

DEPARTMENT OF AGRICULTURE
OTTAWA, CANADA
HEALTH OF ANIMALS BRANCH

BULLETIN No. 14

RABIES

BY

GEORGE HILTON, V.S.
CHIEF VETERINARY INSPECTOR.

Published by direction of the Hon. SYDNEY A. FISHER, Minister of Agriculture, Ottawa, Ont.

MAY, 1909

2044—1

SIR,—
Dr. George
for distri
Altho
only withi
Canada.

Rumo
along the
instance ir

In the
Ontario an
Alberta. I
lations of t
of the dise
sulted and

The k
manifestati
that any d
picion and
the death c
as to the c

This le
countered i
enlightening
animals, th

It is to
the minds c
that there i
guilty of h
tying up or

This mi
who hold it.
of ignorance
from other

Any net
or hounded
cause great
rabies.

People v
unfortunate
have us all b
sary, if not

Science
it is only ne
place, of ger
quarantine, t
numbers of b

With the
to which cou

OTTAWA, May 1, 1909.

SIR,—I have the honour to transmit the accompanying bulletin on Rabies by Dr. George Hilton, Chief Veterinary Inspector, and to recommend that it be printed for distribution.

Although occasional cases of rabies have from time to time been reported, it is only within very recent years that any actual authentic outbreaks have occurred in Canada.

Rumours of its existence in that portion of the province of Saskatchewan lying along the International boundary obtained currency in 1905 and 1906, but in every instance investigation failed to discover any good ground for these reports.

In the last two years, however, a number of outbreaks have been dealt with in Ontario and the disease has also been detected in Manitoba, Saskatchewan and Alberta. I am glad to say that the prompt and thorough manner in which the regulations of this branch have been enforced has, in every instance, prevented the spread of the disease, and that, so far as can be ascertained, no loss of human life has resulted and very few animals, other than dogs, have become infected.

The knowledge of the general public as to the true nature of rabies and its manifestations is so defective and so much clouded by tradition and nervous dread, that any dog acting in a peculiar manner is very apt to become an object of suspicion and to be hunted down and killed as mad. Under ordinary circumstances, the death of the animal in this way destroys all possibility of confirming the facts as to the existence or non-existence of the disease.

This lack of definite evidence constitutes one of the greatest difficulties encountered in dealing officially with reported outbreaks, and it is with the view of enlightening the public as to what rabies really is and how to deal with suspected animals, that this bulletin has been prepared for general circulation.

It is to be hoped that its distribution in Canada will assist in dispelling from the minds of some exceedingly well-disposed and humane persons the hallucination that there is no such disease as rabies and that the officers of this department are guilty of heartless cruelty in ordering the destruction of affected animals and the tying up or muzzling of dogs which have or may have been exposed to infection.

This mistaken view, most laudable, and properly so, from the standpoint of those who hold it, undoubtedly owes its origin to the fact already stated that, as a result of ignorance, many dogs are cruelly treated and destroyed as mad, when suffering from other ailments or perhaps only from exhaustion or excitement.

Any nervous dog, in a strange place or under abnormal conditions, when worried or hounded as such animals too often are, is liable to act in such a manner as to cause great alarm to persons uninformed as to the true nature and symptoms of rabies.

People who like and understand dogs naturally resent the way in which these unfortunate animals are treated and, going to the other extreme, believe and would have us all believe, that there is no such thing as rabies and that it is quite unnecessary, if not foolish, to take any precautions against it.

Science and fact, however, prove the contrary, and, if an illustration is needed, it is only necessary to point to Great Britain, where, by the adoption, in the first place, of general muzzling orders and subsequently by the enforcement of a rigid quarantine, the disease formerly very prevalent, and causing annually the deaths of numbers of bitten persons, has been eradicated and is now quite unknown.

With the disease existing as it does to an alarming extent in the United States, to which country nearly all our outbreaks can be directly traced, and with a land

boundary of three thousand miles, it is not possible for Canada to effectually adopt the policy which has been found so successful in the motherland.

The fact that all the outbreaks in Ontario have occurred in the Niagara peninsula and the adjacent counties, would indicate that the infection, so far as this province is concerned, has been introduced from the State of New York, while in the west, it must have been brought in by the dogs of some of our new American settlers.

Two points I would especially like to impress upon the people of Canada:

The first is that a suspected dog should not be killed if it is at all possible to avoid it, but should be driven into a loose box or similar inclosure and detained, pending the arrival of the veterinary inspector of this department who will be promptly sent to investigate as soon as notification is received.

The second point is that there are kept in Canada, as in many other countries, far too many useless mongrels, which are not only a constant and ready means of conveying the infection of rabies, as well as many other diseases both to man and animals, but constitute besides, a standing and very real menace to one of our most lucrative agricultural industries, namely the breeding and raising of sheep.

There is little to be said against the well bred dog or even the dog of p'ebeian origin, provided he is properly broken, handled and kept under control, but the practice of allowing dogs to run at large indiscriminately and unattended, especially at night, cannot be too strongly condemned.

Those tender hearted persons who have so much sympathy for dogs might, with advantage, bestow some consideration on the people and the other animals bitten by dogs, rabid or simply vicious, and on the cruelly worried sheep and lambs of the long suffering farmer.

The painless destruction by the lethal chamber or by chloroform, of sixty per cent of our canine population, would in my opinion, be a most humane measure and one of the greatest possible benefit to the country, its people and its dogs.

I have the honour to be, sir,

Your obedient servant,

J. G. RUTHERFORD,

*Veterinary Director General and Live
Stock Commissioner.*

To the Honourable,
The Minister of Agriculture,
Ottawa, Ont.

Rabies described tagious di of opinion general pu to intense that undu produce it sible.

Altho: transmissi its sponta: It is only of rabies i into the sy

While cultivate i proved tha most mode demonstrat a rabid an of which d liquid afte healthy ani

The sa only means before the contain the being, when It is claim: the transmi have occasi case, howev

Pasteu is responsib ing it. In animal by which had that the vit to such an that animal virulent ma found favo

RABIES.

BY

George Hilton, V.S., Chief Veterinary Inspector.

Rabies has been recognized throughout the world for many centuries, and was described before the advent of the Christian era, but there is probably no other contagious disease in animals which has, from ancient times, caused a greater diversity of opinion among authorities, and produced such erroneous ideas in the minds of the general public. There were those who firmly believed rabies was the result of exposure to intense heat, others thought it was caused by extreme thirst, many maintained that undue excitement, and the ingestion of foods rich in nutritive matters would produce it, while by others, climatic changes and certain seasons were held responsible.

Although the contagious nature of rabies has long been acknowledged and its transmission from animal to animal by means of a bite recognized, the possibility of its spontaneous development was nevertheless until very lately generally admitted. It is only during recent years that authorities have agreed that the causative agent of rabies is, without doubt, a specific micro-organism, which must first be introduced into the system of an individual before it is possible for the disease to develop.

While the actual causal agent has not so far been identified, and all attempts to cultivate it on artificial media have been unsuccessful, experiments have conclusively proved that such an organism does exist, but is of such minute proportions, that the most modern microscopic lenses are unable to detect its presence. This has been demonstrated positively by suspending, in liquids, virulent brain matter taken from a rabid animal, and passing it through a porcelain filter, the extremely minute pores of which do not suffice to arrest this micro-organism, as proven by the fact that the liquid after passing through the filters retains its virulence and produces rabies in healthy animals, when inoculated with it.

MODE OF INFECTION.

The saliva of a rabid animal is its most frequent and so far as at present known, only means of spreading contagion, this being frequently infective one or two days before the advent of any symptoms of disease. The brain and spinal cord, however, contain the most virulent material after death, these tissues, preferably the former, being, when possible, invariably used in confirming diagnosis where suspicion exists. It is claimed by some that other body fluids contain virulent material, and cases of the transmission of rabies from mother to offspring through the medium of the milk have occasionally been reported, but of this there is no satisfactory proof. In no case, however, has the blood of a rabid animal proved to be of a virulent nature.

Pasteur, who devoted the greater part of his life to investigating this disease, is responsible, directly and indirectly, for the great advance in our knowledge regarding it. In the early eighties he discovered that he could produce rabies in a healthy animal by inoculating it with material taken from the brain or spinal cord of one which had died from that disease, and later, after extending his experiments, found that the vitality of the virus could be reduced by passing it through different animals to such an extent as to produce mild symptoms, followed by recovery, and further that animals so treated acquired immunity to such a degree that the injection of virulent material into their systems produced no bad results. This discovery rapidly found favour in scientific circles throughout the world, and energetic measures were

adopted for its perfection, so that at the present time Pasteur institutes are maintained for the treatment of man in all large centres of civilization, where rabies is known to exist. These institutions have reduced the mortality in human beings bitten by rabid animals to such a remarkable degree that the effectiveness of the Pasteur treatment is now universally acknowledged. Rabies is therefore unquestionably a disease of inoculation, and is, in the large majority of cases, transmitted by means of a bite from a rabid animal, the virulent saliva thereby gaining entrance to the wound. The possibility of producing it by means of the ingestion of saliva, milk or meat of infected animals has for some time been a matter of experiment, but sufficient definite satisfactory data have not so far been obtained to determine whether such products may or may not be consumed with impunity.

SPECIES AFFECTED.

The habits of the dog and his species, the unrestricted freedom which the majority of them enjoy and the fact that biting constitutes their natural mode of defence, make them pre-eminently fitted for the transmission of this disease and responsible for the rapidity with which large outbreaks cover unlimited areas. Rabies is therefore naturally far more frequently seen in canines, and to their species outbreaks in other animals are generally attributable.

Unfortunately, however, man, and all warm-blooded animals are susceptible; the horse, ox, sheep, hog, cat, rat and fowl, together with other members of their respective species, domesticated or otherwise, readily develop this disease when bitten by a rabid animal. It is therefore not by any means uncommon to find several species affected during the existence of an outbreak in any vicinity.

NATURAL IMMUNITY.

There are very few cases on record of recovery once the symptoms have developed and these have been reported only by Pasteur and other investigators as occurring in animals experimentally inoculated. The possibility, however, of certain individuals possessing a natural immunity against this disease, as is strikingly apparent in other fatal contagious maladies, must be considered, and such immunity doubtless exists, but probably to a very limited extent.

PERIOD OF INCUBATION.

As soon as the virus is introduced into the system, unless prompt, energetic and effective measures are adopted to arrest it, or the individual possesses an acquired or natural immunity, the incubative period commences. This may be of short or long duration, much depending upon the vitality and the quantity of virus introduced, the resisting power of the individual organisms, the location of the bite, the favourable or unfavourable facilities afforded for the inward progress of the virus, and the suitability of the surrounding tissues. While the course followed by the virus has not so far been satisfactorily demonstrated, the symptoms exhibited in fatal cases and their examination after death, show clearly that it invariably reaches the large nerve centres.

Numerous cases on record appear to indicate that the nearer the bite is to the brain or spinal cord, the shorter the incubative period, and that when it is in the extremities that period is considerably lengthened. Although the period in question may vary largely, owing to one or other of the causes already mentioned, authorities have through the accumulation of reliable data arrived at the average period in the various species as follows:—

- 40 days in man.
- 28 to 56 days in horses.
- 21 to 40 days in dogs.
- 14 to 28 days in cats.

The
the deg
sible fo
order, m
are gene
ent so s
the nor
teristic
easily r
demeano
creased
the sym
and the
vary fro
by partic
Rabies,
the dura
from two

In t
become a
their nat
turning
exhauste
ance, the
or how I
detected.
retching,
server th
of the bi
He at tir
and may
or jump
fuse, and
ing and
puppy ye
A sh
seclude i
rapidly r
frequently
ing becor
depression
signs of
unable to
supervene
objects, al
paralysis.
move, mov
ing spasm

14 to 21 days in pigs.
 21 to 40 days in cattle, goats and sheep.
 14 to 20 days in birds.

SYMPTOMS.

The comparative virulence of the organism itself, the quantity introduced and the degree of suitability of the tissues directly inoculated are undoubtedly responsible for the variation of the symptoms observed. These are chiefly of a nervous order, mental excitement, or depression being the prominent manifestations. They are generally speaking similar in the different species of animals, and become apparent so soon as the virus and its toxins have developed sufficiently to interfere with the normal functions of the nervous system. The symptoms are sufficiently characteristic to impress their peculiarities upon the mind of the observer and are more easily recognized than described. In all species, however, a marked change in the demeanour of the animal is first noticed by the careful observer. This may be increased excitability, restlessness, viciousness, or dullness. As the disease progresses the symptoms differ in accordance with the location, the distribution of the virus and the rapidity with which the normal structures become affected, and consequently vary from a violent uncontrollable state to one of marked dullness, followed rapidly by partial or complete paralysis and death. The former has been termed Furious Rabies, and the latter Dumb Rabies. Once, however, symptoms become apparent, the duration of the illness is fortunately very limited, death invariably resulting in from two to ten days; in dogs most frequently on the third or fourth day.

FURIOUS FORM.

In the furious form in the canine species, individuals noted for their cowardice become aggressive and quarrelsome with other animals, show an inclination to leave their natural place of abode, either permanently or for short intervals. When returning they show evidences of having been in trouble and are frequently in an exhausted condition. They rapidly assume a wild unnatural expression of countenance, the eyes are prominent, glaring and much reddened, the membrana nictitans or haw projects and is bright red in colour, and a discharge from the eyes may be detected. A peculiar movement of the muscles of the neck is noticeable, producing retching, which may be followed by vomiting, or attempts to vomit, giving the observer the impression that a foreign body is obstructing the throat. The location of the bite is frequently very irritable and appears to annoy the dog continually. He at times tears open the wound and bites it viciously. He becomes very excitable, and may tear his bedding to pieces, snap suddenly and viciously at the least noise, or jump furiously at any object within reach. The flow of saliva now becomes profuse, and soon adheres around the muzzle in a frothy mess, due to the constant barking and snapping of the jaws. The bark becomes unnatural, changing to a shrill puppy yelp.

A short period of quietness may at times intervene, the animal endeavouring to seclude itself; this, however, is generally very brief, furious paroxysms of rage rapidly returning. The patient shows evidence of great thirst, and will lap water frequently when available, although he may, or may not be able to swallow. Breathing becomes rapid, followed by panting, the mouth remaining open, and extreme depression is exhibited. Sudden noises, or approaching objects produce immediate signs of rage, which may also be witnessed when no cause is apparent. He soon is unable to control his movements and paralysis, generally of the hind extremities, supervenes; he, however, persists in spasmodic yelps and feeble attempts to snap at objects, although he is unable to make much noise, due to increasing depression and paralysis. This is rapidly followed by a state of coma; he lies prostrate, unable to move, mouth open, lower jaw dropped, bathed in saliva, extremely emaciated, breathing spasmodically, death speedily taking place. In cases where he shows an inclina-

tion to roam he may run continuously across country until he becomes exhausted. His gait is erratic, he trots aimlessly along, unalert and regardless as a rule of his surroundings, with head and tail dropped, tongue hanging from the corner of his mouth, and saliva escaping and frothing around his muzzle. He will seldom attack motionless objects, anything in his path, however, appears to excite him to fury and he will viciously attack animals unfortunate enough to be in his reach.

DUMB RABIES.

The dumb form of rabies is frequently witnessed in the last stages of the furious form, but does occur independently from the first advent of symptoms. In such cases the animal always seeks cover and remains hidden as much as possible. He exhibits a tendency to vomit, retches with muzzle poked out, becomes very much depressed; paralysis setting in rapidly, the lower jaw drops, he is unable to swallow, saliva flows abundantly and the breathing is laboured and accompanied by a slight snoring sound. There are no paroxysms of rage; the facial expression is similar to that witnessed in the furious form, rapid emaciation sets in, followed by complete paralysis and coma, resulting in death.

The symptoms enumerated necessarily vary in degree in different individuals, and are sometimes sufficiently acute to cause death in a paroxysm of rage without the advent of a comatose condition.

It is well, however, to look with suspicion upon a dog, whose demeanour suddenly changes. If he becomes restless, wanders away, refuses food, continually retches, attempts to vomit, snaps at objects, and rapidly loses flesh, especially if a strange dog has previously been observed on the premises, or if rabies has been suspected in the vicinity, he should be promptly detained, safely secured where no other animal can come in contact with him, and closely watched. If rabies is the cause of the symptoms noted, death will quickly ensue.

GAT.

Cases of rabies are less numerous in cats than in the other domestic animals. This is no doubt due to the dexterity with which they are able to escape from their pursuers, the conditions under which they live, their strong antipathy for dogs, and the fact that they seldom when caught by him escape alive. When, however, infection does take place the disease progresses very rapidly, terminating fatally about the third day from the commencement of symptoms. These are frequently not seen, as the infected animal often hides away, and is not found until either death is approaching, or has taken place. In other cases, the animal is extremely restless and excitable, moves about persistently in an erratic manner, and seldom remains at ease. The eyes assume an unusual brilliancy, the pupils are dilated, resulting in a wild frightened expression. Great thirst is apparent, but there is no desire for food. He shows a tendency, however, to pick up and swallow stones, sticks, and other foreign bodies. The voice rapidly changes to a loud harsh tone. He may run from one secluded spot to another constantly, mewing in a loud, harsh, unnatural, screechy, manner. Saliva flows profusely, which with the persistent licking, frequently apparent, soon moistens the coat of the animal, and adds to its dejected appearance. Any noise or excitement may be followed by paroxysms; these may occur frequently or occasionally, during which the animal jumps about furiously, and will attack a dog, or other animal or man, biting and scratching savagely. Emaciation is rapid and complete, paralysis soon takes place, followed quickly by death.

WILD ANIMALS.

Foxes, wolves, coyotes being in many respects closely allied to the dog, exhibit similar symptoms when rabid. They become bold and venture into public roads, pastures and barnyards, often attacking domestic animals, and are therefore occasionally the cause of outbreaks in areas previously uninfected.

Cat
ticularly
able. T
and viol
denly be
fastening
at any
with hea
be notice
times sh
from ab

A s
sistently.
sudden f
lashes it
lently, b
laceratin
and adds

As t
emaciate
quarters.
and die
takes pla

In ca
a more v
butts vic
desist.

Whil
are occas
pression,
feet alter
followed
noticeable
ciation at
usually fi

In sh
carried en
their sock
grinding
give vent
expiration
sound. T
out of res
some, and
is invarial
at other
after the
ciation ar
follow and
day after
the first s

CATTLE.

Cattle affected with rabies may exhibit a wild staring look, the eyes being particularly bright, or on the other hand, an unusually mild expression may be noticeable. The former condition denotes an increased excitability of the nervous system, and violent symptoms frequently follow. If secured in the stall, the animal will suddenly bellow in a terror-stricken manner, pull forward and backward strenuously in its fastenings, stamp its feet determinedly, shake its head violently, and butt viciously at any object. A period of calmness may intervene, the animal standing quietly with head slightly elevated; spasmodic twitching of the muscles of the neck may now be noticeable, accompanied by frequent blinking of the eyelids. It may even at such times show signs of restlessness and may kick occasionally at its abdomen, probably from abdominal pain.

A strong desire to lick objects in reach is apparent, the patient doing so persistently. The flow of saliva is profuse and the animal shows no desire for food. A sudden fit of rage may follow, perhaps induced by an approaching object; the patient lashes its tail, bellows loudly with a hoarse unnatural sound, shakes its head violently, butts wickedly at the manger or wall, and may bite savagely at the former, lacerating the palate and dental pad. The flow of saliva now assumes a bloody hue and adds considerably to the wild unnatural appearance of the animal.

As the disease progresses the animal rapidly weakens and now becomes markedly emaciated, paralysis quickly follows, affecting the muscles of the throat and hind-quarters. The patient soon falls, is unable to rise, and may sink into a state of coma and die rapidly, or may struggle persistently for a considerable time until death takes place.

In cases where the animal is not under restraint, the symptoms may be of even a more violent nature; he rushes wildly about, leaps into the air, bellows loudly and butts viciously at any animal in reach until weakness or paralysis force him to desist.

While the symptoms in cattle are most frequently of a very violent nature, they are occasionally ushered in by extreme lassitude, denoted by an unusually mild expression, or one of marked dejection. Continual yawning is apparent, shifting of the feet alternately, pronounced dullness, twitching of the muscles of the neck and face, followed by great stupor. Smacking of the lips and grinding of the teeth may be noticeable and an increased flow of saliva is generally a prominent symptom. Emaciation and paralysis rapidly follow, the patient lies down or falls and death occurs usually from the fourth to sixth day after the commencement of illness.

SHEEP.

In sheep a change in demeanour is quickly noticeable, their heads are generally carried erect, the eyes assume an exceedingly bright appearance, and may roll in their sockets, due to the involuntary twitching of their motor muscles. Excessive grinding of the teeth is a prominent symptom. When approached they frequently give vent to a peculiar wheezing sound, which terminates abruptly, due to a sudden expiration of air through the nostrils. They bleat frequently with a loud, hoarse sound. They may stamp with the forelegs, and often jump like a dog at any object out of reach. They also exhibit a great desire for licking, are exceedingly quarrelsome, and frequently run and butt viciously at any other animal. Their expression is invariably one of extreme excitement, and they have been known to bite savagely at other animals. The flow of saliva is profuse and the appetite disappears soon after the first symptoms are detected. As the disease progresses weakness and emaciation are marked symptoms, causing the animal to stagger and fall, convulsions follow and death rapidly ensues, generally taking place from the second to the fifth day after the commencement of illness. In some cases, however, paralysis may be the first symptom detected; the animal is found down and unable to rise, with the

same excited facial expression, twitching of the muscles, rolling of the eyes, heavy breathing, grinding of the teeth, and a profuse flow of saliva; emaciation becomes marked, and convulsions occur at irregular intervals, rapidly terminating in death.

HOGS.

The rabid hog shows a strong tendency to hide in the most secluded spot available, and will suddenly, without apparent cause rush out and run in evident terror, grunting and squealing loudly. His expression is one denoting extreme fear, with an unusual brilliancy in the eyes. Although his normal appetite is generally in abeyance, he exhibits a tendency to chew wood and other articles, and may persist in so doing for lengthy periods. The flow of saliva is markedly increased, the patient continually champing his jaws and showing signs of extreme restlessness. He will occasionally rush at his fellows or other animals, bite savagely, and if a boar use his tusks viciously. Paralysis of the muscles of the throat and hindquarters rapidly intervenes and emaciation and weakness become markedly apparent, followed by convulsions, terminating quickly in death, which generally takes place from the first to the sixth day. The symptoms are subject, as in other species, to varied degrees of severity, and may be ushered in by extreme depression, quickly followed by paralysis without the appearance of any violent manifestations.

HORSES.

In the horse a change of demeanour is also first noticeable. He exhibits either great excitability or depression. In the former case his expression is one of keen alertness, ears erect, eyes exceedingly bright and blood shot, exhibiting a wild glassy stare. His appetite becomes impaired and is soon altogether absent. He is extremely restless; twitching of the muscles may be noticeable, together with quick spasmodic movements of the eyes, and the membrana nictitans (haw). He may get up and down, roll, and shake his head repeatedly. The least noise is sufficient to temporarily increase the symptoms, he will kick suddenly at any object, neigh frequently, and may gnaw persistently on manger, stall or fence. There may be intense irritation at the seat of the bite, the animal licking and finally chewing it viciously. Cases have been reported where the patient has gnawed through the muscles to the bony tissues, and persisted in doing so until approaching paralysis intervened.

Violent paroxysms are common, causing the animal to kick dangerously; he will frequently rush and bite savagely at the manger, burying his teeth in the woodwork. The symptoms become extremely aggravated, the animal smashing the stall to pieces, and even occasionally breaking his way out of the stable. Extreme thirst is evident, the flow of saliva profuse; he grinds his teeth frequently and will suddenly snort loudly. Swallowing becomes difficult, resulting in the return of food through the nostrils. His movements become stiff and jerky, he exhibits marked vicious tendencies and will rush and bite other animals in a determined manner. As the disease progresses he becomes very much emaciated, convulsions frequently take place, which may terminate suddenly in death.

In other cases the symptoms are ushered in by depression and stupidity. There may be involuntary muscular twitching, irregular movements of the eyes, which assume a prominent, reddened, unnatural appearance. The animal breathes with a snuffling noise, and in a laboured jerky manner. He frequently persists in pressing his head forward against the manger or wall, often grinding his teeth. As the disease progresses he knuckles over on the fetlocks, staggers, sways, and finally falls unable to rise, or to do so only with difficulty. Emaciation is marked, the flow of saliva is noticeably increased, he may bury his teeth in the ground, flooring or any convenient object, remaining in this position for short or prolonged intervals. Convulsions follow, which become more severe with each recurring attack, ultimately resulting in death from four to six days from the advent of the first symptoms.

T
and th
tissues
of the
of the
tribute

In
bodies
article
found

W
materi
an inc
even h
attenti
coverin
them to
lation.
the ner
existen
from a
bodies,
means
the bra
from ca
been m
lation a

In
other a
is, at th

It
detai
if symp

If
is much
is impo
is no gr
have pa
nervous

For
animals
judgmer

Who
and awa
to leave
experien
This sho
massage

In
being ha
of a phy

POST MORTEM APPEARANCES.

The carcasses of animals succumbing from this disease are extremely emaciated, and the post-mortem findings are not of a marked nature, the alterations in the tissues being often but slightly discernible even to the experienced eye. The lining of the mouth and throat frequently shows evidences of congestion, as does also that of the stomach, on the surface of which hæmorrhagic spots may be fairly well distributed.

In view of the depraved appetite so often witnessed in affected animals, foreign bodies are frequently found in the stomach, such as sticks, stones, dirt, and similar articles. It is seldom, however that this organ contains food, and when much is found present it is a fairly safe indication that rabies was not the cause of death.

While the brain, spinal cord, and their membranes contain the most virulent material, they seldom exhibit marked visible changes. Evidences of congestion, with an increase of the fluids, may be detected, but the important pathological changes even here are of microscopic proportions. Pathologists have naturally directed their attention for years to the microscopic study of the nerve tissues, with a view to discovering some constant, definite characteristic alteration therein, which would enable them to arrive at a positive diagnosis more promptly than is possible by animal inoculation. Van Gehuchten, Nelis and Ravenel, have shown that certain changes occur in the nerve cells of the *plexiform ganglia*, while Negri more recently demonstrated the existence of peculiar staining granules within the nerve cells of the brain taken from animals dying from this disease. The latter have been termed the 'Negri bodies,' and while generally accepted, and largely adopted by pathologists as a rapid means of diagnosis, the fact remains that the same bodies have also been detected in the brain cells of animals, which have later been proved conclusively to have died from causes other than rabies. It is therefore quite evident that while progress has been made, it has not been sufficient to furnish a reliable substitute for animal inoculation as a means of certain diagnosis.

BITTEN PERSONS AND ANIMALS.

In conclusion it cannot be stated too emphatically that the bite of a dog, or any other animal, will not under any circumstances transmit rabies, unless that animal is, at the time of biting, affected with the disease.

It is, therefore, most important in cases of biting of a suspicious nature, to detain securely the animal that inflicts the bite, and no danger need be apprehended, if symptoms do not develop in the course of a few days.

If, as is too frequently done in such cases, the animal is destroyed at once, there is much doubt and delay in obtaining proof as to whether it was rabid or not. This is important, as the mere fact of having been bitten by an animal, even though there is no ground for suspicion, may in view of the erroneous imaginary theories, which have passed down from generation to generation, result seriously in an individual of nervous temperament.

For this reason there is probably no other communicable disease of the lower animals in which the exercise of extreme caution, commonsense, and good sound judgment is of such paramount importance.

When valuable animals are bitten a veterinarian should be promptly consulted, and awaiting his arrival every attempt made to encourage bleeding. It is advisable to leave further treatment of the wound to the veterinarian, unless undue delay is experienced in which case pure nitric acid is probably the preferable agent to use. This should be dropped carefully into the wound, while the latter is being thoroughly massaged, in order to ensure the penetration of the acid to its depths.

In cases, however, where the least suspicion of rabies exists, and any human being has unfortunately been bitten, no time should be lost in procuring the services of a physician, and the same precautionary measures promptly adopted.

RABIES (HYDROPHOBIA).

An animal suspected of being affected with rabies (hydrophobia) should, if possible, be captured alive, placed in a cage where it can do no harm, and carefully watched. If affected with rabies, symptoms will appear within forty-eight hours, and death will, as a rule, occur within a few days. Affected animals are scarcely ever known to recover.

In order that other causes of death may be excluded, material should be forwarded to the laboratory for confirmatory diagnosis. If the time necessary for transmission to the laboratory does not exceed twenty-four hours, the head may be severed from the body and forwarded by express packed in ice. In winter, the severed head, if frozen, may be sent any distance, provided instructions are given to keep frozen.

Where the distance from the laboratory exceeds twenty-four hours a portion of the brain or spinal cord (the medulla or base of the brain is preferred) may be placed in pure glycerine and forwarded by mail. There should be an excess of glycerine over the bulk of material forwarded.

Full information as to history, clinical symptoms, &c., should also be furnished.

Specimens should be addressed:

Biological Laboratory,
Ottawa, Canada.

By Or

1. infecti
other
2. meanir
where
3. dog or
order
4. which
5. infecte
6. cart, et
infecte
disinfe
to a V
7. suspect
or othe
detaine
fit.

HEALTH
DE

DOMINION OF CANADA.

REGULATIONS RELATING TO RABIES.

By Order in Council dated 10th August, 1905, in virtue of 'The Animal Contagious Diseases Act, 1903.'

1. No dog or other animal which is affected with or has been exposed to the infection of rabies, shall be permitted to run at large, or to come in contact with other animals.

2. Any Veterinary Inspector may declare to be an infected place within the meaning of 'The Animal Contagious Diseases Act, 1903,' any place or premises where the infection of rabies is known or suspected to exist.

3. Veterinary Inspectors are hereby authorized to order the slaughter of any dog or other animal affected with rabies, or suspected of being so affected, and to order the disposition of the carcase of such animal.

4. Veterinary Inspectors are hereby authorized to order dogs or other animals which have been exposed to the infection of rabies to be detained, isolated or muzzled.

5. No dog or other animal, nor any part thereof, shall be removed out of an infected place without a license signed by an inspector.

6. Every yard, stable or outhouse, or other place or premises, and every wagon, cart, carriage, car or other vehicle, and every vessel and every utensil or other thing infected or suspected of being infected with rabies, shall be thoroughly cleaned and disinfected by and at the expense of the owner or occupier in a manner satisfactory to a Veterinary Inspector.

7. On receiving the report of an Inspector to the effect that rabies is known or suspected to exist in any locality, the Minister of Agriculture may order that all dogs, or other animals, within such an area as he may determine or describe, shall be detained, isolated or muzzled in such manner and during such period as he may see fit.

HEALTH OF ANIMALS BRANCH,
DEPARTMENT OF AGRICULTURE,
OTTAWA.

J. G. RUTHERFORD,
Veterinary Director General.

Attention is Specially Drawn to the Following Sections of 'The Animal Contagious Diseases Act, 1903,' R.S.C., 1906.

Section 3.—Every owner of animals and every breeder of or dealer in animals, and every one bringing animals into Canada shall, on perceiving the appearance of infections or contagious disease among animals owned by him or under his special care, give immediate notice to the minister and to the nearest veterinary inspector of the Department of Agriculture, of the facts discovered by him as aforesaid.

2. Any veterinary surgeon practising in Canada shall, immediately on ascertaining that an animal is labouring under an infectious or contagious disease, give similar notice to the minister and to the nearest veterinary inspector.

Section 37.—Every person who brings or attempts to bring into any market, fair or other place, any animal known by him to be infected with or labouring under any infectious or contagious disease, shall, for every such offence, incur a penalty not exceeding two hundred dollars.

Section 23.—Whenever under this Act a place has been constituted an infected place, no live animal, nor the flesh, head, hide, skin, hair, wool or offal of any animal or any part thereof, nor the carcass nor any remains of any animal, nor any dung of animals, nor any hay, straw, litter or other thing commonly used for and about animals, shall be removed out of the infected place, without a license signed by an inspector appointed as aforesaid until said place has been released by order of the minister.

Section 41.—Every person who refuses to admit any inspector or other officer into any place or premises or any steamship, vessel or boat, or any carriage, car, truck, horsebox or other vehicle used for the carriage of animals, or who obstructs or impedes the execution of any order or regulation made by the Governor in Council or the Minister under this Act, shall, for every such offence, incur a penalty not exceeding one hundred dollars; and the inspector or other officer may apprehend the offender and take him forthwith before a justice of the peace to be dealt with according to law; but no person so apprehended shall be detained in custody, without the order of a justice, longer than twenty-four hours.

Section 46.—Every person who violates any provision of this Act, or of any regulation made by the Governor in Council or by the minister, under the authority of this Act, in respect to which no penalty is hereinbefore provided, shall, for every such offence, incur a penalty not exceeding two hundred dollars.