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Pack-Mules In Burma

P. E. Smith, D.V.M.

Pack animal units served in Italy and France during the war, but I have been told that Burma was the only theater of operation where pack animals were used almost exclusively for ground transportation in the combat zone. On the mountain trails and in combat we were limited to the incongruous combination of mule and air transport.

Our mules were shipped from New Orleans to take the Atlantic route, and after some 2 months at sea they arrived in Calcutta. From Calcutta they went by rail to Ledo, which took about 20 days with only one detrainment for exercise. Despite their treatment, the mules arrived at our advance base in Ledo in very good shape and with an extremely low mortality rate. After a few days of shoeing, fitting saddles, and distributing loads, we were ready to set out on our series of missions whereby we would ultimately reach our goal of Myitkyina, Burma. One out of 3 infantrymen was assigned a mule to lead, and each man in the pack troops had a mule. Our strength at the start of the campaign was about 300 mules per battalion, with 3 battalions in the unit. One veterinarian and 4 aid men were assigned to each battalion.

Fortunately for the veterinary detachment, the infantrymen, inexperienced in handling mules, soon were taking pride in the accomplishments of their animals. They saw to it that cinches were not too tight, that their animals were fed and watered and allowed to graze whenever time permitted. Then too, the packmasters in each unit soon became the pride of the men. When they could, packmasters together with the veterinary officer or an

aid man, walked back and forth along the column of their troops, constantly looking for maladjusted loads, cinches too tight or too loose, breast harness or breeching incorrectly adjusted and other trouble makers.

Our supplies were brought to us every 3 to 5 days by C-47 cargo planes. All fragile equipment and supplies were dropped by parachute. Grain for the mules was always free dropped. From 6 to 8 double burlap bags were pushed out of the planes at a time. Mule loads varied a little each day as rations for men and mules were consumed or new supplies were added. The loads varied, and because of the awkward shapes, sizes, weights and hurried loading, there were mules and muleskinners falling out of the column from time to time for readjustment of loads. A loose or unbalanced pack made back sores and unnecessarily tired the mule. Sometimes part of a load would fall loose and scare the mule who would take off through the jungle dragging a tenacious soldier who was determined to stop him. Invariably one of these runaways meant trouble for the veterinary detachment in the form of rope burns, cuts, bruises and occasionally a bad sprain or strain.

When we hit mountainous terrain our troubles really began. Prior to this time, our rest periods had been taken on fairly level ground so that loads would not strain the mules' backs, but this principle had to be forgotten on long slopes where the trail was often so narrow that the mules could not even be turned sideways for relief. Water alone became the determining factor in selecting a bivouac area.

If there were small grazing patches, bamboo or elephant grass to cut for the mules, the area was perfect. Advance parties to select an area would try to find one of the scarce streams a reasonable distance from the last bivouac area. Some days 3 miles was a long, tough march. Other times 8 to 10 miles could be made. The necessity for water points made some marches longer than they should have been, and others shorter.

The average day's march was planned to end as soon as possible after 3:00 p.m., so that the mules could be unloaded to rest in the afternoon. Mule loading usually started at 6:30 a.m., and the march started at 7 a.m. I have seen the end of the column pull into their bivouac areas after dark, a good 12 hours of ups-and-downs behind them. The mules had carried their loads the entire time, perhaps without water since early morning, and with no promise of anything green that night.

Mule Stories

Every day had its mule story, but on one particular day, one of the more dramatic episodes featuring these faithful beasts of burden was enacted. The serial was following one of the narrow trails cut in the side of a mountain; the moving column didn't improve the safety for those behind. Some 180 ft. below, ran a creek in a deep ravine. Along came one of the mules loaded down with a good 180 pounds of chests and top load. The narrow ledge gave way under him. On the slope of 60 degrees, there was no hope for a footing as gravity took its natural course, and the mule rolled, not easily nor gently, but head over heels with increasing momentum for 150 ft. until he jammed between two trees. The top load jolted loose, the chests burst open, records and supplies littered the path the mule had battered through the jungle. We cut the cinches holding the pack saddle which was keeping the mule jammed between the trees. As he was cut loose, he fell the remaining 30 ft. all but straight down into the shallow creek, landing on his back. It was then that a mule's paternal inheritance and G. I. training showed forth. He calmly

rolled over, got up, and started eating leaves off the bamboo overhanging the stream.

Salvage Project

Before the entire serial had passed this particular spot, we had 8 live mules and 5 dead ones down in the ravine. We really had a worth while salvage project: 8 good mules whose f.o.b. Burma value was something over \$2,000 each. Dollar value, however, meant little where they were. Human replacements could be flown in by liaison planes, when there was enough rice paddy field space, but not mules. They were the only means of ground transportation for guns, ammunition, medical supplies, feed, and other supplies. With entrenching shovels, the men cut a set of stair steps $\frac{1}{2}$ mile long over which the mules were led back to the trail.

After some $3\frac{1}{2}$ months of walking down jungle trails which took us through valleys, across rivers, up and down mountains and brought us into 15 minor skirmishes and 4 major battles, we arrived at our destination, Myitkyina, Burma. The air strip at Myitkyina was over 900 miles by ground travel from where we started.

We reached there with about 50 less mules than when we began the campaign. Our losses were due to varied causes. We lost quite a number of animals from enemy artillery and mortar fire. Accidental deaths, particularly through the mountains, also accounted for many of the mules. General emaciation and exhaustion was another big factor accounting for our losses. As yet, we had been very fortunate in that we had not encountered any infectious or contagious diseases. Our work had been primarily with saddle galls, rope burns, lacerations, laminitis, and some bloating; the biggest problem was screw worms. Every scratch or leech bite, any abrasion even very minute, had to be painted thoroughly with pine tar or it would become infested with screw worms. Several different times when mules were brought to us with a severe standing leg lameness, we discovered the entire frog undermined

with screw worms. Quite often sheaths of geldings would become infested and occasionally even the glans penis.

We had several animals brought to us which showed a severe swelling of the soft structure of the hard palate. It would extend down as much a $\frac{1}{2}$ in. below the upper incisors. We were feeding a mixed grain of barley and gram. Gram appeared to be quite similar to very hard, dry peas, and we believed it to be the cause of the swellings. At any rate, on the first 3 or 4 animals brought to us, we incised these swellings in several places but in a few days they were back. We finally resorted to removing the soft tissue posterior to the incisors two bars. We controlled the hemorrhage by giving the animal a nose bag full of grain immediately following the operation. This operation proved to be the answer to the problem.

Our experience with infectious diseases was limited to surra. Doctor Frank J. Linn, of Sheffield, Iowa, formerly with the Chinese 1st Army in Burma, related to me some of his experiences with this disease and others in the Chinese animals, as follows: surra caused more loss than any of the other diseases in the Chinese animals. The incidence of infection ranged from 5 to 35 percent in different divisions.

Surra

The causative organism of surra is *Trypanosoma evansi* which is easily detected by a direct smear of fresh blood under the low or high power lens of a microscope. The usual procedure was to examine a slide under low power until motion is detected among the blood cells, and then examine that point under the high power. This would usually reveal the trypanosome which on the unstained slide is visible by the refraction of light through certain parts of its body so that it resembled a very minute filaria. The incubation period of surra is said to be from 4 to 14 days. There is an initial temperature rise of several degrees the first 24 to 36 hours, then a gradual fall back to normal. The animal shows a marked depression, and

may show an edema of the underline and lower extremities. One of the earliest visible signs of infection is an icterus noticeable in the mucosae and the eyes where small hemorrhages also appear. After several days, the animal regains normalcy, only to have the symptoms repeated in several weeks with gradual emaciation and death. The disease, if left to run its course, would end in death within a period of several days to several months. The trypanosome is spread by biting flies and other insect vectors, so smudges were kept burning in the stable areas, and refuse kept removed insofar as possible. Animals were stabled on high ground and all brush was removed from within and around the area. Cattle and dogs were reservoirs for the causative organism, so any animals near the stable areas were blood tested. Insect repellants were used when they were available. Some units used prophylactic treatments of ampytrol.

Treatment

Ampytrol is an arsenical developed by the British for intravenous injection in the treatment and prophylaxis of surra. It was administered at the rate of 0.3 gram per 100 lbs. of body weight. The weight of animals was estimated with a measuring tape much like the old cattle weight measuring tape used in this country. The ampytrol was furnished in powder form and mixed with water that had been boiled, and then injected slowly. The early treatments resulted in many sloughs and formation of cold abscesses. These were found not only at the site of injection but also around the shoulders, croup and legs. Calcium lactate was then added to help prevent shock and sloughing subsided considerably. This treatment was continued at intervals of several days as long as symptoms of the disease persisted. Some units used ampytrol in the above dosage at 30 day intervals as prophylaxis. However, due to the systemic reactions encountered, our particular unit did not follow this practice. On post mortem, animals with surra showed a generalized ic-

terus with sero-gelatinous infiltrations of the body walls.

Several cases of piroplasmosis were diagnosed, but its prevalence was not sufficient to cause alarm. The symptoms observed in these animals were surprisingly like those of surra, but with less cachexia. It was differentiated by microscopic examination of stained blood smears. Piroplasma can be seen inside the red blood cells. This disease, also spread by insect bites, was controlled by picketing the animals in cleared areas and keeping these areas as clean as possible. Smudges were also used extensively. Treatment consisted of arsenicals injected intravenously.

Filariasis

Filariasis was encountered frequently. *Filaria sanguinis equi*, the causative organism, was described by Lingard, in India, in 1906, but little seems to be known about this organism. New animals added to an infected area are slow to contract the disease. When the disease is contracted there is a progressive cachexia and a voracious appetite. Animals will stand and eat hay for hours at a time without moving from their tracks. In the later stages the extremities become edematous and the animal shows a marked depression. Diagnosis is confirmed by finding the filaria in fresh blood. Dr. R. W. Davis of Colorado State studied the filaria quite extensively; he used a hanging drop for examination. The organism seems quite temperamental and disappears from the blood stream at times for no apparent reason. They appear to be more prevalent in the blood stream in the evenings than during the day. Many cases were diagnosed when fresh blood smears were being examined for the presence of surra. No treatment was found effective. Dr. Davis, using arsenicals, made the filaria disappear from the blood stream, but only temporarily.

Epizootic lymphangitis was observed only once in ponies used by the Chinese in the first retreat from Burma. These ponies showed an incidence of over 50 per cent infected when they arrived in India. Quarantine and destruction of infected

animals was the only means of control. When these animals were observed, the extremities and shoulders were covered with purulent ulcers and cicatrices of previous ulcers. The frequency of primary infection of the limbs is due to infection from the straw and feces, in which the organism, *Cryptococcus farciminosus*, may remain alive for long periods of time. The lymphatics of the infected areas were enlarged and beaded. The animals were in comparatively good flesh despite the extent of their lesions.

Anthrax losses were small, probably due to the fact that all animals were vaccinated at intervals of 6 months with a bacterin produced at Mukketwar Veterinary College in India.

Glanders was much less prevalent in Burma than in China. I was told that the probable reason was that the economic value would not permit an animal to be destroyed in China, despite the known infection. All animals were mallein tested at least every 6 months with very few reactions being found. However, 2 animals captured from the Japanese at one point were infected to an extreme degree. One showed an advanced infection of the nasal type, and the other with a large number of farcy buds particularly on the hind quarters.

Tetanus Unknown To Chinese Veterinarians

Tetanus is mentioned only for its surprising absence. No animals were given antitoxin or toxoid, yet animals received gunshot wounds and other puncture wounds through fleshy parts of the body with never a symptom appearing. Graduates of Chinese Veterinary Colleges professed never to have seen a case.

The mules used so successfully in the Burma campaign were driven on toward Kunming, China after hostilities ceased in Burma. Before they reached their destination, surra had started taking its toll, but those loyal beasts of burden had performed their duties well.