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## ORIGINAL ARTICLES.

### THE TREATMENT OF CERTAIN CHRONIC INFECTIOUS PROCESSES.\*

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The bacteriologists have been teaching us a good deal about the nature of infection of late years, and it is the duty of those of us who are clinicians to go to work and apply in diagnosis and therapy the facts that the bacteriologists have discovered. We have been shown what the process of infection means; we now know how the human body, and other animal bodies enter into competition in the struggle for existence with minute living parasites. We know a good deal about the mechanisms of defence in the human and animal body, and how they are overcome. We have been taught much about the mode of entry of microscopic parasites—the bacteria and the protozoa—into the body; we believe, for instance, that some parasites come in by one door only, *e. g.*, the cholera bacillus enters only through the intestinal epithelium, the typhoid bacillus probably through the intestine; whereas many other parasites enter by various ways; the staphylococcus or the streptococcus, for instance, can come through many doors into the human organism.

We have learned something about the process of incubation. The time of incubation appears to be simply the period when the organisms are multiplying, so that they become numerous enough to cause some appreciable effect in the organism, and we are finding out how these effects are produced. We distinguish between the effects which the toxins produce, and those due to the bodies of the bacteria and protozoa themselves. When invading micro-organisms enter the body, and gain a foothold there, they sometimes settle near the place of entrance and give rise to a local lesion only, not being distributed beyond that point, as in an ordinary boil or local abscess. Sometimes on multiplying they spread by direct continuity of surface; the gonococcus, for instance, may not confine its growth to the urethra, but may extend into the prostate or the bladder, or the gonococci may travel up the

ureter to the pelvis of the kidney. Sometimes the bacterial infection spreads by metastasis, a primary focus of infection giving rise to secondary local infections in some other part, not immediately adjacent; for instance, from a boil, or furuncle, under certain conditions, bacteria may enter the lymphatic channels or the blood vessels, and, once in the blood, be carried to distant parts of the body, where they lodge and set up "metastatic infection"; or streptococci, on the tonsil, may not limit themselves to growth on the tonsil itself, with production of tonsillitis, but may get into the blood current, in small numbers, through the lymph channels, and finding lodgment on the heart valves, cause endocarditis, or, on the synovial membranes of the joints, causing polyarthrititis.

Typhoid fever, which was formerly thought to be largely an intestinal infection, is now known to give rise in almost every case to metastatic infections of the spleen and skin. Every rose spot on the abdomen in typhoid is an instance of metastatic infection of the skin, for it has been demonstrated that the rose spots contain living typhoid bacilli. A certain number of typhoid bacilli get into the blood from time to time, and are filtered out by the organs. Sometimes the microbes may actually multiply extensively in the blood itself, instead of being merely transported by the blood, and then we have to deal with a true septicæmia in the bacteriological sense. I may remind you of the general streptococcus and staphylococcus infections; quartan malaria is a typical generalized protozoan invasion of the blood.

The same organism may in one case of infection be distributed in one way, and in another, in another way. Think for a moment of the varying behavior of the gonococcus. Sometimes it stays in the urethra; sometimes it extends to the prostate and bladder; sometimes it forms metastatic infections, a few bacteria going over into the blood, to be carried to a heart valve (gonococcic endocarditis), to a joint-membrane (gonococcic arthritis); rarely the gonococci may multiply rapidly in the blood and give rise to a true gonococcic septicæmia.

The bacteriologists have shown us further how these parasites which cause infection often have

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a predilection for a certain tissue; for example, the bacillus of leprosy, when it gets into the body, has a particular affinity for the nerve trunks and multiplies in them; whereas the cholera vibrios multiply chiefly in the intestinal epithelium; even if you inject cholera vibrios into the blood, they rapidly disappear from the blood and become localized in the intestinal epithelium. Similarly if the gonococcus gain entrance to the blood, it is likely to be picked out by the susceptible joints, which accounts for the metastatic arthritis which so often occurs in the course of gonorrhœa. Other bacteria, like the staphylococcus, the streptococcus and the pneumococcus, have less limited predilections; they may settle and multiply in any one of several of the tissues or organs of the body.

We have begun to find out also how microscopic parasites struggle with their hosts in order to maintain their footing in the body. The natural mechanisms of defense are overcome in various ways. The production of poisons of various sorts have been carefully studied, and we hear much nowadays of toxins, endotoxins, lysins, agglutinins, antigens and the like. There is thus quite a variety of poisons produced by bacteria for overcoming the mechanisms of defense in the body.

I need not delay to speak on the topic of virulence or on the local effects produced by bacteria in the animal body. Certain general phenomena associated with infection are familiar to all—leucocytosis, or, in some cases, leucopenia, fever, or, occasionally, subnormal temperature, hemorrhagic diathesis, splenic tumor, anæmia, general disturbances of nutrition in the organs, parenchymatous degeneration of the kidney, changes in the nerve cells, are some of them. Formerly we spoke of them as "symptoms of infection"; now we are more inclined, on account of the difference in view-point, to refer to them as "biological reactions" which take place in the body during infection. That it is on account of the biological reactions which occur that the susceptibility of the body to subsequent infection of the same sort is altered, we are gradually coming to learn; in other words, we are gaining an insight into what happens in the natural cure of infection, and why it is that after an infection has run its course, in many instances, the body is, for a time at least, protected against a repetition of the attack.

In the study of infectious processes it is customary to differentiate more or less sharply the acute from the chronic affections. Diseases like

typhoid, cholera, plague, pneumonia and influenza as a rule run a very acute course; the organism attacked is quickly killed, or the patient soon recovers. But in chronic infections there appears to be no very marked tendency to spontaneous cure; the diseases continue for a long time. Tuberculosis, leprosy, and actinomycosis are types of chronic infectious processes with but little tendency to spontaneous cure. The distinction between acute and chronic infectious processes, however, is not a hard and fast one. We know that certain processes ordinarily acute may become chronic, and, again, some of the infections usually chronic may pursue a very acute course; for instance, gonococcal infections, so frequently acute in the urethra, only too often give rise to a chronic process there or in the prostate and seminal vesicles; tuberculous infections, usually chronic, are not always so.

The bacteriologists in their studies of the natural cure of infections and of the production of immunity have discovered that a variety of reactions must be considered. In "antitoxic" immunity there is manufactured in the body of the infected animal a substance which neutralizes the soluble poisons (toxins) produced by the bacteria; this antitoxic immunity we are familiar with in diphtheria and in tetanus. But in the vast majority of infectious processes there is no marked antitoxic immunity acquired; the biological reactions give rise more often apparently not to an "antitoxic" but to an "antibacterial" immunity; thus in the course of typhoid fever or cholera, the cure is not brought about by the production by the body of substances which neutralize the soluble toxins manufactured by the typhoid or cholera bacilli, but, apparently by the elaboration of substances, which prevent the further life and growth of these bacteria in the body. Just in what this antibacterial immunity consists we are sometimes in doubt. It is now known that the body produces a series of different substances which combat invading bacteria. One kind of such substances is to be seen in the materials which appear in the blood of patients suffering from typhoid fever, for example,—I mean, the agglutinating substances upon which the Gruber-Durham-Widal reaction depends. These "agglutinins" tend to make the typhoid bacilli adhere to one another in clumps. Then another set of substances, the so-called "bactericidal substances," actually kill the bacteria, and still another set, the so-called bacteriolytic substances, not only kill the bacteria, but dissolve them up. Finally there is a set of substances

which do not kill the bacteria, which do not clump the bacteria, and which do not dissolve the bacteria, but which do so modify the bacteria as to make them suitable food for the phagocytes of the body; in other words, these substances so sensitize the bacteria that the leucocytes are enabled to engulf and digest them. These bodies, which have been studied especially by Wright of London, are the so-called "opsonins." The term is derived from a word which means to provision, to cater to, to purvey, to act as a sauce, so that these substances, in the figurative language of Wright, act as "sauces" on the bacteria, so that they are transformed into a "desirable" food for the leucocytes.

While some infectious processes yield an almost permanent immunity once a single attack has run its course, others yield an immunity for a short time only, and still others apparently yield no immunity at all. In diseases like tuberculosis and leprosy, for instance, it is hard to find much evidence of acquired immunity to the diseases; such diseases are but too prone to go on through the whole lifetime of the patient.

I shall not take up your time and delay the particular part of what I have to say by discussing the various theories of antitoxines, agglutinins, bacteriolysins, hemolysins, etc. These theories are somewhat complex when you hear or read about them for the first time, but those of you who have worked through them know how simple they are. The side chain theory of Ehrlich looks complex and abstruse, but it is not so; it is really a very simple theory. Fortunately, Dr. Ricketts, of Chicago, has written a book in which immunity is very simply described. This book is entitled "Infection, Immunity and Serum Therapy," and it is an excellent exposition of all the modern doctrines on these subjects. I recommend it highly, especially to the general practitioner who wishes to read a clear and succinct account of the newer work.

What I wish to speak about mainly is the subject of the therapeutic measures which we employ in the treatment of chronic infections, and I desire to say a word or two about the principles underlying these therapeutic measures. Since the time of Hippocrates physicians have been trying to help Nature in the cure of the infectious processes, and gradually a whole series of different methods of helping Nature have been worked out. One of the principal efforts that has long been made has been that directed toward *keeping up the general strength of the body*; general reconstructive measures have always been much relied upon for

fortifying the natural mechanisms of defense. When patients are kept in the fresh air, are made to sleep out of doors, to eat as much good food as they can digest and are relieved from physical and mental strain, the mechanisms of defense are better maintained than when the sick do not have these advantages.

Much was hoped from methods of chemical *disinfection* when they were introduced. It seemed reasonable at first to attempt to kill invading micro-organisms directly by bringing into contact with them disinfecting agents which would kill them. That method, though it has its uses, has been very much abused; surgeons, especially, use chemical disinfectants less now than formerly. It was soon found that chemical disinfectants which kill the bacteria also injure the body cells; it has been shown that even very minute amounts of chemical disinfectants will render inefficacious certain of the substances in the blood serum which Nature uses as weapons in her fight with bacteria; for instance, it is asserted that lysol in great dilution mixed with blood serum destroys those sensitizing substances which prepare the bacteria for phagocytosis.

A very important method of fighting infectious processes is the surgical procedure of *removing the focus of infection*. The surgeons have undoubtedly done a great deal in helping us to fight acute and chronic infection by searching for the primary focus and excising it. The surgical treatment of appendicitis is an instance in point of triumphal achievement. There is, however, force to the objection that an attack on the primary focus by surgical means is, in some cases, dangerous. Surgeons, for instance, do not recommend operation on tuberculous joints as often as formerly, for efforts at excision have in more than one instance led to the dissemination of tubercle bacilli, through the body with the production of an acute miliary tuberculosis. Again, if a local focus be much stirred up by manipulative measures, the specific immunizing powers of the body may be, temporarily, greatly lowered. For example, Wright has shown that simple massage of the tuberculous joint leads, as a result he believes of disintegration of tubercle bacilli and diffusion of the endotoxines of tubercle bacilli into the system, to a state in which the opsonins are for a time markedly diminished in the blood. Indeed, he goes so far as to assume that simple percussion of the chest of a tubercular patient may lead to such an inoculation of the body with tubercle-poison that the specific opsonic bodies are reduced in amount for quite a period of time.

In all attempts, therefore, to treat local foci of infection by surgical methods the dangers should be borne in mind.

Another method of fighting local infections, especially chronic infections, is by *increasing the flow of blood and lymph through the part*; the application of heat to a part, for instance, causes an active hyperæmia and increases the amount of blood which flows through the part. The principles underlying such methods are understood better now than formerly. By increasing the amount of blood and lymph in a part, we bring into the part increased amounts of the antitoxic and antibacterial substances, which the body uses in fighting infection; we increase the number of phagocytes in the part, and with the plasma come those sensitizing substances, the opsonins, which make the bacteria ready for ingestion by the phagocytes.

*Passive hyperæmia*, now so much employed, has a like rationale. Bier obstructs the venous outflow from the part; if he wants to treat a chronic infection of a wrist joint, for instance, he will compress the veins in the arm, so that though the arterial blood can flow into the hand, the venous outflow is hindered; cyanosis develops with a great increase of blood in the part; the wrist becomes surrounded by engorged venous vessels, and when the pressure has reached a certain height in the veins, there is effusion into the tissues; all the parts are bathed with extra lymph, lymph which carries in it quantities of, say, bacteriolysins on the one hand, and opsonins on the other; some bacteria are killed and dissolved; others are sensitized for phagocytic engulfment.

In order to enhance the efficacy of Bier's method, the modification of Klapp has been introduced; an incision is made in the affected part, and passive hyperæmia then produced. Now the arterial blood flows in, venous engorgement leads to increased lymph formation, but as the lymph can find an exit through the incision, the infected part is continuously exposed to a flow of fresh serum, with ever-new supplies of protective substances. The advantage of this method is lauded by those who have tried it.

*Specific serum therapy* has been tried in acute and chronic infections, both antitoxic and antibacterial serums. There are only two or three antitoxic serums which are of value, those for diphtheria, tetanus, and perhaps for snake poisoning. The other serums on the market have no antitoxic value, or, if any, it is so slight that it need scarcely be considered. Antityphoid, anti-

streptococcic and antipneumonic serum are not antitoxic sera, but rather antibacterial.

The streptococcus, staphylococcus, gonococcus, typhoid bacillus and cholera vibrio do not produce true "toxines" in the bacteriological sense in great quantities. The symptoms of typhoid and cholera are due rather to the substances set free when a part of the bacteria are killed, and the dead bodies of the bacteria are dissolved up, setting free so-called "endotoxines"; the human body does not, Pfeiffer asserts, build an antidote to these endotoxines. There are, he thinks, no antiendotoxines comparable to the antitoxine for diphtheria-toxine.

It might be thought possible to make a protective serum so rich in opsonins that it would be valuable for passive immunization. If we inoculate a horse with staphylococci we may increase his opsonins somewhat, and then by transferring the horse's serum to a human being suffering from staphylococcus infection we might hope that the opsonins of the horse's serum would help to combat the staphylococcus in the human organism, by enabling the human organism's phagocytes to destroy the staphylococci more quickly. But it seems impossible to concentrate opsonins in a serum to the extent necessary to make such a treatment efficacious. It is possible that there are certain other substances in the antibacterial sera which help in the production of immunity, about which we as yet know nothing. In some cases favorable clinical results have apparently been obtained by their use; in other cases no good results are obtained. Antibacterial sera are, as yet, decidedly disappointing.

Another method of fighting chronic infection, that recently urged by Wright, is by *inoculation* with bacteria themselves. The symptoms in tuberculosis are supposed to be due largely to the endotoxine set free from tubercle bacilli disintegrated in the body. The question arises, what possible benefit could accrue to a tuberculous patient by injecting more dead tubercle bacilli into his body? Therapeutic inoculation sounds at first absurd, but modern study indicates that much may be hoped from it. In cases of tuberculous infection of the glands in the neck or of tuberculous joints, the opsonic power of the blood for the tubercle bacilli may be lowered. In inoculation, we have a method, which, if cautiously used, permits us to increase the opsonic power. Thanks to the ingenuity of Wright, we are now able easily to measure, by a clinical method, the opsonin index. In tuberculous infection the op-

sonic index may be low or very high or it may be variable. If the opsonic index is low, phagocytes cannot destroy tubercle bacilli; the tubercle bacilli are not properly sensitized, and cannot be eaten by the phagocytes. When the opsonic index is high, the phagocytes have their best opportunity; in cases of tuberculosis in which the opsonic index is high, the body is doing well in the battle, and inoculation is unnecessary. When the opsonic index is low, you can increase the opsonic power, the amount of opsonins in the blood, by injecting very minute quantities of dead tubercle bacilli. Apparently, in certain chronic tuberculous infections the body is not destroying enough tubercle bacilli to cause the biological reactions which give rise to the opsonins. If you can artificially put in dead tubercle bacilli, you can increase the opsonins, so that the body will fight the living tubercle bacilli much better; that is the principle underlying the treatment of tuberculosis by tuberculin, a treatment which is still being used in Saranac Lake by Trudeau and apparently with success. According to Wright, using minute quantities of tuberculin, and measuring the opsonins as you work, you can increase the opsonic power of the blood and help the patient to throw off his tuberculosis. He has found the treatment by bacillary vaccine helpful in the cure of tuberculous glands and lupus, and in the cure of tuberculous sinuses after operation.

The determination of the opsonic index sounds like a difficult procedure, but it can easily be done by men with laboratory experience. It seems possible that just as we have now anæsthetists in our hospitals, so in the future we shall have men there whose especial duty it will be to determine opsonic indices and to give bacterial inoculations. To measure the opsonic power the laboratory worker simply draws a little blood from the finger, dilutes it with sodium citrate and centrifugalizes, so that the white corpuscles are obtained in a layer; some white corpuscles are mixed with a suspension of tubercle bacilli and the patient's serum; the mixture is placed in the thermostat for half an hour, after which a smear preparation is stained and the number of bacilli ingested by fifty leucocytes counted; then dividing by fifty the average number of bacteria ingested per leucocyte is obtained. Let us say that the serum from a patient suffering from a tuberculous process yields a preparation in which the average number of bacilli engulfed is only ten per leucocyte, whereas the same white corpus-

cles, mixed with the same bacterial suspension, but with normal blood serum, yield a preparation in which the average number of bacilli ingested per phagocyte is twenty. The opsonic index in the patient then would be half normal; if we arbitrarily call the normal 1, the opsonic index of the patient would be 0.5. It turns out that the opsonic index in healthy people rarely varies more than 0.1, while if you examine a patient who has tuberculosis you may find that the opsonic index is very much below 1.0, say at 0.8, 0.6 or 0.4.

This work of Wright's is being confirmed. Hektoen, of Chicago, with a group of associates, has done much work on the subject. Simon, of Baltimore, and Potter, of New York, have also made a careful study of the opsonic index. In my laboratory Dr. Cole and others are now busily engaged in testing and practically applying the method. It seems probable that though the methods may yet be made more precise, we already have a practically valuable way of measuring the opsonic power of the blood; in working with therapeutic inoculation of bacteria it is desirable therefore that this practice should be controlled by regular determinations of opsonic indices.

Wright asserts that in inoperable cases of tuberculous cystitis he has wrought cures successfully by increasing the opsonic power by inoculation. Another chronic infection which he declares is amenable to treatment by inoculation is chronic furunculosis. Some cases, as everyone knows, are very resistant to ordinary treatment; Wright has shown that they can be cured by giving injections of dead staphylococci, starting with an injection, say, of 200,000,000 dead staphylococci and increasing up to 300,000,000 or 400,000,000 per dose. By this means the opsonic power against dead staphylococci can be distinctly increased. Care must be taken not to give too large doses, for the so-called "cumulative negative phase" has to be avoided.

I desire to speak especially before closing of certain *chronic metastatic infections* which tend to be recurrent, polyarthritis on the one hand, and endocarditis on the other. A great deal of new light has been shed upon the infectious forms of arthritis in the recent past, light which has come largely through the co-operation of physicians, bacteriologists, pathologists and orthopædic surgeons. The younger Boston school of orthopædists, with Goldthwait at its head, have helped us especially. It seems tolerably clear now

that the majority of the so-called acute and sub-acute rheumatisms, many of the so-called chronic rheumatisms, and at least a part of the cases of arthritis deformans are instances of infectious polyarthritis. As a result of a primary focus of infection situated somewhere in the body, a few bacteria get over into the blood and are carried to the joints, where they set up the arthritis. If the primary focus of infection is cured and does not recur, there may be only one acute attack of arthritis, but where the primary focus persists and undergoes recurrent exacerbations the joints may be repeatedly metastatically infected.

One very practical point in this connection has resulted, and that is this: *we have in such cases to seek especially for the primary focus of infection, and having found it, we must get rid of it in order to prevent further metastatic infection.* It would appear that in a considerable percentage of the cases the primary focus of infection is in the throat, particularly in the palatine tonsils. Even where the tonsils are atrophic and superficial examination reveals no obvious lesion, it is sometimes found that if the tonsils are extirpated the patients get well, and examination of the extirpated tonsils reveals local infection. The series of cases recently studied by Goldthwait, and operated upon by Goodale, is very convincing.

If the palatine tonsils are not the seat of the primary focus of infection, the pharyngeal tonsil should be carefully examined, as should also the gums, since in certain instances a pyorrhea alveolaris (Rigg's disease) appears to be responsible for the metastatic infection. We have long had a paradigm of these metastatic infections before us in the form of gonorrheal arthritis, the primary focus of infection being the urethra or prostate, but we have been slow to recognize that other forms of acute polyarthritis are also metastatic in origin and dependent upon the existence of some primary infected focus. In women the uterine canal or the Fallopian tubes may be the seat of the local infection which is responsible. Occasionally we have to suspect an otitis media or infection of one of the para-nasal sinuses as the initial disease. Now and then bronchial or pulmonary infection or infection of the mucous membrane of the intestine may be the primary process. A large part of our success in treatment of these chronic forms of arthritis will be dependent upon our ferreting out the primary focus of infection and getting rid of it.

Since my attention has been called to the importance of this conception of a primary focus of infection in the etiology of polyarthritis, I have been turning over in my mind, also, the many cases of endocarditis which we see in young people, cases in which the endocardium may be repeatedly attacked, sometimes with complicating pericarditis. It seems to me probable that we have to regard such cases as similar instances of metastatic infection from some primary focus of infection. We all know how common it is to have an endocarditis associated with a polyarthritis, and how frequent it is to meet with an endocarditis as a complication of various local pyogenic infections. In a great many instances the endocarditis is secondary to a primary tonsillitis and the recurrences of the endocarditis are associated with recrudescences in the throat. I believe that we shall be able to do a great deal to prevent the progress of endocarditis in young people. Once a joint has become infected or the endocardium attacked, we shall make it our duty to search for the primary focus and treat that infection, and in many instances, especially where the tonsil is involved, we may without great danger excise the primarily infected organ and thus prevent a recurrence of the attacks. In very young children one might hesitate to remove the tonsils for fear of some protective function or of some function or internal secretion necessary to the welfare of the child. In later life, after the tonsils have begun to become atrophic, such dangers need scarcely be considered. In view of the fact that the palatine tonsils are only a part of Waldeyer's ring, and inasmuch as the lingual tonsils are never removed by operative procedure, it would seem likely that the tonsillar function of internal secretion would be sufficiently carried on even in young children after the palatine tonsils have been excised. There is now a large bibliography on the subject of infections through the tonsil. It has been very well reviewed in the recent address given by Dr. Isaac Adler, of New York.\* Physicians have for a long time been familiar with the close relation which exists between tonsillitis, rheumatism and endocarditis, but action has scarcely kept pace with knowledge. The time has come when an acute tonsillitis should always be regarded as a very serious infection, owing to the possibilities of metastatic infection therefrom. No case of acute tonsillitis should be considered as trivial.

\*Adler, I. "Remarks on some General Infections Through the Tonsil." *New York Medical Journal*, March 31, 1905.

The patient should be placed in bed at once and active measures taken to combat the local infection. Once metastatic infection has occurred, the quicker we make further metastatic infection from the same source impossible, I think, the better. I believe that from now on physicians are going to be able to prevent a great deal of polyarthritis, endocarditis, and perhaps acute and chronic nephritis, by recognizing this conception and acting promptly upon their convictions. It is the general practitioner who meets with these primary infections in the tonsils and elsewhere, and it is he to whom the great majority of patients must look for the recognition of the danger and judicious prophylactic advice.

### A MORE CAREFUL DIAGNOSIS IN HEAD INJURIES.

BY C. F. BARBER,

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As in previous papers I again advocate a closer study of head injuries and their results. More especially in this brief paper would I call the attention of the surgeon to the seeming trivial injuries to the head—trivial at the time of the accident but later becoming serious in the extreme.

There are without a doubt many cases of death each year of hemorrhage upon or within the brain, the result of fracture of the skull, which fractures have passed unobserved at the time of the accident. In a large proportion of these cases the individual has at the time of receiving the injury been sufficiently under the influence of liquor to mislead even the best of observers. Further, in a goodly number of cases of this class the general symptoms are so profound that an observer unless especially trained and of great experience will be unable to properly judge the exact nature of the injury.

Most cases however if carefully watched and sufficient time is spent in separating the normal from the abnormal, will have one or two factors sufficiently prominent to guide one in locating the centre of greatest damage.

An unusual movement of the extremities, restrained or convulsive, is of importance in many cases. Oftentimes a simple lineal incision will confirm or disabuse your mind of a suspected irregularity of the skull surface.

A case will illustrate the purpose of this brief paper and so I will take one of recent occurrence.

W. C. H., age 37 years. A gentleman of edu-

cation, in full health. While attempting to alight from a trolley car, fell, in just what manner is uncertain as statements differ by those who were with him.

He arose quickly and walked several blocks to the home of the gentleman who accompanied him; felt somewhat disturbed after reaching home and went to bed. Asked that a physician might be called. Gradually sank into a semi-comatose condition. Would answer questions if sharply spoken to and complained of severe pain in occipital region. A few hours later sank into coma and was in that state when removed to Kings County Hospital.

Upon admission it was noted that his breathing was stertorous; pupils equal, reacting to light. Right eye slightly deflected to right, mouth possibly a little drawn to right. A slow left-sided paralysis came on. Pulse full and slow. Tongue to left. Respirations deep and slow.

Dr. Applegate who saw the patient directly after the fall could find no mark upon him to indicate any point of injury. No abrasion or contused area was found at the time he was operated upon. His increasing stupor caused the doctor to suggest his removal to the hospital. At this time it was not quite clear as to whether he had suffered an apoplexy at the time of his fall or whether the fall was due to a cerebral hemorrhage. There being a question of doubt Dr. Wm. Browning was asked to see the patient. At his suggestion the patient was transferred to the surgical division and from the symptoms then present it was deemed wise to explore if nothing more; to ascertain the possibility of hemorrhage and, if present, whether intra or extra dural.

From the symptoms present it seemed most probable that the centre governing the left arm was as near the point involved as any. It was therefore decided to open at about this point—a trifle in front of same. A rule advised by Dr. Browning and one which I have never regretted abiding by, in cases such as this, is to open the skull and then inspect through a small bone opening to see if hemorrhage is present and its location. This small opening might be called the control-point, as one is able by enlarging it to relieve the pressure to any extent he may see fit. In this case I incised the scalp at the point designated but, before applying the small drill, examined the skull with my index finger. Much to my surprise I was able to report a positive fracture.

Satisfied on this point, a generous horsehoe

shaped incision was made. This exposed the fracture but did not reach its distal part. Following the line of fracture it was found to extend from a point about one inch above the external auditory meatus and one-half inch posterior to the external angular process of the frontal bone, posteriorly to about the occipital protuberance. A fair sized trephine opening was made at the anterior portion of the fracture and a rongeur quickly followed the fracture to its limits. An extradural clot of large size was found and curetted out. The fresh hemorrhage was quite free; several branches of the middle meningeal had suffered by the accident. The hemorrhage had been so extensive that a portion of the cerebral hemisphere was indented, of the size of an English walnut, the largest indenture I had ever seen.

We were obliged to sew in quite a bit of gauze to control the bleeding. It is my custom to pack fairly snug when hemorrhage is uncontrollable, and then stitch the scalp over the gauze, thus making a firm but elastic pressure which I have always found has controlled excessive bleeding. I allow none of the gauze to be exposed. Three or four days after I reopen sufficient of the wound, usually without anesthesia, to remove or renew the packing. If able to remove the packing I close permanently.

In this particular case we had a return of consciousness the next morning and a clear mental condition, which continued. The temperature and pulse suddenly soared—the one to 106, the other to 140—and this accompanied with a miserable hiccough. After the packing was permanently removed the temperature and pulse gradually subsided but the hiccough remained for several days and persisted in spite of every drug and device, so that we feared we might still lose our patient. He suffered extremely from this serious condition but it gradually subsided. The high temperature and pulse I am inclined to believe was due to the force packing. The other troublesome symptom is possibly accounted for by the necessary irritation caused in curetting the clot from its position.

However, he so rapidly improved that he was able to leave the hospital two weeks after he had been operated upon and from last reports he was out of doors enjoying the luxuries of country life.

In this case the symptoms upon admission were so profound that any attempt at localization was out of the question; thirty-six hours cleared

the condition sufficient to permit of a provisional diagnosis.

This uncertain condition prevails in many cases, for the extreme shock in injuries to the head where no marks are apparent to guide is sufficient to mask the important diagnostic symptoms. But by keen watching, the symptoms of shock will be found to gradually disappear and the permanent symptoms be discernible. It may take twenty-four hours for this transformation to take place and sometimes several days. As soon as symptoms are found which shall guide you, open at once, for permanent damage soon begins in a brain subject to continued pressure.

We are sometimes entirely at sea even when the skull is opened, absolutely nothing showing for the symptoms present. The best explanation is an injury contre-coup. This I have been able to verify on several occasions.

As to returning consciousness, severe shock will oftentimes delay the return of the senses for days; the functions are reestablished more slowly in my experience where the shock has been great than when hemorrhage has occurred. This is probably due to the great cell disturbance; whereas with hemorrhage it is the compression which, being relieved, quickly restores the functions of the higher centres.

#### PRINCIPLES OF MECHANICAL SUPPORT.

BY C. D. NAPIER, M.D.

By mechanical support is meant artificial means in aiding nature to overcome a disease, injury or defect. This support is obtained by steel, plaster of paris, celluloid, leather, or wooden splints. It is indicated in diseases of the bones or joints, or fractures or dislocations, and in certain injuries, defects and malpositions. When the surgeon is called upon to assist healing by placing the part at rest or protecting it, he should understand thoroughly the general principles of mechanical support as well as those specially pertaining to the case in hand.

One of the cardinal principles of mechanical support is that it is an aid only and not the whole treatment. This is the most important principle, and yet the one least appreciated by many. It is flagrantly disregarded or not understood by the instrument and shoe makers who treat flattened arches of the feet solely with the insole, and disregarded as well by the physicians who think they have done their duty by such a patient when they send him to a brace maker for a plate. The causes which have produced this condition—im-



proper shoes, faulty position of the foot in standing and walking—are not explained to the patient and corrected; and instruction in exercising and toning up the weakened and over-stretched muscles is neglected—all of which are just as important, if not more so, than the supports. And so also in dealing with the so-called "bete noir" of orthopedics—lateral curvature of the spine—the brace or plaster corset alone is not scientific, nor is the exercise treatment alone sufficient in all cases—as practised by Bernard Roth, of London.

Heather Bigg, of England, has recently written on the use of the brace in lateral curvature, claiming that the exercise treatment and plaster of paris treatment are of no avail. He has probably either had no experience with those methods, or if he has tried them, has not properly adapted them to the individual case. The love of the brace has blinded him to the good in the others. The two should be intelligently combined where indicated. Were these patients brought under proper care early, this condition would not be considered so much of a "bete noir." Fractures are not neglected and therefore not dreaded. Even phthisis in its early stages is now looked upon with less fear. And the weak arch if seen in its incipency and cared for with proper regard for its normal functions and position, may never require mechanical support; and we might be spared the difficult management of the neglected or antirheumatic treated, badly deformed flat foot. In those unfortunate cases of infantile paralysis, so much may be accomplished by muscle development, and later operative interference to correct deformity or by tendon transplantation or arthrodesis to give more stability and strength to a joint. Yet the brace is invaluable to aid the other methods.

It must be remembered that the artificial support, when applied, largely takes the place of nature's support—the muscles; and when muscles are not used, they become weakened. Where complete rest and fixation are not required for the cure of the disease or in the convalescent stage of Pott's disease or other joint diseases when constant fixation is no longer necessary, the muscles must be exercised in order that they may regain their tone and functioning power. That brace weakness always follows brace use is another principle which must be reckoned with.

In adjusting the steel, the pressure must be real where needed, but unnecessary pressure avoided, and good support obtained to the weakened part. The ordinary shoemaker's sole plate

gives upward support only and does not take into account the sliding inward of the astragalus, and this may take place and marked valgus result while the foot is resting on this inefficient support. The commonly used short hip brace does not fix the diseased hip, if fixation is sought for. In the care of the fracture, the general rule is to fix the joint above and below with the plaster or splint, so in fixing a joint, the apparatus should extend well above and below the joint. A plaster dressing for fixation of the knee, when carried only to the middle of the thigh, as is so often the case, allows at least 10 per cent. of motion in the joint. Protection should be made in all directions. The common method applied with fracture of the neck or upper third of the femur—traction with a long side splint—does not take into account antero posterior motion. The daily application of the bed pan, usually by a semi-trained nurse, produces motion at the point which should be completely fixed in order to obtain union. Posterior support over the buttock is most important, either with the splint, or better, plaster of paris.

Prevention or correction of deformity is another important point to study and carefully work out in using any mechanical appliance. Whether treating Pott's disease, joint disease, lateral curvature, weak foot, paralysis, or fractures, it is known that deformity, that is, bad position, is almost sure to result if nature is not assisted in the right way. The anatomical condition and physiological functions of the part must be understood to appreciate what deformity it tends to, and then, by proper application of force in adjusting the appliance, that tendency must be counteracted. This problem may be a simple one or complex, owing to divergent action of muscles. The principles, however, are simple. In paralysis it is certain that, given a loss of power in one group of muscles, the opposing group tend to contraction and shortening, or if the affected group be merely weakened, the result is the same, but comes more slowly. It is an important point to recognize that muscles partly paralyzed, if allowed to be on the stretch, recover with difficulty, but if well supported and shortened up, regain their tone more quickly and more completely. An early case of infantile paralysis may often be much benefited by immediate application of steel or plaster of paris support. How many instrument makers can appreciate the value of these seemingly small points, or, if they do, can understandingly apply them to an individual

case? Yet these mechanics are constantly treating such cases with their braces. The surgeon should study the case and be in control, the maker of the brace adjusting it under his direction.

The instrument maker should be what he is—a mechanic, not a surgeon. However, they do not hesitate to handle even a patient with Pott's disease. The writer has seen such a case which had been treated—or, more correctly, maltreated—by one of the best known and highest priced firms in New York, where, with the disease in the upper dorsal spine, a brace had been applied which held only the spine below, barely reaching up to the affected point. The parents, supposing the child was receiving proper care, allowed the case to go on, until extreme deformity resulted.

In diseased joints, or joints where the motion is restricted from any cause, the tendency is toward flexion, in the hip, flexion and adduction. Consequently the fixation or supporting splint should aim to preserve extension. Exception should be made with the elbow, where the flexed position is a more useful one in case of resulting ankylosis. When plaster of paris is applied to the ankle joint, whether for disease or fracture, the right angle position should be maintained that the tendo Achillis may not be too shortened for easy walking, with also some inversion to prevent a subsequent valgus with resulting flat foot.

Nature must be made to aid us. The severely paralyzed child cannot walk, consequently the muscles which have some power are not stimulated by use to recover that power, and they become still more atrophied. Such a child well braced is put on its feet, is made extremely happy thereby, and muscular action is improved. The use of the crutch to take the place of a partly paralyzed leg is bad treatment. The leg which might become very useful if mechanically supported goes on to greater atrophy and greater shortening till it becomes a mere appendage.

The influence of growth on deformity is considerable. This is justly emphasized in Dr. Judson's excellent book on that subject. The limb should be carefully held in a normal position, that the bones may develop normally and not be subjected to abnormal pressure.

While treating one part, thought must be taken of the rest of the body. If one leg be shorter than the other the pelvis will be tilted and the spine thus curved. If this vicious position be maintained for some length of time, lateral curvature will likely result. In the application of

the brace to hip disease, care must be observed that it does not become too short. In infantile paralysis one limb is usually shorter than the other. This should be equalized by building up the shoe. When the plaster jacket is applied not sufficiently low to include the whole abdomen, or the canvas apron of a Taylor spinal brace is too short, the abdominal contents will make too much pressure at the rings, with often a resulting hernia, which is favored also by the weakness of the abdominal muscles.

The material to be used in the appliance is often decided in favor of that with which the surgeon has had most experience. And so we will see Pott's disease, for example, treated largely by some with plaster of paris, and by others with a steel brace. For thorough fixation the plaster is the more satisfactory; therefore, as a general rule, when there is active inflammation it relieves the symptoms quicker and the diseased process is better controlled than with any form of brace; but, as in everything else, the individual case must be studied. The assistance to be expected from the parent must also be considered. Where nothing but ignorance and carelessness or too much sympathy may be expected, one feels safer to lock up the joint or spine in plaster, rather than a brace which is easily removed.

To secure the best results a combination of different kinds of support is often essential. Hip disease may be well treated with fixation by means of a plaster spica in addition to a short hip brace, which acts as a crutch to take the weight off the joint. A paralyzed foot may be partially supported by a brace and partly by building up the shoe on the inner or outer side to prevent either a valgus or a varus. The knock-knee brace may be aided by raising the inner side of the shoe to take some of the strain from the ligaments on the inner side of the knee.

The older child or adult who is condemned to the use of the brace thinks much of its unsightliness. It should therefore be made as neat as possible, the steels approximating the limb as closely as allowable, and unnecessary steel avoided. Often an extra stocking with the foot cut off may be drawn over it, making it much less conspicuous. The patient will then not be so tempted to discard an important support. A child can be taught to limp much less by securing a more nearly normal rhythm of step—a limp being merely a break in the normal rhythm.

These are merely suggestions relative to the general principles of support. They must, of course, be applied rationally to the individual case. And it is a sensible proposition that the surgeon is the one to apply them, and that this duty should not be delegated to the maker of the steel, who has not the knowledge of the anatomy and functions of the various parts of the body to properly apply the principles.

### THE TREATMENT OF CHRONIC VALVULAR DISEASE IN CHILDREN.\*

BY EDWARD E. CORNWALL, M.D.,

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There is no specific or well defined line of treatment for chronic valvular disease in children. Only general principles governing the treatment in this condition can be laid down, the successful application of which to particular cases must depend on the skill and experience of the physician.

This disease, as it occurs in children and adults, presents certain points of difference. In children, when not a congenital condition, it occurs almost always as a sequel of acute endocarditis caused by acute rheumatism or one of the infectious diseases; while in adults, as a result of changes in the valvular tissues produced by atheroma, by gout, syphilis, lead or alcohol, or by long continued muscular overexertion, a considerable proportion of cases appear as chronic from the start. Another fact which differentiates this condition in children from the same condition in adults is that the growth and development, which is continually taking place in children, puts a burden on the crippled heart of the child from which the heart of the adult is free. These points of difference have a bearing on the treatment.

In the treatment of this disease it is of prime importance to individualize each case. In the treatment of all diseases correct practice demands that each case be individualized, but there are some diseases whose course is sufficiently regular to make it possible to describe a routine treatment for the average typical case. This is not so, however, in chronic valvular disease. Here we find no typical average case. The patient may appear to be in perfect health, or he may present a complication of serious disorders, in the treat-

ment of which the utmost skill in the adjustment of remedies is required. In individualizing a case of chronic valvular disease in a child, besides making as accurate a diagnosis as possible of the particular valve lesion, and estimating carefully the condition of the heart muscle as regards nutrition and functional power, we must also take into account the idiosyncrasies of the patient and his physical and mental environment.

Success in the treatment of this disease depends largely on the general management. Here we often encounter difficulty. The patient is a child and irresponsible, so his co-operation cannot be secured. He cannot be trusted to do what he is told, but must be compelled to do it. It is the parents on whom we must depend to enforce our directions for general management. It is easy to get the effective co-operation of the parents when the child is suffering, but when he is free from troublesome symptoms and chafes at the restrictions imposed it is not always easy. It is a good plan early in the case to explain frankly and fully to the parents the nature of the disease, what prospects there are of improvement under good management, and what dangers threaten the patient if the prescribed directions for general management are not rigidly carried out. It may be necessary to refer to this subject many times, to harp on the dangers, and to emphasize the responsibility which rests on those who have immediate charge of the patient. Even then the parents frequently fail to enforce prescribed restrictions, being influenced by the pleadings of the child. The prognosis in this disease is worse than it would otherwise be, because of the difficulty so often experienced of securing proper management during and after convalescence. In every case the physician should insist on having the child brought to him for observation at least four times a year, no matter how well he may be.

The most important part of the management of these cases often consists in keeping the patient in bed for a long time. This is a remedial measure of the greatest value. In every case where compensation has been lost the patient should be kept in bed until long after compensation has been reestablished. This is treatment enough in mild cases, and in severe ones no treatment is of avail without it. How long a particular patient should be kept in bed is not always easy to decide. It is better to keep a child in bed too long than to let him get up too soon. Several months in bed does a child no harm, and

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is not too great a price to pay for a reasonable security against relapse. It is somewhat different with adults, whose retention in bed requires to be regulated more closely. A good rule is to keep a child who has suffered from ruptured compensation, or who recently had acute endocarditis or an acute exacerbation of chronic endocarditis, in bed for at least a month after all symptoms that in any way show disturbance of the circulatory balance have entirely disappeared. This is the minimum. More often it is advisable to keep him there longer. In view of the difficulty of controlling the parents during the period of convalescence, it is best to avoid setting a formal date for the child to get up, because if that is done the parents are very apt to anticipate it; and if circumstances should arise which compel us to postpone it, the difficulty of keeping the child in bed longer will be greatly increased.

After compensation has been established and the child is up and around, the amount and character of the exercise he takes must be regulated. While we should not risk a relapse by allowing too much freedom, on the other hand we should not restrict exercise so far as to cause the muscular system, including the heart muscle, to lose tone. In general, very little exercise should be allowed for a considerable time, perhaps a year, after restoration of ruptured compensation or recovery from acute endocarditis. Walking on the level is practically the limit in such circumstances. But after compensation has existed for a considerable time, and the heart muscle shows a fair amount of reserve power, greater latitude may be permitted. In favorable cases the patient may indulge in minor gymnastics, climbing hills, even bicycling on the level. But running; swimming and all athletic games in which there is prolonged muscular exertion must be absolutely prohibited.

Regulation of nervous activity in these cases is as necessary as regulation of muscular activity. The patient should be protected as much as possible from sources of nervous excitement. In this connection the question of school attendance comes up. I believe that it is safest to keep a child from school for at least a year after all signs of cardiac insufficiency have disappeared. When he does go he should be carefully watched for signs of heart strain, such as impaired nutrition or anemia, or more pronounced signs of imperfect compensation, such as shortness of breath on slight exertion and a dry cough. Particular vigilance is necessary at the time of puberty,

when the burden of growth and development is heaviest, and when extra strain in school or at play easily destroys compensation.

In this disease the ultimate dependence is on the nutrition of the heart muscle, consequently the value of good hygiene and proper diet is obvious. The patient's room should be well ventilated, and when strong enough he should be in the open air as much as possible. If general nutrition lags, it may be advisable to try a change of scene and climate. The diet should be regulated with reference to the needs of the patient's system, the limitations of his digestive power, and the indications given by coexisting morbid conditions. Indigestion is common in uncompensated valvular disease, and greatly aggravates the bad heart action.

The use of heart stimulant drugs is often a vital part of the treatment of chronic valvular disease in children, but in order to get the best results they should be administered with care and judgment. Some of them are so very effective that it is easy to fall into routinism in their use, giving them in every case of valvular disease in which compensation is lost or weakened, and in more or less the same doses, and rapidly increasing the doses if the desired effect is not speedily obtained. Such injudicious drugging is frequently responsible for failure to produce good results. In giving these drugs to children the following consideration should be borne in mind:

First, they should not be given at all if the recumbent position alone is sufficient to restore the circulatory balance. It is only when compensation is so far lost that the recumbent posture alone will not restore it that they are indicated. If continued after compensation has been gained they may do harm.

Second, they should not be given to restore compensation without at the same time keeping the child absolutely in bed. Although it is true that adults, under certain circumstances, may be given heart stimulants to bring their circulation up to the level while they are allowed to be on their feet, such treatment is never justifiable in the case of children.

Third, they should be given in doses suited as nearly as possible to the capacity of the heart muscle. Because a certain dose of a heart stimulant fails to bring about the desired effect promptly, it does not follow that a larger dose will produce it. Often it happens that a larger dose will produce an injurious instead of a beneficial effect. If the heart is greatly dilated

and its muscle correspondingly feeble, large doses of stimulants exhaust it. In bad cases it sometimes pays to try the effect of diminishing the doses of heart stimulants instead of increasing them. I have seen such action followed by good results. In order to get the greatest benefit from the use of heart stimulants when the heart is much dilated, small doses should be given at first, such as the weakened muscle is able to respond to. Later, when the muscle has gained in strength, larger and more effective doses may be given. In bad cases we should be satisfied at first if we can keep the patient's condition from getting worse. If it does not get worse it is probably getting better. In advanced cases of dilatation with much dropsy, visceral congestion, etc., improvement may be very slow. But if we have patience, and do not try to hurry too fast the development of the compensatory hypertrophy, we sometimes get surprising recoveries. If on the other hand we get impatient, and pour in heart stimulants in a frenzied attempt to make the heart do what is beyond its power, we may hasten the child's death.

The particular heart stimulants which should be used in a given case must be determined by the physician according to his experience, but there are a few guiding indications, such as the degree of heart failure, the extent of dilatation, and the character of the lesion. When there is considerable dilatation digitalis is the classical remedy, but the superiority of this drug over all others in the treatment of dilatation is less striking in the case of children than in the case of adults. I have found strophanthus as effective or more so in a large proportion of cases. In cases of severity I usually give both drugs alternately, and have the mother or nurse report to me on the condition of the child while taking each. The report more often than not has been that the patient seemed better while taking the strophanthus. Even in mitral incompetency, where digitalis is generally supposed to be pre-eminently indicated, I have seen strophanthus produce equally good results. In bad cases of dilatation from any cause strophanthus sometimes acts better than digitalis. In the treatment of the various stenoses, I think there can be little question of its superiority over digitalis. Possibly the explanation why the action of strophanthus is sometimes better than that of digitalis, lies in the fact that it exhausts the heart muscle less than does the latter drug. But strophanthus with all its good qualities, can not entirely re-

place digitalis as an agent for the steady training of the heart muscle. In the use of these drugs much depends on the method of administration as well as the reliability of the preparations.

Besides digitalis and strophanthus there is only one other heart stimulant which we are likely to need in the treatment of most cases of lost compensation. This is strychnine. Strychnine can be used in connection with the other two drugs oftentimes with great benefit, and it can be continued after they have been stopped, and, even after compensation has been restored, because it does not have the bad effect on the compensated heart that they are apt to have. It is a valuable adjuvant heart stimulant, but can not be relied on by itself to restore compensation.

Besides the three heart stimulants above mentioned, there are many others which are in good use, but with the exception of aromatic spirits of ammonia and morphine, they need not be mentioned here. The others are inferior, and the only excuse we could have for using them would be that we could not get the better ones. The desire to use something different would not be a sufficient excuse. Aromatic spirits of ammonia is valuable as an emergency stimulant, and morphine is sometimes a life saving drug. When the dyspnea and cough are extreme and the patient is utterly unable to sleep, morphine or codeine is imperatively called for. But it should be remembered that children usually make more fuss with a given amount of discomfort than adults.

Besides the main treatment of this disease, which is directed toward establishing compensatory hypertrophy of the heart muscle, we are often called on to treat numerous complications which result from passive congestion. These complications range all the way from slight impairment of nutrition and anemia to cirrhosis of the liver and kidneys. Catarrh of the gastrointestinal tract, bronchitis and pneumonia are common. Dropsy is often present, though it is perhaps relatively less prominent as a symptom of valvular disease in children than in adults. The treatment of these complications is necessarily palliative so long as the cardiac insufficiency remains.

In closing this brief discussion of the principles governing the treatment of chronic valvular disease in children, I have ventured to give a few sketch reports of cases which illustrate the particular application of some of these principles.

CASE I. Diagnosed as congenital pulmonary

stenosis. Girl three years old, giving no previous history of significance except that when she was two years old a doctor said she had a "weak heart." Two weeks before I saw her she began to suffer from cough and dyspnea. When she came under my observation there was extensive pulmonary congestion, rapid and irregular heart action, and a temperature of 101 degrees. Over the entire chest a loud systolic murmur could be heard, which was most marked in the second left intercostal space near the sternum, where also a thrill could be felt. The murmur was transmitted to the left and slightly upwards. The treatment of this case consisted of rest in bed for three months, the administration of tincture of strophanthus in drop doses every four hours for one month, and a little iron. Compensation was completely recovered.

CASE II. Diagnosed as mitral stenosis and incompetency due to acute rheumatism, with permanent relative tricuspid incompetency. Boy eight years old, with previous history of rheumatism and symptoms for two months past of ruptured compensation. When he first came under my care his lower extremities were greatly swollen. The area of his liver dulness extended two inches below the normal. His heart was enlarged both to the right and left. His pulse was small and feeble. There was a systolic murmur audible at the apex and all over the chest. At times a presystolic thrill could be made out at the apex. His urine was scanty, albuminous and bloody. There was distressing cough and dyspnea. Treatment consisted of rest in bed for five months, administration of four to ten drops of tincture of digitalis three times a day for four days, alternating with two to four drops of tincture of strophanthus every four hours for three days, and strychnine sulphate in doses of one hundred and eightieth to one hundred and twentieth of a grain three times a day continuously. Digitalis proved less effective in this case than strophanthus. Aromatic ammonia in five drop doses was occasionally given with benefit. During the worst period codeine in doses of one-sixteenth of a grain was of great assistance. There were times when the condition of the stomach required a diet of peptonized milk or of predigested foods. Iron was extensively given. Under this treatment apparently good compensation was secured which lasted six months. Then the child, whom it was impossible to keep under proper restraint, broke it down by playing too hard. In this relapse all the symptoms were

worse than before except the dropsy, which was less. The dyspnea was so great that the patient was unable to lie down for five months. The lower lobes of both lungs were partly consolidated. The area of liver dulness extended four inches below the ribs. When compensation was with great difficulty again restored, there was a permanently dilated heart and a permanent relative tricuspid insufficiency. The enlargement of the heart was so great that the precordium bulged. The area of cardiac dulness extended from the right nipple line to the left mid-axillary line, and as far up as the second rib. At the present time, three months after the second recovery, the patient is beginning to show signs of failing compensation, and I expect that he will soon start on a final downward course.

CASE III. Diagnosed as mitral incompetency following acute rheumatism, with relative tricuspid incompetency. Girl of six, supposed by her mother to have growing pains, shortly after became pale and languid, lost flesh, was short of breath, and had a troublesome cough. Examination showed a systolic murmur at the apex transmitted into the left axilla, with considerable enlargement of the heart. Rest in bed for five months, with administration of four to eight drops of tincture of digitalis three times a day for three or four days, alternating with tincture of strophanthus in doses of one to four drops every four hours for three or four days, with strychnine sulphate in doses of one hundred and eightieth of a grain three times a day, and a fair amount of iron from time to time, brought back good compensation. Six months later, despite the warning given to the mother, that she must keep the child constantly under her eye, the child was permitted to go with some other children on a long walk. This overexertion produced a rupture of compensation. This time it took eleven months in bed to restore compensation. A few months after the second restoration the child played too hard and a third relapse took place. The child improved for a time under treatment, but there was now a permanent relative tricuspid incompetency, and the improvement was transitory. Later she declined steadily, and died at the end of thirteen months.

CASE IV. Diagnosed as aortic incompetency. Boy of fifteen, with history of frequent attacks of shortness of breath on slight exertion, and cough, during the past five or six years. When first seen by me there was extensive congestion of the lungs, a Corrigan pulse, and rapid and

tumultuous heart action. The left ventricle was much enlarged, the apex beat being in the seventh interspace. There was a clear, blowing, diastolic murmur, audible with maximum intensity in the midsternal region and at the apex. Four drops of tincture of strophanthus were given every four hours, and a sixtieth of a grain of strychnine, and the parents were told to keep the boy absolutely in bed. This they failed to do for the first month, and during that time the patient failed to improve. A severe lecture was then administered to the parents, after which the order to keep the boy in bed was obeyed. At the end of four months in bed fair compensation was recovered. Now he is walking around, gaining flesh, suffering no inconvenience. His apex beat is in the sixth interspace, and he has a marked *cor bovinum*.

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#### **SOME OBSERVATIONS ON PYREXIA AND SUBNORMAL TEMPERATURES IN INFANCY AND CHILDHOOD.\***

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Very slight causes will elevate or depress the temperature of the healthy child. Heat applied to the surface of the child may send the temperature up two to five degrees and, *per contra*, cold applied thus may reduce the temperature two to five degrees.

A baby's temperature is exceedingly unstable and it may be stated that the younger the child the more easily varied the temperature. The older the child the nearer it approaches to adult stability.

A baby's normal temperature varies from 98° to 99° F. There is apt to be an evening fall of a degree. For the first five months of life the temperature varies greatly from slight causes. After this, the older the child and the more stable the nervous system the less the variations from slight causes; but up to the sixteenth year there is more or less susceptibility to high elevations from comparatively slender causes. Starr truly remarks, "Without doubt, during the period of active growth, heat regulation is highly unstable, and the temperature consequently more labile than at other periods of life." It would seem to be true that the process of growth causes pyrexia at times. Of course, the more stable the nervous system, the less the variations in temperature from this cause.

As an instance of how nervousness will run up a temperature in an infant, I observed recently in dressing a case of resection of a rib, that the temperature would run up from normal to 102° from fear and excitement, subsiding in a few hours to normal.

I think too much importance is given sometimes to temperature readings, and I believe it is not wise for the relatives of the sick child to watch the temperature too closely.

Elevations, which, perhaps, are anticipated by the physician and which are inevitable in the progress of the case in hand, cause an enormous amount of worry in the minds of the attendants, a good portion of which is sure to rebound upon the doctor.

The indiscriminate handing out of clinical thermometers to patients, as is the habit with some, with the remark, "You must take the temperature so often and if found so high, send for me," will tend to wear a man out unnecessarily and is sometimes adversely criticised. Of course, we all meet cases where it is eminently proper to have the temperature taken frequently and regularly for a time.

Too much importance may be laid upon the temperature in the professional mind also.

It is a fine point to know just how much significance to give to a fever in a child. Often a high temperature reading is not either important or dangerous as will be quickly discovered if the child be watched.

If a baby with a temperature of 104° and upwards is playful, unconcerned and not wasting one may be sure that a trivial cause is at work and that the fever will soon subside. The prognosis is good. So it should be borne in mind that slight causes will sometimes run a baby's temperature up very high with little discomfort or danger to it.

In judging then, of the symptomatic value of pyrexia in the young, we should observe its effects and the effect of the disease present upon the patient and so be able to judge of the gravity of the case; paying more attention to the effects of the fever than its height, and always bearing in mind that high fever is a common symptom in the diseases of infancy. The younger the child, of course, the truer all this is.

The thermometer readings in the young, because of this great susceptibility to pyrexia, are not of such value in diagnosis and prognosis as in the adult. Nor can the severity of the

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disease always be judged by the temperature range.

A very serious disease may be present, as enteric fever or pneumonia, and yet the temperature may be distinctly atypical, perhaps not read higher than 102° F., although the case may terminate fatally and the diagnosis be proved by the autopsy.

A well-known example is tubercular meningitis. I have attended a case of this disease where the temperature never went higher than 100° F.

As a rule children with fever perspire comparatively little and so are not relieved much by evaporation. For this reason the skin often has a pungent burning feeling when fever is present. On the other hand, radiation of heat in the child is immense, accounting for from 60 to 70 per cent. of the heat lost. The more the skin is exposed, the greater the radiation by the cooling of its surface; again, the cooler the surrounding air, or water, if the child is in a bath, the greater the amount of heat lost.

Carrying a sick baby through the streets in cold weather will frequently run the temperature down several degrees. I shall have more to say in regard to this phase further on.

Pyrexia in the young is apt to take on irregularity. The temperature is apt to show surprising and great remissions, and at some hour in the day is apt to approach the normal to within a degree or so. This is the rule to which there are, of course, exceptions.

A series of careful observations has impressed me with the belief that if possible the temperature of a child should always be taken in the rectum, giving the thermometer two more minutes than it calls for. The rectal temperature informs one of the very worst there is to know, running about one degree higher than when taken in the axilla and one-half degree higher than when taken in the mouth. We are informed of hyperpyrexia and it also helps us in making our diagnosis, informs as to the severity of the case, and if no fever be present, we are sure in most instances that no serious disease is imminent.

In order to be sure that the highest and lowest temperature has been recorded in the case, it is sometimes necessary, for instance, before the diagnosis is made with certainty, to have the nurse use the thermometer every three hours for a day or two, because these variations may occur any time in the twenty-four hours. In this way

only can we be sure that the highest and lowest temperature has been recorded.

As to the prognosis, Sturges lays down the following rules. "The pyrexia is good, *cæteris paribus*, which is lower in the morning than in the evening; which is equable, with but slight variations from day to day; which has a single rise and a single fall in twenty-four hours and whose lowest morning level approaches the normal line. The pyrexia is bad, *cæteris paribus*, which is highest in the morning, which ascends from evening through the small hours; which has two or more rises or falls for one day and night; which either maintains its level above 103° F. pretty equably for many hours together or else is very variable from day to day, and conformable to no pattern." Temperatures below 102½° F. may be expressed as moderate. If amounting to 104° or 105° F., severe, and if running up to 106°, 107° F. or above, decidedly dangerous.

While a temperature of 106° F. is quite often seen by the pediatricist, and often with recovery following, much above that in my experience is generally followed by a fatal ending.

A sustained high temperature, decidedly above 103° F., and ranging upwards at times to 104° or 105° F., is cause for serious thought and careful treatment, for while fever is but an important symptom, a maintained high temperature is very destructive, fairly burning up the tissues.

If the cause of a fever can be ascertained, and that cause be a removable one, it is a pleasant duty to treat the fever.

Thus castor oil and calomel quinine and the salicylates do yeoman service where indicated. Aconite and digitalis are also sheet anchors. Diuretics, diaphoretics and laxatives are all very useful where indicated. In my experience it is never necessary and would be often dangerous to use the coal tar products to reduce the temperature in the fevers of infancy. I merely mention them to condemn them.

Fever calls for active treatment for the reduction of the temperature when the elevation causes certain symptoms or when it is so very high that the swift and soon production of such symptoms may be anticipated. These symptoms are principally drowsiness, delirium, convulsions, rapid and weak heart action, restlessness, and sleeplessness.

*Per contra*, if the child is calm, smiling and restful, too active interference is unnecessary.



Hyperpyrexia should always be combated as the body rapidly wastes when it is present.

As to food, nothing need be said in this presence, save to remark that I personally believe that food very often acts injuriously, increasing the fever when given in a solid form or in an improper form, or in too great quantities in fever cases. Witness the favorable drop in the temperature often following the use of a laxative, with complete withdrawal of food for a few hours. Fever consumes tissues to be sure; but the repair process must be gone about very carefully and slowly or we will but burden the exhausted organism and thus increase the fever and exhaustion.

While perspiration is slight, as a rule, in children, the skin is apt to be full of blood and to feel dry and hot. Pungent is the word that best expresses the sensation given on touching such a skin. In some cases the skin is pale. A bath with friction will send the blood into the skin. The friction is as important as the bath.

The cold friction bath is our best measure for the relief of fever in the cases where it is dangerous because of its height and persistence.

Properly given, the temperature in almost every case where it is used, will drop, commonly from two to three degrees and sometimes more, and the patient will fall asleep. Barusch gives the technique as follows: A suitable tub is filled three-quarters full of water at a temperature of 95°. Give the baby ten minims of whisky. Strip off the clothes and place it in the water with its head resting on the left arm of the nurse, while with her right hand she makes gentle but persistent friction all over the child's body. The water is reduced to 85° by adding cold water or ice to the bath.

The duration of the bath should be five minutes for a weak and ten minutes for a strong child. The baby should then be removed from the bath and wrapped up well in a sheet and blanket, and a hot water bottle put to its feet. Generally the child will lose all nervous symptoms, the face will assume a placid, restful expression and a quiet sleep follows.

"Prolonged shivering after the bath means that either the bath was too long or the temperature was too low."

"Cyanosis of the face demands cessation of the bath."

"Chattering of the teeth demands cessation of the bath."

Crying should not be heeded.

The reduction of temperature by irrigation is

in many cases very effective, and should always be tried faithfully before the cold bath be used.

Positive instructions should always be given that the lower end of the irrigator be not placed higher than 1½ feet above the anal opening. The water should be used at a temperature of 95° and should be encouraged to gush out alongside of the tube whenever the rectum fills, by pressing the tube gently to one side.

In this way about a gallon should be used.

Sometimes irrigation given most carefully, fails to make any great impression upon the temperature. It is then well to repeat the procedure within three hours. If this does not bring the temperature down materially, irrigations should be abandoned in that particular case and other measures resorted to.

The alcohol and water sponge bath is very efficient in some cases, being all they need. It should always be tried before using the cold bath. It is always grateful to the patient, never frightens and will quite often reduce the temperature to within safe limits. Like irrigation, it is of much more value in some cases than in others as a febrifuge.

Lavage will reduce temperature in cases where it depends upon conditions in the stomach such as irritating food or masses of mucous. The child will almost always fall asleep afterwards.

Where intestinal infection causes the fever, enteroclysis is of great value, washing out all irritating and infectious material. Besides using the same precautions as in giving irrigations, the water should be boiled a long time, sterilized, and should be used at a temperature of 98° F.

The addition of a drachm of salt to the total quantity of water is said to render it more soothing. The salt should be boiled with the water.

Subnormal temperature is deserving of more attention than has been given to it.

Some children die with the temperature very much subnormal.

This is particularly true in the wasting diseases where the vitality is brought very low.

The principal conditions in which the temperature is apt to be found subnormal are exposure to cold, severe fluxes, malnutrition, Athrepsia, prematurity, inanition, collapse, heart disease, anemia, hemorrhage and for a short time after acute diseases.

A temperature persistently below 97° shows a serious failure of the powers of life and, in those cases where the mercury fails to leave the bulb, death soon takes place.

In premature cases a constant subnormal temperature is a bad sign.

I was drawn to study subnormal temperatures by noticing that many of those brought to the Babies' Hospital during more particularly the cold months, had temperatures decidedly subnormal, due to the exposure incident to the journey from their homes. For instance, a malnutrition case was brought in during January and, on attempting to take the temperature, it was found that the mercury would not leave the bulb. In January a premature baby was brought in with a temperature of 96; another in November with a temperature of 94; another in January with a temperature of 95 2-5. In November another admitted with a temperature of 94 1-5. Three hours later the temperature was again taken in this case, and 99° was recorded. One in October showed 94 3-5°, six hours later 98 1-5° was recorded. In January a case came in with a temperature of 95 2-5, three hours later the temperature reached 98, and so the list might be extended.

I have picked out 25 of the lowest of these subnormals and they show an average temperature of 95 2-5° on admission.

Surely, all things considered, I would rather treat a child with an elevation of temperature of six degrees than one with a depression of a like amount.

The quickest and best way to bring the temperature up to normal in these cases is to give whisky and strychnine and to place the patient in a mustard bath at a temperature of 105° for five minutes. Gentle friction should be made. The child should then be wrapped in blankets.

The bath will elevate the temperature several degrees and stimulate the powers considerably. In one case which I observed, where the temperature was 96 when the child was placed in the bath, the procedure brought the temperature up to 101.

## TRANSACTIONS OF SOCIETIES.

### THE MEDICAL SOCIETY OF THE COUNTY OF KINGS.

STATED MEETING, NOVEMBER 20, 1906.

The President, W. F. CAMPBELL, M.D., in the Chair.

There were about 200 members present.

The meeting was called to order and the minutes of the previous meeting read and approved.

## REPORT OF COUNCIL.

The following candidates have been accepted by the Council:

John Daniel Freitag, Jr., 433 Ralph Avenue.  
Charles E. Manning, 480 Putnam Avenue.  
Otto Niedner, 110 Pennsylvania Avenue.  
Joseph Raphael, 100 Sixth Avenue.

## ELECTION OF MEMBERS.

The following, having been duly proposed and accepted by the Council, were declared, by the President, elected to active membership:

Edward John Murphy, 733 Carroll Street.  
Charles E. Wuest, 1024 Bushwick Avenue.

## APPLICATIONS FOR MEMBERSHIP.

Applications have been received from the following:

Irving Cyrus Allen, 113 Albany Avenue, N. Y. University, 1898.

Proposed by H. A. Fairbairn, seconded by J. A. Lee.

Albert W. Beck, St. John's Hospital, L. I. C. H., 1905.

Proposed by W. F. Dudley, seconded by Membership Committee.

Leo J. J. Commiskey, 96 Lincoln Place, P. & S., 1904.

Proposed by W. F. Campbell, seconded by Membership Committee.

La Willa Mott Cornelius, 1420 59th Street, Bellevue, 1891.

Proposed by J. W. Malone, seconded by Membership Committee.

Horatius Latto, 68 Rockaway Avenue, L. I. C. H., 1890.

Proposed by W. F. Campbell, seconded by Membership Committee.

E. J. Leavitt, 717 Bushwick Avenue, P. & S., 1901.

Proposed by O. P. Humpstone, seconded by W. F. Campbell.

William Lippold, 953 Gates Avenue, L. I. C. H., 1904.

Proposed by N. P. Geis, seconded by Membership Committee.

William Henry Lohman, Brooklyn Hospital, P. & S., 1904.

Proposed by W. F. Dudley, seconded by Membership Committee.

Norman Roth, 128½ Noble Street, L. I. C. H., 1906.

Proposed by M. E. Connor, seconded by W. F. Dudley.

H. Schuhman, 596 Bainbridge Street, N. Y. Univ., 1902.

Proposed by W. F. Campbell, seconded by Membership Committee.

William Sidney Smith, Brooklyn Hospital, P. & S., 1905.

Proposed by W. F. Dudley, seconded by Membership Committee.

Zohlap K. Theodorian, 867 Lafayette Avenue, N. Y. University, 1880.

Proposed by C. G. Crane, seconded by Membership Committee.

Henry P. Vaughan, 89 Bay 26th Street, P. & S., 1897.

Proposed by J. W. Malone, seconded by Membership Committee.

N. H. Wallace, 196 Prospect Park West, Med. Col., Va., 1899.

Proposed by W. A. Sherwood, seconded by Membership Committee.

Alfred W. White, St. John's Hospital, Cornell, 1905.

Proposed by W. F. Dudley, seconded by Membership Committee.

Jerome Milton Woodle, 1024 Halsey Street, Cornell, 1903.

Proposed by W. F. Campbell, seconded by Membership Committee.

#### SCIENTIFIC PROGRAM.

##### I. PAPER: THE MEDICAL TREATMENT OF THOSE GASTRIC DISORDERS IN WHICH THE HELP OF THE SURGEON IS OFTEN DEMANDED.

BY CHARLES G. STOCKTON, M.D., OF BUFFALO, N. Y.

##### 2. PAPER: CERTAIN SURGICAL ASPECTS OF CHRONIC GASTRIC DISEASE.

BY JAMES G. MUMFORD, M.D., OF BOSTON, MASS.

#### EXECUTIVE SESSION.

DR. BRISTOW made a motion that the Chair appoint a Committee to investigate the subject of the Correspondence School of Nurses, and report at the next meeting of the Society, with suggestions as to what the medical profession ought to do in this matter. Seconded and carried.

Adjourned. JOHN A. LEE, *Secretary*.

### THE BROOKLYN PATHOLOGICAL SOCIETY.

470TH REGULAR MEETING, OCTOBER 11, 1906.

The President, R. W. WESTBROOK, M.D., in the Chair.

#### EPITHELIOMA OF EAR.

DR. WM. C. BRAISLIN read notes.

#### Discussion.

DR. J. E. BLAKE stated that, as the previous speaker had said, epithelioma of the ear is comparatively rare. His father, an ear specialist, had informed him that, in the course of nearly a dozen years of dispensary work in two different clinics, he never saw a case at either clinic; but that he had had one case in private practice. It was a large epithelioma in a man aged 65 years or more, which had begun just anterior and inferior to the external auditory meatus, and then widened out posteriorly over the mastoid process. It had been there for several years, and was giving the man but little pain or discomfort. There was some discharge and some ulceration. He had been told by one or two doctors that it was of malignant nature, and came to the speaker's father for the purpose of obtaining a positive diagnosis. The growth was pronounced to be malignant, whereupon he hid himself away to a quack in the central part of the State, and remained under treatment for a number of weeks. Some form of arsenical preparation was applied and apparently the tumor was eradicated, for there has been no return of the growth in the last five years. Stenosis of the meatus followed cicatrization.

It is possible that this line of treatment may prove of service in selected cases. For it is well known, that sometimes these arsenical preparations are used with advantage. In other cases they are used with very serious disadvantage.

In this connection Dr. Blake stated that he knew another person, a strong, hearty, middle-aged lady, who went to this same quack suffering from chronic eczema. She remained at his place for about three weeks, was treated with arsenical (?) pastes, and developed symptoms of very acute gastro-enteritis. Her death certificate read gastro-enteritis, but he has always believed that it ought to have read acute arsenical poisoning.

If arsenic pastes are to be used, they should be applied by one familiar with their danger, and with the necessary cautions to be observed in their application.

DR. G. G. HOPKINS said he had never seen until Monday, a case of epithelioma of the ear. That day a case came under his observation. The whole ear was involved. The growth measured six inches in length and 1½ inches in breadth.

The man was 76 years of age, and the growth had lasted eighteen months. He had been for a time under treatment by Kilmer, the cancer quack, but the growth progressed very rapidly, and on Monday he came under his observation. The discharge was free. At times the pain was excessive. The discharge was so offensive that when the man left the speaker's office, he had to open the windows to free the room of the odor. The patient has been to see him every day since. He is using the X-ray and a preparation of formaldehyde. Formaldehyde, if it does not give too much pain, will deodorize these cancerous growths better than anything he has ever seen. One to three parts makes a very good application. The man was in his office to-day with absolutely no odor. The tumor has shrunk in breadth very decidedly; in length probably  $\frac{1}{4}$  inch.

Dr. Hopkins said that it was as yet too early to know what he was going to do with it, but the measures he had employed certainly had some effect on the growth. Whether the benefit was due to the formaldehyde or to the X-ray, he thought it was hard to tell just yet, but the X-ray is beginning to be regarded, in epithelioma of the lip, as almost a specific. He never had a case of epithelioma of the lower lip that did not yield to the X-ray.

Dr. W. C. BRAISLIN said that he was interested in Dr. Blake's remarks regarding the use of arsenical paste. John Wyeth, in an article published some years ago, stated that if he had an epithelioma on his face, he would employ arsenical paste to take it out. Whether his opinion in later years was the same as it was then the speaker did not know. Dr. Braislin said he very well remembered, in the neighborhood where he grew up, a quack who used to be called the "black doctor," who treated all kinds of cancers with some preparation of arsenic—arsenical paste in some form—and treated many of them successfully. There is no doubt that when small enough they may be thus treated, and even some large ones yield to it. He thought, however, that the knife is a preferable instrument in most cases. When the growth is confined to the external ear, it is very easy to cut it out and close the space over.

In a case like Dr. Hopkins' it seemed to Dr. Braislin that the proper treatment would be to remove the growth by excision. If it could not be eradicated very completely, there might be then a field for the use of Coley's serum or the X-ray.

For these particular tumors Dr. Coley does not recommend his preparation because it has proven unsuccessful in many epitheliomatous cases, and hence it is often our last resort. He believes everyone should become familiar with the different methods of treating these tumors.

PAPER: HEART BLOCK (STOKES-ADAMS DISEASE).

A CASE AND AUTOPSY, BY GLENTWORTH R. BUTLER, M.D.

DR. R. CLARK described the findings at autopsy.

DR. H. A. FAIRBAIRN said that the clinical picture presented by this case, one might say, was a familiar one to the clinician. Although these cases are not frequent, still they do occur. The explanation of them, of course, is of recent years. There is one point he thought well to bear in mind, and that is, that when these temporary periods of unconsciousness appear at any time of life, connected with slowing down and intermission of the pulse, they ought to direct attention to the heart. He knew of a case which occurred several years ago. A prominent gentleman of New York City was under the observation of several men. A neurologist maintained that he had epilepsy and a clinician diagnosed the case as degeneration of the heart. He was a man of means and was sent abroad to consult Charcot. Charcot had him watched night and day for three weeks. At the end of that time he said the diagnosis of degeneration was correct and that the diagnosis of epilepsy was wrong. So the case proved finally. That man greatly improved; he changed his method of life and changed his occupation.

Dr. Fairbairn thought it is well for us to bear in mind that physiologists have taught us for years that there is normally a retardation in the muscular impulse as it passes from the auricle to the ventricle, but they could not give us an explanation until His demonstrated the bundle of muscle which passed from the auricles to the ventricles. The contraction of the heart is a conduction of muscular activity from base to apex. The muscular fibres are almost entirely wanting at the auriculo-ventricular division and this small bundle of His acts as the limited conductor over this barrier. When for any reason it refuses to act it, of course, retards or entirely "blocks" the muscular wave and the ventricle ceases to functionate and the Adams Stokes phenomena occur. They, by the way, occur at any time of life and in connection with any disease, and may be acute or chronic and may result in recovery.

DR. L. C. AGER wanted to know whether there was any indication found clinically of an insufficient mitral valve, and also what was the general state of nutrition of this patient; whether there was this general fatty deposition all over the body that was found in the heart?

DR. J. A. McCORKLE said that he wished to express his appreciation of this excellent presentation of the subject. It recalled vividly to his mind a case that he treated years ago when we knew very little about anything of this kind. The clinical history was almost complete; it would almost correspond to the one he had heard to-night, only in this case the gentleman was much older, and for days and days that man's pulse would run down to 12, 14 and 18 and the highest 24. The patient finally died. There was some convulsive action and loss of consciousness, and the history was almost as Dr. Butler had described.

The speaker thought the working out of this case deserving of all praise. He had been following some of the literature, but it is very indefinite, and he had seen nothing that corresponded in detail, or anything of the kind that we had heard to-night.

DR. G. R. BUTLER said with regard to the two questions asked, that there was a mitral systolic murmur and evidence of some slight regurgitation, but that was a secondary matter. The man's nutrition was good, but he was not what one would call a case of obesity.

So far as Dr. Butler was aware, this was the first case where fatty infiltration and degeneration of the bundle of His was found with this symptomatology. Pratt, of Boston, who worked for two or three years in John Hopkins, was interested in this particular subject, and had made a prediction that at some time fatty degeneration, as well as sclerotic changes, of this bundle would be found as the cause of it. Of course, the main point of interest about this whole case is the demonstration of the cause of the symptoms.

The New York Obstetrical Society has elected the following officers for 1906-07: President, Dr. Brooks H. Wells; Vice-President, Dr. George H. Mallett; Second Vice-President, Dr. W. E. Studdiford; Recording Secretary, Dr. Howard C. Taylor; Assistant Recording Secretary, Dr. William E. Stone; Corresponding Secretary, Dr. E. E. Tull; Treasurer, Dr. J. Lee Morrill; Pathologist, Dr. Franklin A. Dorman. The society now numbers sixty-nine members, with monthly meetings at members' houses.

## Brooklyn Medical Journal.

WILLIAM C. BRAISLIN, M.D.  
Editor-in-Chief.

JAMES P. WARBASSE, M.D.  
JOHN A. LEE, M.D.  
Associate Editors.

CLARENCE R. HYDE, M.D.  
Medical News Editor.

G. L. HARRINGTON,  
Business Manager.

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Entered at Brooklyn, N. Y., Post Office as second-class matter.

BROOKLYN-NEW YORK, DECEMBER, 1906.

### BROOKLYN MEDICAL JOURNAL.

With this issue of the JOURNAL its publication ceases.

The JOURNAL, during the twenty years of its existence, has furnished an instrument for the publication of the medical affairs of the City and Borough of Brooklyn, and by virtue of its position as the official organ of the Medical Society of the County of Kings, as well as the publishing medium of the transactions of other medical societies, it has largely reflected the medical activity of the city.

It is a pleasure to the Editor to acknowledge in the closing pages of the JOURNAL the valuable assistance which has always been readily accorded him by his confrères.

### NEW OBSERVATIONS AS TO THE SIZE OF THE THYMUS GLAND.

So much attention has in late years been directed to the glandular organs of the body and their secretions, among which the thymus gland has received not a little consideration, that the study of Drs. Bovaird and Nicoll of this gland has a genuine interest.\*

Nearly 600 autopsies performed by the investigators furnished the material for investigation.

One important result of the investigation seems to be a disproof of the statement in

\*David Bovaird, Jr., M.D., and Matthias Nicoll, Jr., M.D. "The Weight of the Viscera in Infancy with Special Reference to the Weight of the Thymus Gland, *Arch. of Pediatrics*, Sept., 1906."

Gray's Anatomy and elsewhere, that the weight of the thymus increases in weight up to two years of age, and then gradually atrophies. The authors find that there is no evidence of a growth of the thymus after birth under ordinary conditions, but that under certain conditions the gland may enormously hypertrophy. The gland after birth undergoes gradual involution with, however, but slight loss of weight. Remarkable variations of its weight were found, relatively more than of any other organ of the body. Thus, in a single case, one from a fourteen months infant weighed 33 grams; in the opposite extreme was a three months infant, in which the thymus weighed but 0.7 gram. The writers conclude that the commonly accepted average weight of the thymus is excessive, the results of their examinations in the large number stated giving an average weight of 6 grams.

#### INFLAMMATIONS OF THE NASAL ACCESSORY SINUSES OF THE NOSE IN PNEUMOCOCCIC INFECTIONS.

Dr. S. T. Darling\* found in 37 autopsies in cases of death due to pneumococcic infections that in 34 cases, a percentage of 91, there was present in one or more of the nasal accessory sinuses an inflammation of a fibrino-purulent character. He believes that in these cases the inflammation of the sinuses antedated the inflammations in the lungs, meninges and other localities. Fifteen additional autopsies, in deaths due to other agencies than the pneumococcus, showed these sinuses involved in four cases.

The importance of the nasal accessory cavities as portals of entry of disease-bearing organisms is emphasized by this paper. We are glad to note that the writer promises a more detailed account of his conclusions at some time in the future. If the nasal accessory cavities shall be proven to figure so largely, as the paper would seem to indicate, in severe systemic disease invasions, it would seem that they must be classed with the vermiform appendix and other anatomical structures, fit for little but the surgeon's attention.

#### THE NEW JOURNAL OF THE ASSOCIATED PHYSICIANS OF LONG ISLAND.

We take pleasure in announcing that the Associated Physicians of Long Island will hereafter publish their transactions in the form of a monthly journal. This extension of that organization's

usefulness will allow an inclusion of papers other than those read at its own meetings. Dr. Paul Pilcher, the Chairman of the Publication Committee of the Association, will have editorial charge of the new publication.

We extend to the new journal best wishes for its success and bespeak for it the cordial support of members of the medical profession.

#### THE GEORGE RYERSON FOWLER MEMORIAL FUND.

As the result of an opportunity given to the members of the Medical Society of the County of Kings, and to a selected list of laymen, a fund was contributed, which has been employed for the erection of a memorial tablet by the Tiffany Studios to Dr. George Ryerson Fowler and for the establishment of an endowment fund for the library of the society. This fund is known as the George Ryerson Fowler Endowment Fund, and will be used in perpetuity for the benefit of the library. The following are the contributors:

Horatio Mortier Adams.	J. W. Fleming.
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Martin Amador	Theo. Frickenstein.
E. H. Bartley.	Charles P. Frischbier.
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\**Journal of American Medical Association*, Nov. 10, 1906, pp. 1561-1563.

R. H. Pomeroy.	C. H. Terry.
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F. H. Stuart.	F. W. Wunderlich.
J. J. Terhune.	O. Zellhoefer.

### MEDICAL NEWS.

EDITED BY CLARENCE REGINALD HYDE, M.D.

*It is earnestly hoped that all members of the profession possessing news concerning themselves or their friends, which would interest others, will communicate the same to the News Editor before the 9th of each month. Items for this department should be sent promptly to Clarence Reginald Hyde, M.D., 126 Joralemon Street.*

Dr. John B. Byrne, Jr., has removed to 224A Sixth Avenue.

Dr. Julius H. Moore, formerly of 979 Madison Street, has removed to 209 Lincoln Road.

The will of the late Mrs. Caroline Polhemus, the donor of the Polhemus Memorial Clinic, gives \$300,000 as an endowment fund to this institution.

The death is chronicled of Dr. Harry Heth Rodman, of Buffalo, the son of the late Thomas H. Rodman, former President of the Regents of the Long Island College Hospital.

On November 23d a fair for the furnishing of the children's ward in the new Long Island College Hospital building was held at the old Nesmith mansion, on Remsen Street.

Dr. Frederick D. Crawford has removed to 369 Clinton Street. Dr. Crawford has recently been chosen to fill the chair of medical jurisprudence in the Brooklyn Law School of the St. Lawrence University, from which institution he received the degree of LL.B., in 1905. He has recently been admitted to practice at the New York State Bar.

On account of a disagreement with the superintendent of nurses of the German Hospital, of the Borough, the entire house staff resigned in

a body to express their disapproval. Their places were quickly filled.

The *Long Island Medical Journal* is the title of a new local publication, edited by Dr. Paul M. Pilcher, and published under the auspices of the Associated Physicians of Long Island. This journal will in a great measure take the place of the *BROOKLYN MEDICAL JOURNAL*, which ceases publication with the present issue. It will cover all the Island news, reporting transactions of all the county societies, and in addition give full accounts of the meetings of the different sections of the Kings County Medical Society. It will be almost distinctively a local journal, and as such should receive generous support. The first number will be published in January, 1907, and will appear regularly the fifteenth of each succeeding month.

The Board of Directors of the new Jewish Hospital, corner of Classon and St. Marks Avenues, announce the following appointments to the hospital staff.

**Surgeons:** Chief, Dr. H. Beeckman Delatour; associates, Dr. J. Bion Bogart and Dr. Warren L. Duffield; assistant surgeons, Dr. William Linder and Dr. George I. Miller.

**Physicians:** Chief, Dr. Jacob Fuhs; associates, Dr. Joseph Merzbach, Dr. Leon Louria; assistant physicians, Dr. Jacob Londoner, Dr. William K. Jacobs.

**Gynecologists:** Chief, Dr. George McNaughton; associates, Dr. John O. Polak, Dr. Albert M. Judd; assistant gynecologists, Dr. Manasseh J. Malament, Dr. Charles H. Tag.

**Obstetrician:** Dr. O. Paul Humpstone, chief; Dr. Emanuel J. Leavitt, associate.

**Neurologist:** Dr. William Browning, chief; Dr. E. F. Luhrsén, associate.

**Eye:** Dr. William Simmons, chief; Dr. H. M. Smith, associate.

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**Nose and Throat:** Dr. Thomas French, chief; Dr. Purdy H. Sturges, associate.

**Skin:** Dr. James McF. Winfield, chief; Dr. J. Franklin Marshall, associate.

**Pathologist:** Dr. S. R. Blatteis, chief; Dr. B. F. Knause, associate.

**Radiographist:** Dr. Charles E. Eastman.

**Cystoscopists:** Dr. Paul M. Pilcher, chief; associate, Dr. Victor H. Pentlarge.

**Consultants:** Surgery, Dr. Lewis Pilcher; Medicine, Dr. John A. McCorkle; Gynecology, Dr. Ernest Palmer.



## VALEDICTORY.

Apropos of the termination of the publication of the JOURNAL the following poetical contribution has been received.

A soul doth never die,  
Spirit of the quick and dead  
Am I.  
And those who are  
And those who were  
Are part of my Infinity.

Tho' my material form  
Will greet your eyes no more,  
Your kindred's voices  
From the other shore, and  
That part of yourselves, which  
Gave me life, will, like  
Aurora, heralding the morn,  
Glorify my being,  
To ages yet unborn.

JOHN C. MACEVITT.



## BOOK REVIEWS.

**THE EYE AND NERVOUS SYSTEM; THEIR DIAGNOSTIC RELATIONS.** By Various Authors. Edited by Wm. Campbell Posey, A.B., M.D., and William G. Spiller, M.D. Phil., Lond.; J. B. Lippincott Co., [c. 1906.] xi, 988 pp., 8 col. pl. 4to.

Without any disparagement to the other sections, special mention may be made of the following chapters: The Psychology of the Visual Act, by Mills; The Extra-Ocular Muscles, by Duane; Tumors and Other Lesions of the Brain, by Spiller; Parasyphilitic Affections by Dercum; Diseases of the Spinal Cord, by Weisenberg, and Neuroses and Psychoses, by de Schweinitz. It is noted with pleasure that the term *astigmatia*, as advocated by Burnett, is used in place of astigmatism.

Inasmuch as the results of the latest researches are embodied in this work, doubtless it will be of great value to the oculist who wishes to know more of neurology and to the neurologist who wishes to know more of ophthalmology.

JAMES W. INGALLS.

**ON THE NATURE, CAUSES, VARIETY, AND TREATMENT OF BODILY DEFORMITIES:** A Series of Lectures Delivered at the City Orthopaedic Hospital in the Year 1852 and subsequently, by the late E. J. Chance, F.R.C.S. Eng. Edited by John Poland, F.R.C.S. Eng. *Second Edition.* In Two Volumes. Vol. I. Lond., Smith, Elder & Co., 1905. xlviii, 315 pp. 12mo. Price: Cloth, \$1.50 net.

This volume comprises a series of lectures delivered by the late Mr. Chance to his students over fifty years

ago, and is edited by Mr. Poland, his associate. It is published as a second edition, the editor attempting to bring it somewhat up to date by frequent comments, foot notes, and reports of his own cases. These numerous interjections, however, make reading a little difficult. Much of the original text is omitted as being obsolete, and it would seem that much more of the discussion on debatable points could have been cut out with advantage. The introduction is interesting in its treatment of the history of the development of specialism—the author, living in the early days of his specialty, is enabled to give a graphic and humorous account of what he had to contend with, such as no later writer could do. This chapter alone would repay the reader for his study of the book. But there is much of interest to follow in the six lectures which make up this first volume, which deal with the causes of congenital and acquired deformities. This is a scientific study of the etiology and pathology, including a discussion of the hereditary and emotional influence on the development of the ovum, and the causation of congenital deformities from arrest of development, mechanical interference, and disease in utero. Acquired deformities are taken up in the two final lectures, deformities due to rachitis and tuberculosis, and also causes affecting the contractile power of muscles with resulting paralysis and contractures. The illustrations, no doubt, were good in the author's day, but cannot compare with the modern photograph. There are portions of the subject which are treated too exhaustively, but a study of the book will be interesting and instructive.

CHARLES DWIGHT NAPIER.



R. H. Pomeroy.	C. H. Terry.
Thos. Potts.	J. M. Van Cott.
W. H. B. Pratt.	Frank Van Fleet.
E. Rauth.	J. P. Warbasse.
Gen. Roe and staff.	H. G. Webster.
H. A. Rogers.	V. W. Weed.
R. A. Sammis.	F. Weisbrod.
C. T. Sauer.	C. T. Wessels.
Francis A. Schlitz.	F. E. West.
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T. B. Spence.	J. M. Winfield.
C. E. Spencer.	Walter Wood.
F. H. Stuart.	F. W. Wunderlich.
J. J. Terhune.	O. Zellhoefer.

### MEDICAL NEWS.

EDITED BY CLARENCE REGINALD HYDE, M.D.

*It is earnestly hoped that all members of the profession possessing news concerning themselves or their friends, which would interest others, will communicate the same to the News Editor before the 9th of each month. Items for this department should be sent promptly to Clarence Reginald Hyde, M.D., 126 Joralemon Street.*

Dr. John B. Byrne, Jr., has removed to 224A Sixth Avenue.

Dr. Julius H. Moore, formerly of 979 Madison Street, has removed to 209 Lincoln Road.

The will of the late Mrs. Caroline Polhemus, the donor of the Polhemus Memorial Clinic, gives \$300,000 as an endowment fund to this institution.

The death is chronicled of Dr. Harry Heth Rodman, of Buffalo, the son of the late Thomas H. Rodman, former President of the Regents of the Long Island College Hospital.

On November 23d a fair for the furnishing of the children's ward in the new Long Island College Hospital building was held at the old Nesmith mansion, on Remsen Street.

Dr. Frederick D. Crawford has removed to 369 Clinton Street. Dr. Crawford has recently been chosen to fill the chair of medical jurisprudence in the Brooklyn Law School of the St. Lawrence University, from which institution he received the degree of LL.B., in 1905. He has recently been admitted to practice at the New York State Bar.

On account of a disagreement with the superintendent of nurses of the German Hospital, of this Borough, the entire house staff resigned in

a body to express their disapproval. Their places were quickly filled.

The *Long Island Medical Journal* is the title of a new local publication, edited by Dr. Paul M. Pilcher, and published under the auspices of the Associated Physicians of Long Island. This journal will in a great measure take the place of the *BROOKLYN MEDICAL JOURNAL*, which ceases publication with the present issue. It will cover all the Island news, reporting transactions of all the county societies, and in addition give full accounts of the meetings of the different sections of the Kings County Medical Society. It will be almost distinctively a local journal, and as such should receive generous support. The first number will be published in January, 1907, and will appear regularly the fifteenth of each succeeding month.

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