

# **PARASITES AND SKIN DISEASES**

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*To the memory of  
Molly  
whose 93 years were eminently worthwhile*

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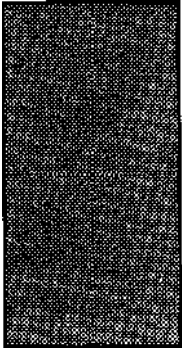
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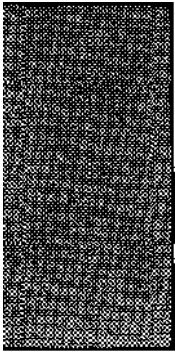
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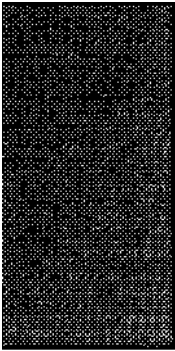
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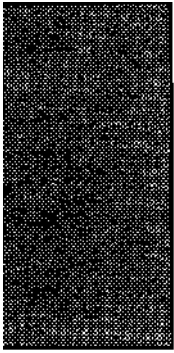
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## Introduction

Parasites and skin diseases of horses are two subjects about which the average horse owner knows little. The difficulty lies in that they are specialist subjects, filled with their own technical terminology and therefore hard to interpret.

However, the clinical importance of these fields is evident in everyday horse management. Worms and other parasites have a significant ongoing effect on growth and production. Skin conditions, be they contagious or not, are a familiar form of equine disease and a regular reason why horses cannot be ridden.

In attempting to make these subjects understandable to the lay person, therefore, it is necessary in this book to begin at the practical base. For example, common names, like 'redworm' and lungworm', are used in conjunction with the generic names, *Strongylus* and *Dictyocaulus*. For correctness, however, the generic names will be used in parentheses in section headings, but every effort is made to enable the reader to gain the information he or she requires without being overcome by the technical nomenclature which is vital to the scientist/veterinarian.

Similarly, in discussing the effects of parasite infection, it is not intended to delve into the complexities of equine pathology. Yet it should be understood that pathology means the study of diseases, or, more properly, the study of the changes in body tissues that result from disease. Thus, a worm is not just an undesirable resident of the digestive system; it may damage the lining to the bowel, it may migrate through other tissues, causing damage to remote organs. It may also interfere with digestion, preventing the absorption of food elements from the bowel; this may lead to weight loss, stunted growth, and improper development of the horse's skeleton. Pathology therefore is a vital part of our discourse

## 2 Parasites and Skin Diseases

here; anyone who has an interest in horses and responsibility for their welfare will be better for an understanding of pathology, and more able to understand the wider practical effects of a given disease.

This book is, then, organised in a way that should make most sense to such a reader. It is not the way in which parasites and skin diseases are dealt with in professional literature, but that need not be of concern. Any reader who digests the contents of this book and wants more information might well be ready to tackle the complexities of specialist professional texts. In order to help the reader with the more technical terms, a glossary is included at the end of the book.

A parasite is a living organism that lives upon or within another living organism from whence it ekes its existence. Its affect on the host varies but may occur directly through invasion of tissues, or through the ingestion of blood as the redworm does. Mange mites live on surface cells, some even burrowing within the skin. Some parasites live within the bowel, in the lumen (centre of the tract) unattached, obtaining their food from the bowel contents.

Parasites that exist within the animal are called endoparasites. Those that live on the skin are called ectoparasites.

The animal that supports the parasite is referred to as the host. In this book, the host in all cases is the horse and we will at times distinguish between the influence parasites have on horses at different stages of growth.

In the main we are dealing with helminth parasites among which are the common worms (divided into nematodes, cestodes and trematodes) of the horse's bowel and arthropod parasites (ticks, mites, lice and flies).

Many parasites are what is known as 'host-specific', meaning they confine themselves to a single species. Others are not and can be found in different animals. It is evident that a worm which is common to cattle, sheep and horses would therefore have a special significance where each of these species were grazed on the same piece of land.

Each parasite has a specific location within a host where it is most commonly found – called a predilection site – and which may play a part in the technical naming of the parasite. Needless to say parasitic infestation may cause interference with the horse's body defences and thus pave the way for secondary infection with bacteria and viruses. A further problem (associated mainly with ectoparasites) is the ability of some parasites to transmit disease (e.g. encephalitis virus and swamp fever, transmitted by biting flies and mosquitoes; human malaria is a protozoan disease, transmitted by mosquitoes).

Other factors which may influence disease are the age of the host and physical condition, also matters like season, climate, geographic location, and so on. Internal worm burdens have a more insidious effect in cold, wet conditions and external parasites may irritate most in warmer weather.

Climatic factors also dictate the manner in which parasites survive outside the host. Most endoparasites lay eggs which pass onto pasture in the faeces. These may hatch into larvae which are ingested by the next host. The capacity of larvae to survive externally is influenced by heat and cold, the quality of the pasture, exposure to sunlight, and so on. Because of this life cycle, horses which are stabled are less likely to encounter parasites than when kept at grass. However, parasitic risk is not completely eliminated by stabling, and stable hygiene is important in preventing spread of disease.

Of course, very few infections are caused by a single parasite. The type and number involved may vary, and there may be external and internal parasites occurring at the same time. This, naturally, will influence the effect on the host. The most important aspect of all this is the daily influence parasites have on management. What are the risks of your horse being affected by diseases which are not altogether evident on the surface? How can you recognise a worm infection? What is the life cycle? What is the prevention? What is the treatment?

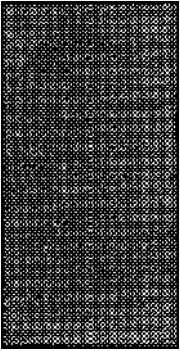
Horses, being animals which are kept for pleasure, not food, suffer because research on their diseases is often deemed uneconomical. We must rely therefore to some extent on information from other sources, like research into cattle and sheep diseases. Yet this does not reduce the value of the information as long as it is understood that principles applying to parasitic infection in general may be diluted in certain circumstances because of the nature of the horse. The horse owner is, of course, more interested in bone development, or diseases of bone that may ensue from nutritional problems. He or she is also interested in weight gain, in the full, normal physical development of an athletic animal; of its ability to perform, to stand up to training and to carry weight. But our primary interest must be in the soundness of our horses, not weight gain *per se*. We simply wish for the animal to reach its natural potential without due hindrance.

Skin diseases are also complex and have a variety of causes besides external parasites. For example, modern medicine recognises such diverse causes as infection, diet, contact with irritant or allergenic substances, allergies, hereditary and auto-immune disease. Each of these are dealt

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with in some detail in this book, hopefully thus making it easier for the reader to understand and recognise the different expressions of skin disease. There is a great deal that horse owners themselves can do to minimise the problems related to them.

In a book combining these two subjects, parasites and skin diseases, it is inevitable that there might be some duplication or variation from an ideal line. For example, the botfly parasitises the horse's stomach in its larval stages; the warble fly, when it affects horses, is most significant when a developing larva appears under the skin of the back. In this book, both are included with other conditions caused by flies, and are therefore treated as external parasites. The reader should not suffer on that account.



## Glossary

abrasion	skin graze, as with rope burn, grazed knee
abscess	cavity filled with pus
acaridiasis	infestation with ticks or mites
acne	skin condition marked by pustules
albinism	inherited absence of pigment in hair, skin and eyes
allergen	substance capable of causing allergy
allergy	hypersensitivity to an antigen
allergic	
dermatitis	skin inflammation caused by allergy
allergic	
urticaria	hives, of allergic origin
alopecia	hair loss
alopecia areata	focal patches of alopecia
anaemia	lowered red blood cells and/or haemoglobin
aneurysm	dilatation of blood vessel wall
angioedema	condition marked by painless swellings under the skin and mucous membranes
anhidrosis	chronic dry coat
annular lesion	ring-shaped or circular lesion
antenna	head appendage of arthropod
antibiotic	chemical that inhibits or kills bacteria
antibody	body defence, produced by lymphocyte cells
antigen	causes antibody production (virus, bacterium, etc.)
antiseptic	inhibits or destroys organisms
aplasia cutis	hereditary absence of skin (as epitheliogenesis imperfecta)
arthropod	family that includes arachnids and insects
atheroma	cyst containing porridge-like exudate
aural plaque	ear lesion, raised and circumscribed, said to be form of papillomatosis

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autoantibody	antibody against animal's own tissues
autogenous	derived from same animal; autogenous vaccine is produced from organisms taken from an affected animal
autoimmune	antibodies produced against own tissues
basal cell tumour	rare, benign tumour of skin
<i>Basidiobolus</i>	
<i>haptosporus</i>	cause of fungal skin disease
biopsy	sample from living tissue for diagnostic purposes
blowfly strike	invasion of skin by blowfly larvae
bulla	large blister
bullous	
pemphigoid	autoimmune skin disease
burn	tissue injury resulting from heat, cold, chemicals, etc.
bursa	fluid-filled sac often between bone and tendon/muscle (false bursa – forms on the knee, etc., as a result of injury; spinous bursitis – fistulous withers)
calcinosis	
<i>circumscripta</i>	localised nodule of calcium
callus	local thickening of skin due to friction, etc.
<i>Candida</i>	fungal organism that may be associated with disease
Canadian	
horsepox	pustular skin disease
cellulitis	inflammatory reaction spreading beneath the skin
cercaria	larval stage of liver fluke
<i>Cestoda</i>	class to which tapeworms belong
chemotherapy	treatment by chemical substances or drugs
<i>Coccidia</i>	protozoan cause of enteric disease
coital exanthema	viral venereal disease
colic	pain of abdominal origin
collagen	structural protein of white fibres of skin, etc.
complement	a body defensive substance
congenital	a mark or condition present at birth
<i>Conidiobolus</i>	
<i>coronatus</i>	fungal infection of nasal cavities.
crust	dried skin exudate
cryosurgery	surgery by freezing, either with dry ice (liquid nitrogen) or carbon dioxide
cutaneous	
habronemiasis	<i>see</i> habronemiasis
cutis	the skin
cytology	diagnostic examination of cells
decubital ulcer	skin ulcer due to lying down
depigmentation	loss of colour from skin
dermatology	study of skin disease

<i>Dermatophilus</i>	bacterial cause of rain scald and greasy heel
dermatophyte	organism that causes fungal infection of skin
dermis	skin area between epidermis and fat layers
dermoid cyst	hereditary lesion often seen on skin
dorsal shield	plate or scutum on hard ticks
eczema	inflammation of the outer skin layer
electrosurgery	surgery by use of an electric current
embolus	clot in blood, blocking artery (usually part of thrombus)
emollient	agent that soothes irritation
endocrinology	study of hormones
eosinophil	a type of white blood cell
eosinophilic granuloma	subcutaneous nodules containing eosinophils
epidermal collarette	circular epidermal lesion
epidermis	outer layer of skin
epitheliogenesis imperfecta	<i>see</i> aplasia cutis
erosion	a shallow surface skin lesion
erythema	redness of skin
erythema multiforme	immune complex disease with annular lesions
erythroderma	redness of skin over wide area
EVA	equine viral arteritis
excoriation	superficial graze, as from scratching
exfoliate	to shed
exfoliative dermatitis	increased skin scaling
exudate	discharge like pus or serum
fibroma	benign fibrous tissue tumour
fibrosarcoma	malignant fibrous tissue tumour
fissure	skin crack
fistula	open skin tract, possibly from deep infection
folliculitis	inflammation of hair follicles
fomes (fomites)	inanimate object capable of spreading infection
furunculosis	skin boils
gangrene	death of body tissue with invasion by saprophytic bacteria (dry gangrene occurs with arterial damage at peripheral sites, such as the ear; gas gangrene infection caused by anerobic organisms; moist gangrene caused by loss of blood supply, as in torsion)
granuloma	tumour-like mass of granulation tissue
guard hairs	long hairs of body coat
habronemiasis	disease caused by <i>Habronema</i> species (also called summer

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	sores, bursatii, swamp cancer, kunkers, esponja and granular dermatitis)
haematoma	subcutaneous swelling consisting of blood
haemangioma	benign tumour of blood vessels
helminth	parasitic worm
hereditary	genetically transmitted trait
hirsutism	hairy state
histology	microscopic study of tissue
histopathology	microscopic study of abnormal tissue
histoplasmosis	fungal infection with primary focus in lungs (also cause of epizootic lymphangitis, pseudoglanders or African farcy)
horsepox	a benign disease caused by a poxvirus.
hyperhydrosis	excessive sweating, often seen after prostaglandin injection
hyperkeratosis	hypertrophy of skin horny layer
hypertrichosis	hirsutism
hypodermis	subcutis
hypo-	
pigmentation	reduction in normal pigmentation
hypotrichosis	alopecia
hyper-	
pigmentation	increased skin pigmentation
immuno-	
pathology	study of immune diseases
immuno-	
therapy	therapy designed to aid or stimulate immunity
induration	hardening of skin
infection	disease caused by microorganisms or internal parasites
infestation	parasitic disease of the skin
inflammation	tissue reaction to insult or infection
<i>Insecta</i>	class of arthropods
intra-dermal	within the skin
ischaemic	
necrosis	local tissue loss on ears, etc., a symptom of ergot poisoning
keratin	protein of epidermis, etc.
larvicidal	kills larvae
leiomyosarcoma	malignant tumour of smooth muscle
lesion	pathological tissue
leukoderma	depigmentation after injury, etc.
leukotrichia	whitening of hair after injury
lichenification	thickening and folding of the skin
lipoma	a benign tumour of fat
lymphocyte	a white blood cell
lymphoedema	oedema due to lymphatic obstruction
lymphoma	tumour of lymphoid tissue

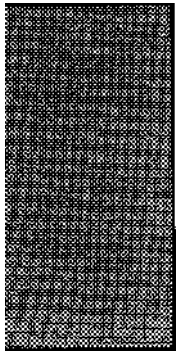


macrophage	scavenger cell of tissue
macule	skin spot
mange	disease caused by mites
mast cell	body defensive cell
mastocytoma	mast cell tumour
melanoma	tumour common in grey horses
melanosarcoma	malignant melanoma
metacercaria	larval stage of liver fluke
metastasis	spread of disease from one organ to another
microfilaria	larval stage of worms like <i>Onchocerca</i> and <i>Setaria</i>
<i>Microsporium</i>	fungus causing ringworm
miracidium	larval stage of liver fluke
molloscum	
contagiosum	skin disease caused by a poxvirus
monocyte	a white blood cell
mycetoma	subcutaneous bacterial or fungal growth
mycosis	disease caused by fungi
myiasis	body invasion by fly larvae
necrosis	process of cell death
<i>Nematoda</i>	roundworm class
neoplasia	growth formation
neoplasm	new growth, usually refers to tumour
neurofibroma	benign tumour of peripheral nerve
neutrophil	a white blood cell
nodule	solid lump of skin
nodular	
necrobiosis	multiple nodules of skin in horse
oedema	fluid accumulation under skin or in body cavity
otoscope	instrument for ear examination
panniculitis	inflammatory condition of subcutaneous fat
papillomatosis	refers to multiple wart growth
papule	small elevation of skin
parasite	organism that lives on another
paresis	partial paralysis, often of hind legs
patch	defined skin lesion
pemphigus	
foliaceus	general scaling disease
phaeohypony-	
cosis	diffuse fungal dermatitis
photodermatitis	condition of skin due to sunlight exposure
photo-	
sensitisation	acquired reaction of skin to sunlight
plaque	large patch
polydypsia	abnormal thirst

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polyphagia	abnormal hunger
polyuria	excessive urination
predilection site	situation parasite lives in/on body
proboscis	sucking mouthpart of insect
prognosis	likely disease outcome
<i>Protozoa</i>	single-cell family of organisms (includes <i>Coccidia</i> )
proud flesh	exuberant wound granulation
pruritis	itchiness
pustule	pimple filled with pus
pyoderma	purulent skin disease
redia	larval stage of liver fluke
reservoir host	animal that acts as source of infection for others, usually without showing signs of disease
resistance	ability to withstand disease, or drug
ringworm	a fungal infection of skin
sarcoid	skin tumour
scale	skin flake
scar	repaired (skin) after wound
schirrous cord	enlargement of spermatic cord after castration
sclerosis	hardening from inflammation
seborrhoea	increase of sebum production with scaling and crusts
sebum	oily product of sebaceous glands
sensitivity	open to disease, or organism susceptible to drug
serpiginous lesion	having wavy outline
serum	fluid part of blood after clotting
sinus	cavity, as in paranasal sinus, or open discharging tract
sitfast	sore on withers caused by saddle
sporotrichosis	fungal skin disease
squamous cell carcinoma	malignant tumour of skin/mucous membrane junction
St John's wort	a plant cause of photodermatitis
strangles	a bacterial disease marked by abscess formation
stratum	layer
stratum corneum	outer layer of the skin
subcutis	layer beneath the skin
subcutaneous emphysema	air or gas under skin
sweet itch	skin disease due to fly bites (also called Queensland itch, dhobie itch, Kasen, summer eczema)
sweat gland adenoma	benign tumour of sweat gland
tardive	late, inherited trait appearing after birth
tetanus	bacterial disease caused by <i>Clostridium tetani</i>

thermo-	
regulation	regulation of body temperature
thrombus	clot within vessel, may include worm larvae
titre	serum level measured against specific entity, like a virus
topical	application of drug, etc., to local skin area
toxin	a poison
<i>Trematoda</i>	parasitic family that includes fluke
<i>Trichophyton</i>	fungal cause of skin disease
trypanosomiasis	protozoan disease caused by <i>Trypanosoma</i> species
tumefaction	a skin swelling
tumour	a mass or swelling, synonymous with neoplasm
thermal injury	burn (including firing marks, cryosurgery)
ulcer	a lesion that penetrates the skin (or other tissues)
ulcerative	
lymphangitis	bacterial infection of lymphatics in lower limbs
unilateral papular	
dermatitis	papules that appear on one side only of horse, cause unknown
urticaria	hives
vellus hairs	smaller hairs of body coat
vesicle	small blister
vibrissae	sensory hairs or whiskers
vittiligo	local loss of skin pigment
wart	papilloma
wheal	urticarial lesion
zoonosis	disease transmitted from animal to man
zygomycosis	fungal skin disease



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Fungal skin diseases usually occur in puppies. Hair loss and skin lesions are common symptoms of such infection. If it is left untreated for too long, it extends and the symptoms get worse. This type of infection may occur anywhere on your dog's body and it requires medical treatment. Since puppies are more vulnerable than adult dogs, you should pay extra attention to any change that occurs in their behavior or on their bodies. All these parasites can infect your pet with various diseases that they carry. If your dog starts scratching more than usual and it has different rashes or bumps on its body, then you should take it to the vet as soon as possible. Most treatments against parasites consist in ointments that are applied externally. Allergic reactions.