

Parasites Of Horses

By L. W. Dewhirst

It is quite likely that all animals have parasites at some time during their life. Horses are no exception.

Almost every horse owner has heard and frequently uses names such as "blood worms, ascarids, and bots." These common names refer to three of the most damaging parasites found in horses. A knowledge of their life cycle is important in helping the owner prevent infections and to realize the damage that they can cause.

Blood worms are also referred to as strongyles, because some of them belong to a genus of roundworm parasites given the name of *Strongylus*. Many of them lacerate or cut the intestinal wall where they reside and blood flows into their mouth — hence the name blood worm. Eggs are produced by these worms, which pass out of the horse's body with the manure. Within several days, microscopic larvae develop within the eggs and then hatch.

Waiting For a Hungry Horse

These first stage larvae feed on organic material as they grow. Several days later they change slightly, so they no longer are capable of feeding. At

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this time they are infective to another horse. They move up and down on the grass, being found on the tips of the grass at times when there is adequate moisture present, such as early in the morning. At other times they may migrate down to the base of plants, or even enter into the soil.

Once the larvae have reached the infective stage they are extremely resistant to detrimental effects of the environment. Even though they can no longer feed, it is quite likely that large numbers of them can survive for several months, and some may live as long as a year on the grass.

A horse becomes infected by grazing in a contaminated pasture and consuming grass which bears infective larvae. These larvae pass through the stomach of the horse until they reach the intestine and then penetrate into the intestinal wall.

There Are Variations

Some kinds of blood worm larvae develop slightly in the wall of the intestine and then return to the lumen of the intestine where they grow to adult worms. Others migrate into some of the intestinal blood vessels. These larvae irritate the wall of the blood vessels so that eventually the vessel becomes considerably enlarged. The blood supply to that part of the intestine is diminished and the horse may suffer from digestive upsets such as colic. Eventually many of these larvae return to the intestine, where they, too, grow to adult worms.

Ascarids are also roundworms, but they are much larger than blood worms. Adult ascarids live in the small intestine. They do not feed on blood but they do compete with the horse for the food in the intestine. Due to their large size they can, if present in large numbers, impede the movement of food through the intestine. The female ascarid produces eggs which pass out with the fecal material.

Unlike the blood worm eggs, those of ascarids do not hatch out on the ground. A larva develops within the egg, and it lies dormant until another horse happens to swallow it, when

IN THREE PHOTOS above, left to right, are shown **Blood Worms, Ascarids and Bots**. The one cent piece in each photo gives an idea of size.

fecal contamination of feed or water occurs. The eggs are extremely resistant to detrimental effects of the environment. It has been shown that the larvae within the eggs can, in some cases, live for four years in the soil.

Go to Various Organs

Once the eggs are swallowed by the horse, they pass down to the intestine, where the larvae hatch. The larvae then penetrate into the intestinal wall. They are picked up by the blood and are carried to the liver, through which they migrate, and then to the heart and lungs. In the lungs they break out into the air passages, migrate up to the back of the throat where they are again swallowed and pass through the stomach to the intestine, where they grow to adult worms. In addition to the damage they cause as adults, ascarids inflict considerable damage as they follow the migratory cycle just outlined.

Bots are actually fly larvae or a type of "maggot". Adult female bot flies cement their eggs on the hairs of the fore part of the body of the horse. The eggs are visible to the unaided eye, and horse owners frequently inquire as to what they are.

While the process varies slightly depending upon the kind of bot fly involved, the eggs usually hatch when the horse chews or licks itself. Larvae hatching from the eggs attach themselves to the tongue and migrate until they reach the stomach. Once inside the stomach, they fasten themselves to the wall of the stomach and remain there for 8 or 9 months. During this time they increase in size and do considerable damage. Eventually they release their hold on the stomach wall, pass out with the fecal material, penetrate into the soil, pupate, and later emerge as adult flies. The entire cycle takes about a year.

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"Six Faces of Mexico" Distinguished UA Book By Multiple Authorship

An attractive showcase of University of Arizona research and writing is "Six Faces of Mexico," published by the University of Arizona Press. Seven members of the U of A faculty have collaborated in the beautiful and intensely interesting volume, describing the historical backgrounds, social mores, geography, government, economy, art and literature of this great republic, neighbor to Arizona.

Dr. Russell C. Ewing, head of the UA History Department, edited the volume and wrote the lead portion, "Major Historical Themes." Other "faces" of Mexico are "Ways of Life," by Dr. Edward H. Spicer, widely known and highly regarded professor

of Anthropology here; "Land, Man and Time," by Dr. David A. Henderson of the Geography Department; "Developing Democracy," by Dr. Paul Kelso of Department of Government; and "An Economy of Contrasts," by Drs. George F. Leaming and Walter H. Delaplane, which covers agriculture, forestry, natural resources, manufacturing, utilities, commerce and finance. Dr. Leaming is with the UA Division of Economic and Business Research, while Dr. Delaplane is a vice president of the University.

Last of the "six faces" is "Legacy of Literature and the Arts," by Dr. Renato Rosaldo, head of the UA Department of Romance Languages. Dr. Rosaldo, a Mexican by birth, has taught at state universities in six U. S. states.

If one would fault this beautiful and delightful volume, it must be the

paucity of attention paid to the most dominant face of all — agriculture. From one-fourth to half of the Republic's gross national product comes from agriculture, and it supports nearly two-thirds of the population.

Yet agriculture, linked in one chapter with manufacturing, utilities, commerce, fishing, finance, forestry and natural resources, is given scant notice.

El interes en el contenido en energía de la ración ha significado mucho para la industria del pollo de asar. Alimentos con alto grado de energía son más eficientes si están balanceados respecto a otros factores nutritivos.

Dictatorship is like a great pine tree — impressive to look at, but nothing grows under it.

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Manure Census

Since blood worms and ascarids produce eggs, these can be detected in the feces. The number of eggs in the manure is roughly related to the number of worms producing them. It then follows that it is possible to obtain a quantitative estimate of a worm burden. This value is usually related to a gram of feces and is called an egg per gram (EPG) count. Probably there is no point at which one can say a specific EPG count is indicative of damage and that another one is not. It is more realistic to use it as a single factor upon which to base a decision to treat or not to treat.

Consider Many Factors

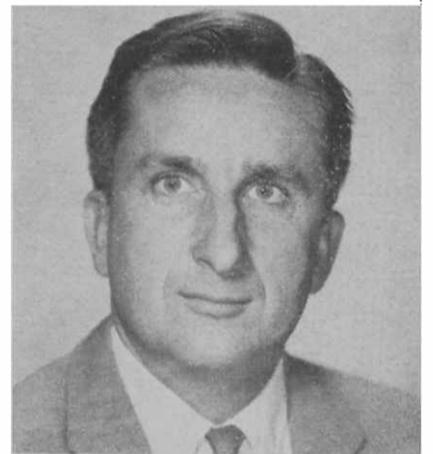
Trained personnel such as veterinarians also take the care and feed of the animal, the general appearance, and its environment into consideration. If the animal is losing weight, has a rough hair coat and has a high EPG count, treatment will usually be recommended.

Treatment materials are frequently quite poisonous. Since an owner wants to kill one or more animals (worms) and not the other (horse), he would be wise to use caution. Whether or not he actually administers the material himself, it is always wise to consult a veterinarian. He is trained to take counter measures if something should go wrong.

Sanitation is undoubtedly the cheapest and most effective measure that the horse owner can put into effect. Less difficulty will be encountered with worm parasites as fecal contamination of feed and water is reduced.

Busch Heads Soil Conservation Society

Dr. Charles D. Busch, (right) associate professor in the U of A Department of Agricultural Engineering, is new president of the Arizona Chapter, Soil Conservation Society of America. At the December election meeting at Phoenix, members heard an address by Dr. Keith Watson from the University of New South Wales, Sidney, Australia. He gave an illustrated talk on water and related land resources of Australia.



Serving with Dr. Busch this year are Ray Bates, (left, above) secretary-treasurer, who is with the SCS state office in Phoenix, and Steve Faltis (right, above), vice president and state executive director of the ASCS in Phoenix.

In the center, in photo above, is Robert Moore, a Salt River Project hydrologist and outgoing president of the state Soil Conservation Society.

The society, according to our correspondent, "Danny" Freeman of SCS, is made up of professional and non-professional people banded together to foster the art and science of wise land use.

Nationally the society has over 11,000 members, while the Arizona chapter has 130. Quarterly meetings are alternated between Tucson and Phoenix.