is found a more or less extensive condition of hepatization mottled by numerous sulphur-yellow spots containing the above-mentioned characteristic fungus. At the same time both the cavum pleuræ as well as the loose parapleural tissue is the seat of a purulent or phlegmonous infiltration, which is characterized by an admixture of fungous granules. The deep-laid organs, as the liver and spinal cord, are eroded at times, and finally destroyed by this continuously progressive malignant tumor.

Aside from this method of propagation a metastasis can take place by means of the blood-vessels. In one case it was possible to discover the point in the vena jugularis where the granulations had broken through the wall, and projected forward into the lumen of the vessel in the form of a little button. A soft tumor, the size of an apple, containing the same fungous masses, was found in the auricle of the heart, evidently developed from particles that had become detached from this node.

The clinical picture is confused, owing to the different parts attacked, and presents merely the results of a phlegmonous inflammation.

Besides cattle and men the disease has also been found in swine which are omnivora, but as yet not in the carnivora. Ponfick therefore concludes that a vegetable diet is in some way connected with its production. He further states that the local malignant character of this affection shows its difference from pyæmia and septicæmia, which have such an early tendency to become constitutional.

Johne¹ has found in the tonsils of twenty-one swine, with one exception, clumps of actinomyces in different stages of development, often already calcified, while the tonsil itself has presented no pathological change, and, above all, no formation of a tumor. Bits of barley and other cereals were also found on the tonsils, and on the barbs of the grain were to be seen gonidia, which were indistinguishable from those of the actinomyces lying near them.

Hospital Practice and Clinical Memoranda.

MALARIAL FEVER.

BY D. H. BATCHELDER, M. D., ARLINGTON-IN-CRANSTON, R. I.

THE subject of *malaria* is now before the medical profession of New England in its most practical form. This unwelcome, though invisible, agent has in rather a surreptitious manner reappeared by way of self-introduction, making itself conspicuous in many localities in at least three of the States of New England.

But I am not disposed to treat the subject of Malarial Fever, farther than to arrange and exhibit to the reader, in the simplest manner, the workings of malaria in my vicinity, just outside of Providence, R. I., for the last year, as I have been called on to attend, and if possible relieve, those who have been victims of the touch of this mysterious agent within my own circle of practice.

During the autumn of 1880 I was called on to attend four patients who were attacked with primary "ague chills and fever." Two of them proved to be severe and obstinate cases. The other two were rather milder, but they were all well defined, representing

every visible feature incident to the disease everywhere recognized as true "malarial fever." I was careful to note particularly every feature, as presented in these cases, type, symptoms, etc. But there being only four cases, I did not deem it advisable to make a report of them for publication.

I had no more cases of malarial disease until the fourth day of July, 1881, on which day I was called to see a patient who had been attacked with a severe chill. The man was suffering intensely. He had about got through with the chill and was suffering as reaction came on. This case was located not more than fifty rods from three of the four cases that occurred the autumn before; and it was a very severe case. From the day on which this patient was taken sick, to the 31st day of October, I was called to see, and attended, one hundred and twenty-eight patients at their homes, all of whom had chills and fever; and I prescribed for twenty more, who came to my office, having had one chill or more, but could be treated by directions given at the office.

AGES OF THE PATIENTS.

The number who had an attack between 1 and 10 years exclusive was	14
The number from 10 to 20 years	27
The number from 20 to 30 years	25
The number from 30 to 40 years	29
The number from 40 to 50 years	20
The number from 50 to 60 years	6
The number from 60 to 70 years	4
The number from 70 to 80 years	3

Making a total of 128

Not one of the hundred and twenty-eight cases whom I attended at their house, failed to fully represent the several stages, with all the physical symptoms usually exhibited in "fever and ague;" subject only to such modifications as may exist from variable habits, regimen, dissimilar constitutions, etc. Out of the whole number under consideration ninety-five were of the purely tertian type; and five more, though of the tertian, exhibited some freaky variations, which I deemed of sufficient importance to note down. A slight chill would occur on the second day, and skip the third. The case would then go along in the usual tertian form. Then there were twelve which were evidently of the tertian type, yet they had no real chill. Every alternate day the patient would pass through three distinct stages. The first stage would commence with a sensation of numbness, with the vital action largely suppressed, full and pressing cerebral sensations and also at the epigastric region, but no chilly sensation whatever. Then the fever would develop itself to some extent but in no way as severely as when it followed a chill, but the patients exhibited great distress, and in most of the cases they would vomit, and there would be a great deal of gastro-enteric hyperæmia. Then they would pass into what might be termed the third stage; did not sweat very much, but suffered apparently as severely as those who experienced the severest chill with febrile and sweating stages. On the whole, these patients did not recover in the same number of days that those did who had chills.

There were eleven cases of what is known as quotidian, with a regular paroxysm every day. Three of those exhibited some freaks, that is, in addition to the chill at twelve meridian a milder one would occur at midnight, skip over one day, then continue as at first in the regular quotidian form. There were three cases

¹ Centralblatt f. d. Med. Wissen.,

of quartan type, with a paroxysm every fourth day; and two of what is known and recognized by writers as double quartan. These had a slight chill on the second day, and skipped the third.

There is in the circle wherein the malarial disease mostly prevailed quite a population of colored people; but I have been called to attend only one case, and that was a mulatto woman, who had malarial disease. So far as I have been able to observe its workings in this community, the Irish population has suffered the most, the natives the next in order, and the African the least of any class in the community.

During the month of July, subsequent to the fourth, I was called to attend eighteen primary attacks of malarial disease. Through the month of August I attended twenty-nine cases that were primary attacks during that month. During the month of September there were forty-four attacks; and through October there were thirty-seven. About thirty of the number took place during the first fifteen days of the latter month. Not an individual case has been brought to the notice of the writer on which could rest the least doubt in relation to a correct diagnosis. Every case was in its preliminary aspect ushered in by, and exhibited through the entire course of the disease, those distinctly marked symptoms and features peculiar to fever and ague the world over.

It is generally conceded by most writers, and practitioners as well, that fever and ague but seldom causes death, except in cases where some other disease joins with it to help complete its fatal work.

I am ready to give due weight to the opinions of authors in this view of the case; but shall abstain from any further remarks on this point at present, as my sole object in this imperfect report is to embody facts as they have been practically established in the course of my experience with the disease.

Out of the hundred and forty-eight cases of malarial disease, — or, if we include the four cases that occurred one year ago this autumn, the number would be one hundred and fifty-two, — in all that I have had to deal with, more or less, there have been two fatal cases. Right here, let me say, that I consider this point of so much importance that I wish to give quite an extended history of those two persons who died with malarial fever. They were both first visited on the same day; and both died on the third day after I made my first visit, the 22d day of October of the current year. The history of the two cases is as follows: —

CASE I. The first case was that of an old, retired merchant. He was born, always resided, and did business, in the city of Providence. He was seventy-four years of age. He had lived an extremely abstemious life in the strictest sense of the term; he had not used spirituous liquors in any way whatever; he had for many years abstained entirely from meat diet, neither had he used tobacco in any form, and had scarcely ever during his life taken a dose of medicine. He was seized with ague chills, but would not consent to have a physician sent for till the seventh or eighth day of his illness, when he reluctantly gave his consent. On my first visit I found him in a semi-collapsed condition; he had had chills and tertian fever of the severest kind up to that day, but had taken nothing of a remedial kind except a very little ginger tea; he had just experienced a severe rigor, but there did not seem to exist sufficient vital force to bring about the usual reaction; his legs and feet were very cold, his hands and arms

were cold, his nose and ears were cold, and he exhibited great distress all about the gastro-hepatic regions; no pulsation could be felt at the wrist, neither was the second sound of the heart distinctly audible.

Notwithstanding this suppressed and negative condition, with his vital forces in a manner far spent, his mind showed evidence of clearness and equanimity. His answers were intelligent and correct.

In this state of things I concluded that he had passed by the time for the treatment I should have rendered had I seen him in the first or primary stage of his illness; consequently there seemed to be no other alternative but to administer the most appropriate diffusive stimulants, with as large a quantity of quinine as the condition of his stomach might tolerate. But his vital forces were so low that the system was totally unable to respond even to the most active heroic treatment, and he died.

Now, in this case there was no visible sign or symptom indicating the auxiliary effects of any other disease that might help to destroy life. It is true that his advanced years might play some part in the result, yet when we consider how well he had been, and the physiological balance of his whole fabric which had apparently existed down to the time of this malarial attack, I do not see how we can charge old age in this case as being a very *important factor* in the destruction of life. I did not hesitate to sign his certificate of death as from the effects of "malarial fever."

CASE II. The other fatal case was a man about thirty-five years of age. He had all his life been healthy and robust; was born in Ireland, but had resided in this country a series of years; he was a blacksmith by trade, and on the whole was an industrious man; while engaged in his shop he had indulged largely in the use of beer, though not neglecting his business; he also, like the first case, had previously been sick but little, and had taken little or no medicine; he also was seized with ague chills and fever; he did not take proper care of himself, and his fever being of the tertian kind on the day of apyrexia he continued to go to his shop, and to drink beer and some other liquors in increased quantities for two weeks or more, the chills and paroxysms of fever becoming more intensely severe all the while. Finally his friends persuaded him to call at my office. It was with some difficulty that he was able to reach the office. He wore a ghastly appearance, and on examination I found his pulse beating in a throbbing manner, 130 per minute; he complained of acute pains in the head, shoulders, back, and lower limbs, attended with a hyperæmic condition of the stomach and probably of the duodenum.

I directed him to return home at once, and get into bed, and said I would follow him immediately and prescribe for him.

On my visit I found him considerably nauseated, greatly debilitated, with rather a suppressed condition of the superficial capillary circulation; his feet and legs, hands and arms were inclined to be cold, and the stomach disposed to eject whatever he took into it. I was informed by his wife that he had taken but very little food for two weeks or more; he had, however, drank fully two quarts of lager beer every day during that time; he had had a chill every other day, in the morning, for nearly three weeks, and he had one that morning before he called at my office, but the usual reaction did not take place. He had not before

or at the time I first saw him, exhibited the remotest appearance or symptom of any other disease in connection with malarial chills and fever.

He was treated heroically with hot brandy and ammonia with quinine, but his vital forces were too much exhausted to be acted upon by medicine, his heart ceased its struggling, and he died.

I know of nothing that could have had any influence in urging this case on to its fatal results except his own neglect to use means in season to modify and check the progress of the disease. It is an unsettled question as yet whether or not such free use of beer and other stimulating drinks serves to hasten on or retard the disease in the final consummation of its fatal work. I am unable to assign any legitimate cause, remote or proximate, for this man's death other than malarial fever.

I have been thus particular in narrating the sickness and demise of those two persons, as there has been some inquiry expressive of doubts in relation to the death of the second case narrated, some intimating that he died from typhoid fever and not from malarial fever. Now I desire to state frankly that during the time, three days, that this case was under my care and attendance there was not a symptom that portrayed the slightest indication of typhoid fever. And here allow me to say that not only was this case exempt from such features, but every other case was likewise exempt from the well-defined symptoms of typhoid fever. I desire, before I close, to say, also, that in my next article in continuation of this subject I shall speak more fully upon that part of the subject which more particularly relates to the connection of malarial with other zymotic or epidemic diseases, as observed and noted during my experience in the phenomena and treatment of this most of all others insidious disease, malarial fever.

In my next I shall describe the surroundings or territory wherein this zymotic has so generally prevailed, its connections with the city of Providence, and the course of treatment I have adopted.

THE TREATMENT OF HYDROCELE AND SEROUS CYSTS IN GENERAL BY THE INJECTION OF CARBOLIC ACID.

THE employment of carbolic acid for the purpose of obliterating the cavity of a hydrocele of the vaginal tunic of the testicle by Dr. R. J. Levis, of Philadelphia, has previously been referred to in the JOURNAL, and has been mentioned by him repeatedly in his clinical lectures during the last ten years; until the last meeting of the Pennsylvania State Medical Society, however, he had not formally brought it before the notice of the profession. After more than nine years' exclusive practice of this method in the treatment of hydrocele in hospital and private practice he still endorses it fully and recommends its general adoption.

The object of treatment sought after is the obliteration of the serous sac by plastic inflammation, and still to avoid suppuration caused by the seton or the more irritant injections. The suppurative process being condemned, while the ordinary fluids used for injection are too uncertain in their results, Dr. Levis was led to try pure carbolic acid to secure adhesion of the walls. The process is entirely painless. The details of his method and its results are best given in Dr. Levis's

own words. It is seen that whereas he formerly used the pure carbolic acid he now prefers a permanent solution.

"For the purpose crystallized carbolic acid is maintained in a liquefied state by a five or ten per centum addition of either water or glycerine, the quantity of the diluent to be added varying with the quality of the article and with the temperature of the apartment; but it is an object to reduce the crystals to a fluid state with no more dilution than may be necessary. Liquefaction could readily be effected by the application of a moderate amount of heat, but reduction of heat might produce solidification of it in the canula.

"After the usual tapping of the sac I inject the liquefied crystals of carbolic acid with a syringe having a nozzle sufficiently slender and long enough to reach entirely through the canula. The illustration represents the syringe, reduced to one half the proper size. The object of having this special form of instrument is to insure the placing of the injecting material entirely within the cavity of the cyst, without any reflow which would irritate the surface of the skin of the scrotum or of the fingers of the operator, and without the possibility of injecting it into the connective tissue between the skin and the tunica vaginalis. This form of syringe is supplied by the leading surgical instrument makers.

"The quantity injected varies in accordance with the size of the tumor, from thirty to sixty grains. Thirty grains of undiluted carbolic acid is the smallest amount that I have used, and the largest quantity a drachm and a half.

"As soon as the carbolic acid is lodged within the sac the scrotum is freely manipulated by the fingers of the operator, so as to diffuse it over the lining walls of the hydrocele. A sense of warmth is produced, which is quickly followed by a decided numbness, and the patient is at once able to walk about and to attend to his ordinary duties without inconvenience. I have not been in the habit of enforcing rest on the patient until after the lapse of twenty-four hours or a longer time, when intra-scrotal inflammation renders quietude agreeable or imperative.

"I have never, after this procedure, been able to detect any general toxic effects from the absorption of carbolic acid. Such systemic manifestations as general depression and the characteristic evidence of the brown discoloration of the urine I have looked for, with negative results. I believe that the action of strong carbolic acid on surfaces secreting albuminous fluids is to seal them, and, as it were, to so shut them off from the system that absorption cannot readily take place. This sealing of an absorbing surface involves a surgical principle in antiseptic treatment which is applicable in very many instances in which denuded or ulcerating surfaces are exposed to septic infection. I state it as an important surgical resource that, in certain compound fractures and destructively lacerated wounds, where septic exposure is inevitable, the danger from absorption may be averted by producing the occluding influence of strong carbolic acid.

"Within my own experience no failure to radically