

HYDROPHOBIA.

Useful Hints and Reassuring

Views Concerning it.

Old and New Superstitions—The Dog Days and the Dog Star—Progress of Madness—How to Treat a Bite—M. Pasteur and His Discoveries.

According to the almanac makers we shall shortly be passing through the dog days. The star "whose burning breath," as Homer sang, "taints the red air with fevers, plagues and death," will soon be in the ascendant, and, according to ancient faith, exerting its direful influence upon the creature of this earth. Now should we give thoughtful heed to the kindly warnings of municipal authorities about muzzling and leading our canine dependents; and it may be that an occasional cry of "mad dog!" will during the warm weather strengthen the popular belief that the dog days are so called because dogs go mad during their course, and that hydrophobia is an evil effect for which the bright star in the constellation Canis Minor is somehow responsible. But with our thankful respect for the efforts of those gentlemen who compile our almanacs, we cannot help reminding them that the regular and exact entry of dog days in the calendars is highly discreditable to their knowledge, and that the belief that certain dates are favorable or conducive to the disturbance of canine sanity is by no means honorable to an age whose people are bristling with educational schemes.

Hydrophobia is undoubtedly one of the most terrible diseases with which humanity is afflicted although fortunately it is comparatively rare. Its terror lies in the fact that it is absolutely mortal, and that the death of the sufferer is peculiarly agonizing. It is consequently to be regretted that so many popular errors and misconceptions should exist upon the subject. Some of these it is the wish of the writer to clear away.

The disease, as at present known, is always communicated by the bite of a rabid animal—usually a dog, but sometimes by a cat, wolf, fox, jackal, racoon or even a badger, for all carnivorous animals are liable to rabies, and it is among them that it invariably originates. It is not many years since a death occurred in this city resulting from the bite of a cat, the feline and the victim exhibiting hydrophobic symptoms, and cases have been

known where both horses and cattle have become afflicted with madness of an acute type. But to communicate the disease, the animal itself must be rabid when the bite is inflicted. The old superstition that if a man is bitten by a dog, and the dog afterward goes mad, the man is in danger of hydrophobia, is altogether absurd, and gives rise to much groundless alarm. We might as well suppose that if our friend leaves us for South America, and there dies of the yellow fever, we are ourselves in danger because we shook hands with him when he left New York. The bite of a dog is always an ugly, painful thing, and apt to fester and heal badly. But the bite of a dog in health cannot possibly give hydrophobia; the animal must itself be rabid, and under ordinary circumstances there is no ground for any grave apprehension on account of a bite, no matter how severe it may be. Even those who are bitten by a rabid dog will do well not to be seriously alarmed. In the first place the bite, even if not attended to, does not by any means always result in the disease. Statistics, indeed, would seem to show that the chances of escape are almost as five to two, only forty deaths occurring out of a hundred persons bitten. But beside this original chance of immunity, proper precautions go far to decrease the dangers; and if the wound is attended to in time by a skilled surgeon, the patient may make his mind comparatively easy.

But what is most important, especially for those who keep a favorite dog, is that they should be able to recognize the premonitory symptoms of the disease, and so secure the animal before it can do mischief. To be forewarned is to be forearmed; and at a season of the year when hydrophobia is apt to be most prevalent, those who are exposed to any risk of infection cannot be forearmed too completely. The symptoms of hydrophobia are very characteristic, and it is unfortunate not only that they should be so little known, but that so much apprehension should exist as to their nature. There is, for instance, a common notion that a rabid dog is always a furious beast, which rushes wildly about, attacking everything that comes in its way. This is altogether an error. Rabid dogs have before now died quite tranquilly; and in any case it is only in the last few hours of the disease that delirium and frenzy set in. It is also a very common mistake to suppose that the mad dog dreads water, and that no dog is rabid which can drink. This is, indeed, a peculiarly mischievous delusion, as it leads people to imagine that because a dog will drink he cannot possibly be dangerous. On the contrary, the dread of water (hydrophobia), which is so marked in the human patient, is often entirely absent in the rabid dog, and a mad dog will drink eagerly. Mr. Blaine, a distinguished English veterinary surgeon, after twenty-five years of wide experience, declares that he cannot recollect a single case of rabies in the dog in which it manifested any marked dread of or aversion to

water.

Rabies in the dog commences with the ordinary signs of ill health. The poor creature is dull and unhappy, its eye is dim, its nose is hot and hard, and its manner is listless and dejected. Indeed, a sick dog is in many ways like a sick child. It betrays symptoms of *malaise*, is downcast, and anxious to be caressed and comforted. Here, however, is one of the most fertile sources of danger; for from the moment that a dog begins to sicken from hydrophobia, its saliva is infectious, and there is consequently nothing more dangerous than ever to allow a dog to lick the hands or face. The deadly virus may be absorbed in the very slightest abrasion of the skin.

The first stage is soon over, and to it succeeds the second, in which the distinctive symptoms begin to show themselves. As to the cause from which rabies spring, nothing yet developed enables us to satisfactorily account, it having been, in fact impossible to trace the origin of the germ; all we know certainly is, that it is a disease of the nervous system, coupled with a morbid condition of the salivary glands, the saliva itself, the fauces or throat, and the adjacent parts. Hence it follows that, as soon as the premonitory symptoms of general sickness and discomfort are over, the more definite characteristics of the disease itself are almost unmistakable. The poor animal suffers from an irritation of the gums and teeth that makes him—something like a teething child—bite and gnaw at everything that comes in his way. He will gnaw at his chain, and at the woodwork of his kennel, or at the mat on which he lies. He will take up in his mouth and champ stones, straw and pieces of dirt or filth. His teeth apparently pain him, and he will run and scratch at them with his fore paws, as if a fish bone had stuck in the gum and he were trying to get it out. But most significant of all is the change in his voice, due to incipient inflammation of the throat and larynx. The bark of a dog in health is clear and sonorous; it barks with ease, as it were, each yelp yielding a distinct and clear note. A rabid dog, on the contrary, utters a bark which, once heard, can never be mistaken, a sort of strangled, stifled howl, lugubrious in its tone, and uttered with an evident effort. It is not, indeed, too much to say that a skilled veterinary surgeon can detect a mad dog by its bark alone; and that the moment a dog's bark is altered in its *timbre* it should be carefully watched to see if other symptoms are not present.

Nor is this all. Beside the inflammation of the throat, there is also cerebral disturbances, which lead to a set of symptoms of its own, equally important and significant. The rabid dog is uneasy and anxious. He roams from place to place, seeking rest and finding none. He starts up suddenly and snaps at the air, as if he were vexed by phantoms. He watches intently imaginary objects, following them closely with his eyes, as if meditating a spring. Above all, he conceives a violent dislike to his own species, the mere sight of another dog driving him at once into an uncontrollable fit of passion. Hitherto he will have been sufficiently docile and tractable, obedient to his master's voice, anxious for the customary caress, and, if anything, more than usually demonstrative of his affection. But toward the end his restlessness increases, and he seizes the first chance of straying away from home. Wandering out into the street, he runs recklessly and listlessly up and down, his tail between his legs, his hair foul and bristling, his whole look haggard and woe begone. The evil fancies which haunt him grow on him. Soon he becomes furious, attacking other dogs, horses, cattle, men—everything, in short, that comes across his path. In this, the last stage, the disease is only too apparent; further doubt as to its nature is impossible. As a rule the dog is killed, although

often not before he has spread the disease over a whole district. If not killed, he soon dies in the natural course. His rage increases, but he becomes weaker and weaker. His legs fail him, paralysis sets in, and he expires in convulsions.

Such, then, is the course of the disease in the dog. With regard to it we ought especially to notice two things: First, that dread of water is rarely, if ever, present. A rabid dog will, on the contrary, lap water eagerly; it relieves the suffering caused by his swollen throat. Second, that until the very last stage of the malady, and often even in that, the dog retains all his affection for and obedience to his master—nay more, seems to be aware of his miserable condition, and to crave for help and sympathy. Indeed, in this respect a sick dog is, as has already been said, strangely like a sick child. The lesson to be drawn from this is very obvious. The moment a dog appears at

all ill he should be suspected, more especially if he should have been bitten by a strange dog, or have the scar of a bite upon him. It is as easy to tell when a dog is ill as to tell when a child is ill. A dog in health is bright and animated, runs freely about, and carries its tail erect; its nose is moist, its tongue clean, its coat clear and "satiny," and its eye full of light and life. A dog that is out of health is the very opposite of all this; and the dog that is out of health when hydrophobia is prevalent should be at once secluded. In a few days either he will be well again, or else the distinctive features of the disease will have shown themselves, and further doubt will be out of the question. What then is really essential is that those who keep a dog should watch him most carefully, to see that he is bitten by no other dog. But they should also watch his health, and note any alteration in his habits, however slight.

But the reader will now naturally ask, "How if I am bitten either by my own or a strange dog?" The answer is a very easy one. If you have the least reason for suspecting the dog to be rabid, do not lose a moment; go at once to the nearest surgeon—do not wait to send for him. On your way keeping on sucking the wound, taking care to spit out all that comes into your mouth. If the place is where you cannot get at it to suck, then you must squeeze it, or sponge it, or do anything else to incite it to bleed freely. If it is on a limb, put on what is called a tourniquet with a pocket handkerchief or a piece of spring and a walking stick or a bit of firewood; and as soon as you are in the surgeon's hands, trust to him implicitly, and remember the good old lines—

Better submit to a little ill
Than run the risk of a greater still.

If a surgeon is not within reach, there are two resources, and two only—the knife and cautery. Few people probably have the requisite courage to cut out the bitten part for themselves. But I venture to say this, that if anyone who had ever seen a hydrophobic patient die, as I have, were to be bitten himself by a mad dog, he would take out his pocket knife and, if possible, cut the bitten part away without a moment's hesitation. The pain of a cut is no very serious matter after all. We all know what it is; and any surgeon will tell us that to cut out a dog's bite is not much, if at all, more painful than to have a big double tooth pulled out. We may take it for granted, however, that few people will ever do this, and that fewer still will follow Shirley's example, and burn the place out with a hot iron. But there is a quick method of cauterizing used in the South for the bite of a snake, which is much to be recommended. If a Carolina

planter is bitten by a poisonous snake, he pours gunpowder on the wound, heaps it into a little pyramid, and then flashes it, repeating the operation some four or five times. The process almost invariably secures immunity; and the poison of a deadly snake is so much more subtle and rapid in its operation than the saliva of a mad dog that one cannot help thinking that what is so successful in the one case would be successful in the other. But then gunpowder is not always to be got, and we consequently have to find a ready substitute for it. The best of these, probably, is the solid lunar caustic, or nitrate of silver. Chemists sell little sticks or "points" of lunar caustic fitted up in a wooden case, like a patent pencil. You can carry one of these in your waistcoat pocket; and if you are bitten, you have only to pull out your pencil and at once apply it freely to the bitten surface. It is infinitely the best thing to be on the safe side.

Let me conclude with a word of warning, and a word of comfort. The word of warning is: Trust to no so-called "cures" for hydrophobia. No cure is known—if in the meantime we leave out of the question, as not yet perfected, the cure proposed by M. Louis Pasteur, who from a series of interesting experiments with animals at his laboratory in Paris has reached the conclusion that an attack of hydrophobia may be prevented by inoculation performed three times successively on one who has been bitten by a mad dog.

A word here about M. Pasteur, the distinguished chemist. Only the other day he communicated the results of his four years' labor to the *Académie des Sciences*, and the facts established by his experiments are in substance as follows: "If the virus of rabies be transmitted from the dog to the monkey, and then from monkey to monkey, it will be found that after each transmission the virulence of the virus has become enfeebled. If the virus thus enfeebled be transmitted to a dog or animal of that species, it will still remain attenuated. By a few transmissions of the virus from monkey to monkey there can easily be obtained a virus so attenuated that it shall never communicate, by hypodermic inoculation, the disease to a dog. Inoculations by trepanning of such virus will likewise produce no result; but, notwithstanding, an animal will not be rendered thereby proof against the disease. The virulence of the virus becomes, on the contrary, augmented in its passage from rabbit to rabbit. If a dog be inoculated with virus thus augmented in power, a far more intense form of the disease will be manifested than that apparent in ordinary canine madness, and it will invariably prove fatal."

By applying these and other observations, M. Pasteur obtained views of different degrees of virulence, and succeeded, by inoculation, of the milder qualities, in preserving animals from the effects of more active and mortal kinds. For example, after several days longer than the shortest incubation term, M. Pasteur extracted virus from the head of the rabbit which had died of the disease, and inoculated successively two other rabbits. Each time a dog was inoculated with the virus, which, as has been seen, would increase each time in virulence—the result was that the dog was ultimately rendered capable of bearing a virus of mortal strength, and became absolutely proof against canine virus. M. Pasteur, however, anticipates that the time is still distant when canine madness will be extinguished by vaccination, but pending that consummation, he feels pretty certain that he will be able to avert the consequences of a bite from a mad dog. He says: "Thanks to the duration of incubation after a bite, I have every reason to believe that patients can be rendered insusceptible before the mortal malady has had time to declare itself." M. Pasteur stated in conclusion that he had solicited the Minister of Education to appoint a commission to test his experiments.

Now there is no doubt that this able and indefatigable investigator's discovery forms a great step in the application of recently acquired knowledge of the means by which animal poisons may be weakened in intensity without change in their essential character—or, at least, without change in the character of the pabulum which is necessary for their maintenance, and it justifies the hope that many other maladies may in time to come be rendered harmless by means analogous to those which are already applied so successfully in the case of small pox. But this new treatment of hydrophobia cannot be regarded as an infallible cure until time and opportunity have been afforded for the complete establishment of what may now appear to be the facts. The liability of different persons to contract hydrophobia is apparently very different, and the periods of inoculation in some have been so prolonged that no apparent results of

inoculation would justify a conclusion until in a sufficient number of instances an analogous lapse of time had been suffered to occur. The differences in the liability may be apparent only, and may have depended on the virus of the bite, or upon its having been wiped off by clothing, and M. Pasteur has perhaps been able to inoculate the lower animals with a certainty of producing disease. But just as there is in some persons a liability to second attacks of small pox or scarlet fever—a liability which the bulk of mankind does not share—so there may be liabilities in man which the lower animals do not share, and the observations made upon the latter may require some modification in their application to the former. However this may be, it is impossible not to be sensible of the zeal, care, and ability with which M. Pasteur has pursued his inquiries, or not to be hopeful that results of the greatest magnitude may eventually spring from them.

Meantime it is better, as I have said, to assume that no cure is known. The broad facts of the case are simply these: Of those who are bitten by mad dogs, comparatively few take or contract the disease. Of those who are bitten and escape it will be found that the majority have treated the wound vigorously—or, as the doctors say, heroic-

ally—cutting it out, or cauterizing it severely. But of those who contract the disease, all die. No single case of recovery is upon record. I do not like to use hard names, but I know what I think of those who pretend to have a specific for hydrophobia and who are willing to sell it. Trust in no quack-remedy; the danger is too terrible to be trifled with. Go to the surgeon at once, if you can. If a surgeon is not within immediate reach, then use knife, gunpowder, lunar caustic—anything that will burn out or cut out the wound, and that you have the courage to bear.

The word of comfort is: Terrible as the disease is, it is yet, fortunately for us, very rare. Indeed the malady is of such rare occurrence that it has even been questioned whether the disease existed at all. M. Pasteur, however, has among other things conclusively demonstrated that hydrophobia is a well defined disease. Then the risk of being bitten by a mad dog is in itself small, even when the disease is more or less epidemic. And even for those who are so unfortunate as to be bitten, the risk of death, serious in itself, is vastly diminished if bold and vigorous precautions are at once adopted.

Of police measures intended to prevent or stamp out the disease, I have not spoken. I have rather written for those who may be, reasonably enough, anxious to know how to protect themselves against this disease, and what errors to avoid. D. C. M.