

Any differences between the susceptibility of individuals of different ages, and of the two sexes, depend, apparently, only upon the varying chances of exposure to infection. The relative susceptibility of the negro is by nearly two-thirds less than that of the white population.

We have distinguished three varieties of the malarial parasite:

1. The tertian parasite.
2. The quartan parasite.
3. The *æstivo-autumnal* parasite.

(1) The tertian parasite requires about forty-eight hours to accomplish its complete development, and is associated with relatively regular tertian paroxysms, lasting on an average between ten and twelve hours, associated almost always with the three classical stages—chills, fever, and sweating. Frequently infection with two groups of tertian organisms gives rise to quotidian paroxysms; rarely infection by multiple groups of organisms gives rise to more irregular subcontinuous fevers.

(2) The quartan parasite is an organism requiring about seventy-two hours for its complete development. It is rare in this climate, and is associated with a fever showing regular quartan paroxysms, similar in nature to those associated with the tertian organism. Infection with two groups of the parasite causes a double quartan fever (paroxysms on two days, intermission on the third). Infection with three groups of the parasite is associated with daily paroxysms.

(3) The *æstivo-autumnal* parasite passes through a cycle of development, the exact length of which has not as yet been determined; it probably varies very greatly from twenty-four hours or under to forty-eight hours or more. But few stages of the parasite are found, ordinarily, in the peripheral circulation, the main seat of the infection being, apparently, in the spleen, bone-marrow, and other internal organs. Infection with this organism is associated with fevers varying greatly in their manifestations. There may be quotidian or tertian intermittent fever, or, more commonly, more or less continuous fever, with irregular remissions. The individual paroxysms last, on an average, about twenty hours. The irregularities in temperature depend upon variations in the length of the cycle of development of the parasite, or upon infection with multiple groups of organisms.

We have not been able to separate two distinct varieties of the *æstivo-autumnal* parasites, though we feel that more investigation is needed on the subject. The cases of malaria in the spring and early summer are of the milder, more regularly, intermittent varieties (tertian and quartan fever), the severe *æstivo-autumnal* infections beginning to appear only in the later summer, and reaching their maximum in September.

The colored race, while showing a relative insusceptibility to malarial infection, is equally susceptible to the various forms. The infections which occur, however, are more apt to take a simpler, milder course—the single tertian cases, for instance, outnumbering the cases of double tertian fever.

The majority of all the cases of malarial infection in this climate depend upon the tertian parasite; these tertian infections form the vast majority of all the cases in the first half of the year, but occur throughout the malarial season. The majority of infections during the height of the malarial season depend, however, upon the *æstivo-autumnal* parasite.

The earliest cases of tertian infection are more commonly single in nature, while, as the season advances, double tertian infections become more common. Nothing in our experience has led us to believe that these varieties of parasites are interchangeable. They are, we believe, distinct varieties, though closely allied to one another biologically. Combined infections with parasites of different varieties may occur, but they are rare, forming less than 2 per cent. of all the cases which we have observed.

The crescentic bodies associated with the æstivo-autumnal parasite develop from the small hyaline forms. We have seen nothing to support the view of Mannaherg, that they are the result of conjugation. We have never seen sporulating forms which we believe to have developed from crescents. We are not as yet inclined to accept the view that these are degenerate forms; we believe that their true nature is still undetermined. The nature of the flagellate bodies which may develop in all types of malarial fever is not yet determined. The specific action of quinine upon these three varieties of the parasite is undoubted. It exerts its influence most strongly when the parasite is undergoing the process of segmentation, before the entrance of the fresh segments into new red corpuscles. It is best administered, then, just before the beginning of a paroxysm, if we wish to obtain the greatest effect with a single dose. The action is much more rapid and certain in the tertian and quartan fevers than in the æstivo-autumnal infections.

SURGERY.

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THE TREATMENT OF NEURITIS OF INFLAMMATORY TRAUMATIC ORIGIN BY FORCIBLE COMPRESSION.

DELOERNE (*Gaz. des Hôpitaux*, 1895, No. 1; *Cent. für Chir.*, 1895, No. 19) recommends, in cases of neuralgia that are due to a traumatism or wound and develop as ascending neuritis, a very simple procedure which he has found successful in the eight cases in which he has used it. The treatment consists in a very short, but very firm, compression of the part, and as an example of the method he gives the following as applied to a finger:

The patient either sits or lies down while the arm is firmly held. The affected finger is grasped by the surgeon between his two thumbs and index-fingers at the point where the scar is which produces the irritation, pressure

is then made with all the force the operator can bring to bear. He begins at the most sensitive point and goes gradually over the entire region. Each compression lasts only a few seconds; if the pain is not relieved, the compression is again applied after a few minutes. Usually one compression suffices; sometimes it must again be employed on the fourth or sixth day afterward. The finger is placed in a compressive cotton dressing for eight days. The trophic changes disappear usually with the pain. He reports the case of a man, twenty-two years old, who had a very painful keloid in a scar on the neck; it was removed seven times. After two compressions the pain disappeared and has remained away two years. Hysteria must always be excluded.

ONE HUNDRED CASES OF RADICAL CURE OF HERNIA.

DELORME (*Arch. de Méd. et de Pharm. Militaires*, May, 1895) reports his second and third series of fifty each of operations for the radical cure of hernia; he had one hundred operative successes out of the one hundred cases, but reports two deaths, one nine days after operation and the other three days; both were due to disease of the lungs, and he thinks only one can be ascribed indirectly to the operation. The sac was ligated with hollow silk. The parietal incision was united by interrupted sutures about one-quarter of an inch apart, approximating the two edges of the wound for about three-eighths of an inch on either side, thus shortening the abdominal parietes by about three-quarters of an inch. Besides this suture the pillars of the external ring were stitched, using two or three sutures, leaving just sufficient room for the passage of the cord. Drainage was never employed, and the author is completely satisfied with that method.

The dressing included the abdominal region, the perineum, and the thighs. The patients were kept constipated for eight, ten, and twelve days, when the first dressing was removed. He has found that this constipation does no harm to the patients, there is no elevation of temperature, no gastro-intestinal disturbance, no decrease in appetite, and the first stool is easily produced by glycerin injections, their volume having been diminished by an animal diet.

THE TREATMENT OF THE DIFFUSE FORM OF SEPTIC PERITONITIS OCCURRING AS A RESULT OF APPENDICITIS.

McBURNEX reviews in the *Medical Record*, New York, 1895, vol. xlvii. No. 13, his experience in the treatment of diffuse septic peritonitis occurring in the course of appendicitis. The paper deals entirely with those cases in which there has been either no protecting wall or only an incomplete attempt to localize the infection. The cases in which the abscess is limited by a firm wall of adhesions, almost without exception, do well after operation. The diffuse form of peritonitis most commonly begins in the pelvis, probably on account of its dependent position, which allows any free fluid in the neighborhood of the appendix to gravitate into its cavity. When this occurs an inflammatory boundary of adhesions scarcely ever forms to limit the spread of the process. After a few hours the fluid overflows the pelvis, and the infection is distributed far and wide throughout the peritoneal cavity. Until very recently these cases have been considered hopeless. A larger experience,

however, and improved technique have resulted in a greater percentage of cures. The author reports twenty-four cases, of which fourteen recovered and ten died.

The use of the rubber drainage-tube in draining suppurating spaces in the peritoneum has been almost abandoned. If introduced at random among the intestines, it fails to accomplish its purpose, inasmuch as the end and lateral openings soon become occluded. For the purpose of draining the bottom of the pelvis a glass tube is the most satisfactory means. This should be supplemented with a strip of gauze within the tube. The best drainage in all parts of the body, the author asserts, is obtained by the use of dry absorbent material like gauze, and the more completely this material touches every point from which it is desirable to extract moisture the more perfect will be the drainage.

For irrigating the abdominal cavity with sterile salt-solution, six parts to the thousand, is to be preferred. All chemicals which have a destructive effect upon the endothelium of the peritoneum should be avoided, inasmuch as the absorbing power of the peritoneum is thereby crippled. It is probable that no actively germicidal fluid can be introduced with safety into the peritoneal cavity, of sufficient strength to be of value in directly destroying the toxic products accompanying a septic peritonitis. What we may endeavor to accomplish is to remove completely the primary source of the sepsis, to wash away more or less thoroughly the secondary products, and to drain away the fluids left behind and those of post-operative formation.

In the cases reported the following techniquis has been employed. The incision has been large, from four to five inches long, and has been made as near to the anterior spine of the ilium and the outer part of Poupart's ligament as possible. After opening the peritoneum every effort has been made to remove at once with sponges all fluids in view. Then the appendix has been sought for, removed, and the stump cauterized. The character of the case has, of course, by this time been appreciated, and the fact noted that either no adhesions have existed, or that they were imperfect, or having existed that they have given away under the pressure of the fluid they restrained; in other words, that the abscess has ruptured into the general peritoneal cavity. Search has then been made for further collections of fluid, the pelvis being usually examined first, unless this has been clearly walled off by adhesions. Rarely has such wall been deliberately broken down, and only when tenderness at another point, or other sign, has led one to suspect secondary formations. In most of the cases the pelvis has been found more or less filled with a seropurulent, often offensive fluid. Where such collections exist the peritoneum on the intestines is always unnaturally injected. Then cautious search has been made in other directions for similar fluid accumulations. That is, a small sponge on a handle had been carefully pushed first in one direction and then in another, and closely examined for the presence of fluid. When all purulent or seropurulent products have been as thoroughly sponged away as possible, the washing process has begun, sterile salt-solution of the uniform strength of six-tenths of 1 per cent. being used as hot as can be comfortably borne by the hand of the operator.

The irrigation of the peritoneum is performed by pouring from a pitcher or glass flask enough of the solution to fill the pelvis. This is sponged out