericarditic friction-sound, when it is heard very loudly and very distinctly, may also at times be discovered by palpation.

Nothing abnormal can be detected by percussion, when the exudation is small in quantity, but, when the effusion is liquid and of a large amount, a dulness over an extensive surface, having the form of a

blunt pyramid, the apex of which is directed upward, is obtained. The dulness upward, which may reach as high as the third and even the second costal cartilage, is especially characteristic of this condition, and materially facilitates the diagnosis. It must not be forgotten that very decided pericarditis, in which the exudation is predominantly of the membranous form, cannot be ascertained at all by percussion.

By auscultation, slightly invigorated cardiac sounds are at first distinguished, which occasionally only deviate slightly from the normal rhythm. A friction-sound, however, soon becomes perceptible over one or the other portion of the dulness, which at first may be extremely difficult to differentiate from an endocarditic *bruit;* later on, however, it distinctly manifests itself as a friction-sound. It will resemble, according to its intensity, a slight grazing, rasping, gnashing, or scratching, and is particularly distinguished by the fact that it is usually neither systolic nor dyastolic, but is heard between the two cardiac sounds. It is often very difficult to differentiate it from the endocarditic murmurs, and then it will always be necessary to examine the patients while asleep; and in this connection it may be well to observe that the precaution should be taken to allow them to fall asleep in such garments as can be readily opened in front, and will permit the thorax to be exposed. The main differences are always that the pericarditic friction sound is limited to an extremely narrow space, and never extends as far as the endocarditic murmurs; that it is neither systolic nor diastolic, and that it often vanishes suddenly only to reappear at an adjacent spot, or to remain absent permanently. In consultations this may sometimes be the means of causing different opinions to be entertained in regard to the disease.

In the early stage of the disease the pulse is strong, rapid, and difficult to be compressed; later, it generally becomes small and unrhythmical, and is then easily compressed. In cases of large pericarditic effusions, distinct undulating movements are observed on the jugular veins, and even a bulging of the veins during the systole, and a subsidence during the diastole takes place. At the beginning of the systole the tricuspid valve becomes closed, and the right auricle then dilates; but, since the dilatation, on account of the existing effusion, cannot take place properly, a stagnation of the blood in the vessels consequently results, and a visible distention of the jugular veins is accordingly produced. Catarrh of the bronchi, and, indeed, also, partial compression of the right lung, are almost always associated with this condition.

The functional and general disturbances are extremely variable,

as has already been remarked at the commencement of this delineation, and depend much more upon the complications of endocarditis than upon this affection *per se*. Its terminations are either recovery, of course only in rare instances, attended by a sudden disappearance of the friction-sound, or death, which often ensues quickly and unexpectedly, or finally sequelæ, such as universal adhesions of the heart with the pericardium, dilatations of single chambers, disease of the cardiac muscle proper, and, as effects of these processes, manifold disturbances of the circulation.

Treatment.—Acute rheumatism cannot be aborted, probably not even shortened, in its duration; neither calomel, tartar emetic, abstraction of blood, nor the cold-water treatment, produces any marked favorable effect upon it. Under such circumstances, we have no other alternative but to initiate a symptomatic treatment, in which morphine plays the greatest *rôle*. A proper dose of morphine, administered to the patients in some syrup, will procure them the necessary rest; the process, however, is in no way modified by it. The affected joints should be rubbed with olive-oil, and thickly covered with cotton wadding, in order to protect them against all kinds of external violence.

I never treat endocarditis and pericarditis, which complicate acute rheumatism, strictly antiphlogistically; in well-nourished children, a few doses of calomel, at the utmost, may, perhaps, prove beneficial as an antifebrile remedy. Mild counter-irritants, such as sinapisms, dry cups, etc., may prove beneficial. Pyæmic pericarditis of the new-born, of course, always terminates fatally, and, therefore, calls for no special treatment. The consecutive cardiac affection requires an extremely cautious, strict *régime*, as has already been more minutely pointed out in the preceding section, in the treatment of congenital affections of the heart.

(3.) Hydropericardium—Dropsy of the Pericardium.—Dropsy of the pericardium, alone by itself, occurs only in defects of the heart, where the disturbances of the circulation then manifest themselves earlier on the pericardium than on the pleura and peritonæum. In most instances, however, it is complicated with serous effusions into the aforesaid sacs, and appears as the closing scene of dropsy, with usually a rapidly fatal end. In children, nephritis after scarlatina is almost the only cause of pure dropsies.

Pathological Anatomy.—A light-yellow, clear effusion, varying from one to four ounces, is found in the pericardium, possessing the chemical properties of other serous effusions, i. e., that of a diluted serum of the blood. The pericardium, in contradistinction from purulent pericarditis, is, with the exception of a slight serous infiltration,

perfectly intact, neither covered with pseudo-membranes nor abnormally adherent anywhere. The muscular coat of the heart itself, as in all other dropsical effusions, has more of a yellowish than a red color.

Symptoms.—Slight pericarditic effusions cannot be diagnosticated, and, probably, give rise to no symptoms, as the pericardium, even in the physiological state, contains some fluid, and the quantity of this fluid is subject to no inconsiderable variations. In extensive effusions, the symptoms of pericarditis, just sketched, will be distinctly observable. Great oppression, and even orthopnœa, comes on; the jugular veins swell with every systole, and subside again with every diastole. The integument on the well-known places becomes cyanotic and its temperature lowered. As the pure hydropericardium is, in every instance, preceded by dropsies in other parts of the body, and which, perhaps, still exist, its morbid picture is, therefore, materially obscured and obliterated; this is especially applicable to the respiratory disturbances. The physical signs are the same as in pericarditis, only still more pronounced, and easier to be elicited, for these patients are less severely affected in their general condition, and, therefore, are more tranquil than those suffering from pericarditis. The præcordial region bulges slightly, the impulse of the heart is weak, or entirely imperceptible, the pulse is small, the dulness on percussion upward very marked and flat. *One* sign only of pericarditis *never* occurs here, namely, the friction-sound, for its cause, roughened walls, plastered with membranous exudations, never exists here. The terminations of hydropericardium differ according to its cause. Those effusions which supervene upon diseases of the heart always terminate fatally, while those ensuing from scarlatina are capable of being absorbed under proper treatment.

Treatment.—The diuretic treatment, as in all dropsies, is also here the one most indicated, and the pure roob* juniperi, without any kind of vehicle, is tolerated longest and best of all the diuretic remedies. Derivatives upon the alimentary canal should not be tried in this class of patients, because they always disturb the digestion, and a cure of dropsy is only possible when the metamorphosis of the tissues goes on properly. Nor do derivatives upon the skin, by repeated vesications, seem appropriate, on account of the great pain they produce; still less can they be used in children with nephritis, for the cantharides keep the kidneys in a constant state of irritation. Paracentesis of the pericardium, it is true, is recommended, in many works, for the sake of completeness, as a last resource, but, so far as I am aware, has never yet been performed in children's practice.

* See note to page 223.—Tr.