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THE CAMEL:

ITS INTRODUCTION AND ACCLIMATION IN THE UNITED STATES BY
MAJOR HENRY C. WAYNE, U. S. A., FOR ARMY TRANSPORTATION
PURPOSES IN TEXAS AND ADJACENT TERRITORIES.

BY MAJOR SIDNEY HERBERT.

[From The Southern Cultivator and Dixie Farmer for May.]

A news telegram to the Southern press, dated Baltimore, April 14th, announcing that great interest was manifested in the birth of an infant camel in Forepaugh's menagerie, follows upon the heel of a paragraph which refers to the introduction of camels into this country, as beasts of burden, some few years before the late war.

The paragraph referred to states that a movement is on foot to renew the experiment, if it may still be called an experiment, and bring into general use, in the mountainous regions of the far West, the camel as a beast of burden.

Now that the subject of camels is before the public, and a proposition is being considered to secure further importations of these useful animals into the United States, it may not be uninteresting to the readers of the SOUTHERN CULTIVATOR to know something of the origin and results of the first experiment of introducing camels into this country for transportation purposes.

ORIGIN OF THE EXPERIMENT.

Under the treaty of Gaudalupe Hidalgo, in February, 1848, which closed the war with

Mexico, the United States acquired Upper California and the whole of New Mexico for the equivalent of fifteen millions of dollars, and thereby became possessed of vast territory, which, in connection with our claims bordering on British America, and known as Oregon, extended from 32° to 49° north latitude, and from the Atlantic ocean to the Pacific coast.

Most of this country was *terra incognita*, unexplored, or, at most, only so meagerly described as to be somewhat mythical in its character and resources. But enough was known of it to establish the fact that it contained vast plains without water or herbage, and almost without vegetation of any kind, except the worthless wild sage, that no species of live stock could eat. It was also known that in many parts there were large districts likewise without water or grass, over which men, horses and cattle could not travel without injury to their feet and hoofs, and danger of starvation.

At that early period of our country railroads were "few and far between," and were confined mostly to great centres of population. It would have been considered a dar-

ing thing in those days to construct a railroad through a long stretch of undeveloped country for the purpose of connecting two widely separated centres of population. California and all that section of country could be reached overland only by laborious, expensive, tedious, and, sometimes, dangerous journeys in wagons drawn by horses, mules or oxen. And yet tides of immigration were thus early turned in that direction, which suggested that some provision should be made for a safer and better means of transportation.

In the protection of immigrants moving into this wild country, the government of the United States was compelled to establish and keep up stationary military posts and moving detachments, for which all the supplies of food, forage, clothing, equipment, building materials for quarters, and, in some instances, even the fuel used for cooking purposes, had to be slowly and expensively transported by army wagons from Fort Leavenworth or St. Louis to Fort ~~Wentz~~ ^{Wentz} or Fort Laramie, or Salt Lake City and Santa Fe, or from Indianola to San Antonio and the western and southern confines of Texas, and to South New Mexico and Arizona, and posts in that region.

The expense of this laborious service, although our army was then small, was so great that Congress, in considering the Quartermaster-General's estimates for its continuance, discussed the subject in a vigorous, and not at all times sensible, manner, the opponents of the administration charging that the method was an extravagant one. Of course these debates led to the practical question: "How can the expense of this kind of transportation be reduced?" Plan after plan was suggested in the War Department, yet without the desired success, and still the question was repeated and the subject discussed in both congressional and army circles.

A SKETCH OF THE ORIGINATORS.

In the midst of all this discussion, it appears that Col. George H. Crosman, then Deputy Quartermaster-General of the army, in a letter to Major Henry C. Wayne, of the Quartermaster-General's department, suggested the introduction and use of camels as an efficient means of transportation on the frontier, and asked that officer to give the suggestion due consideration, and report the

main points of his conclusions on the subject.

Col. Crosman was a native of Massachusetts, and graduated at West Point Military Academy in 1823. As a Lieutenant in the Sixth Infantry, he served on the frontier, and was connected with the Yellowstone Expedition in 1825. Later in his career he was assigned to duty as Commissary and Quartermaster, and during the Florida war of 1836-7 he was the efficient Chief Quartermaster of that department. Capt. Crosman held the same responsible position during the military occupation of Texas, in 1845 and 1846, and was made Major by brevet for gallant conduct at the battle of Palo Alto. As Deputy Quartermaster-General, with rank of Lieutenant-Colonel, he served in the Department of Utah. In 1863 Col. Crosman was promoted to be Assistant Quartermaster-General, and in 1866, being over sixty-two years of age, he was placed on the retired list, with the brevet rank of Major-General, conferred for "faithful and meritorious services" during the late war.

Having seen active and varied service on the frontier as a soldier, and later as a quartermaster, Col. Crosman knew exactly what kind of a country was to be operated in, and the character of the supplies to be transported. He was an accomplished and experienced officer, one whose career in the Quartermaster's Department had been eminently efficient and meritorious. A suggestion from such an officer to a subordinate, even upon a subject of which scarcely anything was known, was worthy of the most respectful consideration. And when Col. Crosman made his suggestion in regard to the importation and use of camels, he wisely addressed it to one of his most capable, efficient and scholarly subordinates, Captain Henry Constantine Wayne, an Assistant Quartermaster, who had won the then high brevet of Major for "gallant and meritorious conduct in the battles of Contreras and Cherubusco," during the Mexican war.

Major Wayne was a native of Georgia, and graduated with high rank at West Point, in the class of 1838, being assigned to the First Artillery, with which he served for several years. He was then ordered to duty as an assistant instructor at the West Point Military Academy, after which he was made assistant to the Quartermaster-General, in for-

Kearney

warding supplies to the army during the Mexican war. Capt. Harry Wayne, as he was then called, was one of the most efficient and popular officers in the service, and worthily won his brevet of Major by his gallantry on the field.

At the close of the war Major Wayne was assigned to duty in the office of the Quartermaster-General at Washington, in charge of the Clothing Bureau, which position he occupied in 1848, the time at which Col. Crosman made his suggestion in regard to the importation of camels. At the close of his connection with this project, in 1858, Major Wayne resumed his connection with the Quartermaster-General's office, where he remained until December 31, 1860, when he resigned and entered the service of his native State. Georgia was one of the first to move in the matter of secession, and Major Wayne's valuable services were speedily secured, and with the rank of Major-General he took an active part in organizing and preparing the State-troops for their movements in the field. He proved himself a most accomplished Adjutant-General, and made a good record in all his operations. He is now a distinguished citizen of Savannah, and frequently uses his cultured pen in the discussion of important public questions.

INAUGURATING THE EXPERIMENT.

Major Wayne replied to Col. Crosman's letter in a somewhat humorous strain, and treated the suggestion with considerable levity. This called forth a response from the Colonel, who evinced much earnestness in his effort to convince the Major that his proposition was a serious one, and entitled to serious consideration. Yet, more to please his superior officer than because of his faith in the success of the proposed plan, Major Wayne promised to give the subject of the camel, and the project of introducing the animal into America, careful and studious consideration, and in due time report the result of his labors and the conclusion reached. This promise, however, was made without "counting the cost" of such a new and novel undertaking, and at the very start Major Wayne found his investigations blocked by many and difficult impediments. His first failure was in finding ready at hand some reliable treatise on the camel. In no library within his reach could he put his hand on any

information of value as to the camel's powers, qualities and habits, as a beast of burden, for service in a foreign land. The most noted writers failed to touch upon this important branch of the subject.

Major Wayne, therefore, set himself to work to gather from all available sources whatever information could in any way be applied to the promotion of the project in view. Every book mentioning the camel was sought out and carefully studied, and the seraps of information thus secured were condensed and consolidated in proper shape for future use.

At that time the Comte de Sartiges was the French Minister at Washington, and having been at an earlier period attached to the French Legation in Persia, he very kindly gave Major Wayne much valuable information about the camel. His residence for several years in their midst enabled the Comte to give reliable and practical information, based upon his own experiences in Persia, in Tartary and in Central Asia generally. The Comte de Sartiges also procured for Major Wayne, from France, a number of valuable pamphlets on the subject under investigation by the most eminent writers of that day. These, with the official reports of British army officers in India, especially such as had served in Afghanistan, and chance observations of intelligent travelers in the East, furnished the Major a stock of camel literature from which to draw the desired information, but it required months of hard work to gather this stock of material and put it in proper shape for practical use.

COL. CROSMAN'S SUGGESTION ENDORSED.

As Major Wayne slowly studiously progressed in his investigations, the force and wisdom of Col. Crosman's suggestion became more clear and manifest, and he felt convinced that if he could get a sufficient number of animals into the United States, the camel would thrive and be as useful in this country as in Asia, the true home of the camel and the field of his greatest usefulness. Having fortified himself with indisputable facts and erushing arguments he prepared a report on the subject which he respectfully laid before the Hon. C. M. Conrad, then Secretary of War, in which he asked for thirty thousand dollars with which to make the experiment of introducing the camel from

Asia and Africa into the United States—no small undertaking when the distances were considered, and that never before had an attempt been made to introduce and acclimate this animal on so large a scale. Secretary Conrad held several interviews with Major Wayne, and after a thorough examination adopted the report, and submitted the matter to Congress, asking an appropriation of thirty thousand dollars to make the proposed experiment.

No sooner was the subject brought to the notice of the public generally than ridicule was heaped upon all who had advocated the experiment. But, fortunately for the projectors of the proposed enterprise, the Hon. George P. Marsh, Ex-Minister to Constantinople, published a small treatise on the camel, and Col. J. Ross Browne, the well-known explorer and author, with others who had lived or traveled in the East, and were thoroughly acquainted with the camel, his habits, capacity and desirability as a beast of burden, promptly came to the defense of the scheme, and the Senate passed the appropriation by a good majority.

Ridicule, however, was more successful in the lower branch of Congress, and despite the endorsement of the eminent authorities quoted and the favorable action of the Senate, the bill was defeated. But Major Wayne and his friends did not become disheartened and abandon the measure. Secretary Conrad was soon after succeeded in office by the Hon. Jefferson Davis, of Mississippi, who graduated at the West Point Military Academy in 1828, and spent several years in service on the frontier, and who knew from experience the importance of the experiment. With his usual energy and earnestness he championed the measure and again brought it to the notice of Congress in 1853 and 1854. The Senate invariably voted the asked for appropriation, but the House, led by a few members who could not comprehend the value of the experiment, as often defeated it.

THE THIRD APPEAL SUCCESSFUL.

The session of 1854-5 was a short one, and on the 3d of March the bill was again lost in the House. Major Wayne, who had been watching its fate with deep anxiety, went home defeated but not despondent, and retired as usual. Between two and three o'clock he was aroused by a call from the

street under his window, which proved to be from his comrade and friend, Gen. Thomas W. Sherman (now deceased) who was then Major of the Third Artillery, who gladly informed him that the House had finally passed the appropriation. Major Wayne expressed doubts as to the correctness of this information, but Major Sherman assured him that through the action of a committee of conference on the army appropriation bill, the camel clause had been re-inserted and passed.

It appears that Major Sherman was somewhat instrumental in securing this reconsideration and favorable action. Passing through the rotunda of the capitol an hour or two after the defeat of the bill, he met Senator James Shields, who was hurrying to a committee of conference on the army bill, and appealed to him to get Wayne's camel appropriation re-instated in the bill. Being friendly to Wayne and his measure, Gen. Shields cheerfully promised to attend to the matter, which he did with his characteristic energy and success. So elated was Major Sherman over the final result that he proceeded to Major Wayne's quarters and aroused him at dead of night to tell him that his half-dozen years spent in patient working and waiting had at last, after many defeats and discouragements, been rewarded with successful results.

As soon as it became generally known that a large appropriation had been made for the purpose of securing and importing camels, scores of applicants for the carrying out of the experiment, besieged the War Department. But Secretary Davis sent for Major Wayne and entrusted the carrying out of the experiment to his well-known skill and energy. The trust was promptly accepted, but not until the Secretary had consented to give the Major the selection of the necessary officers to accompany and aid him in his hazardous expedition. The responsibility of the undertaking was too great to allow him to make any serious mistake in the composition of his corps of assistants, and he, therefore, resisted successfully all attempts to divide the appointing power.

Major Wayne wisely selected Lieut. David D. Porter, of Pennsylvania, (now Admiral Porter) an experienced and trusty officer of the Navy, to take charge of the ocean transportation of the camels. The Navy Depart-

ment granted the use of a vessel, which Lieut. Porter fitted up for the purpose, and selected the necessary corps of naval officers to accompany and assist him in his important part of the great and still doubtful experiment. Major Wayne had given careful thought to the water transportation of the camels to be imported, and desired to entrust that part of the experiment to the sole management of a skilled sailor, one who believed in the success of the project and would enter heart and soul into the details of the enterprise. Without any particular acquaintance with Lieut. Porter, the Major knew his record as a distinguished naval officer, and was satisfied that he was the right man for the responsible position—a man of varied resources and indomitable courage, who grappled hopefully with difficulties when he encountered them, and did not permit himself to be overcome by them, if they were surmountable by human skill and energy.

Major Wayne, after arranging all the matters in which Lieutenant Porter was interested, on May 19, 1855, sailed for England and France, (in advance of the expedition), where he proposed to study the habits and hygiene of the camel, and his management as observed by English and French experiences. In London he received every attention from the authorities, and was encouraged by Prof. Owen, the Currier of England, by the Secretary of the Zoological Society and by all the British army officers he met who had served with camels in India. But in France delay and discouragement met the Major at every step. At a *seance* of the Societe Geographique the Nestor of science, M. Jomard, read a paper he had prepared to prove that the proposed experiment could not succeed. It is worthy of special and honorable mention, however, that after the then doubtful experiment had become a success, and was no longer an experiment, the Societe Imperiale Zoologique d'Aclimatation, with true French chivalry, made the *amende honorable* by voting Major Wayne a first-class gold medal for the successful introduction and acclimation of the camel in the United States.

Nothing daunted by the discouragement met with in France, and firmly convinced that his mission was to be crowned with final success, Major Wayne proceeded on his journey to "Camel land," where active operations were commenced, and on February

15th, 1856, his party sailed from Smyrna with thirty-three camels on board their vessel. Strange as it may appear, they landed thirty-four in good condition at Indianola, on May 14th. Three were lost during the voyage by accidents resulting in death, but the birth of four young camels more than supplied the deficiency. Major Wayne, who had preceded Lieutenant Porter to Europe, was absent five days less than a year, and the entire expense of the first importation was hardly eight thousand dollars. So well pleased was the Secretary of War with the success of this trip, that he allowed a second trip to be made by Lieutenant Porter and Mr. Heap, who left Smyrna on November 18, 1856, with forty-four camels, and landed forty-one in good condition at Indianola, on February 10, 1857, having lost three on the rough, wintry passage of unusual severity. In the meantime Major Wayne had been busily engaged in Texas in the delicate work of acclimating the first cargo. On the arrival of the second importation he found himself in possession of seventy-five choice and well selected camels as the first step in the experiment. It now devolved upon him to make the second step equally as successful by the acclimation and use of these camels for army transportation purposes in Texas and on the frontier generally, a task which he accomplished in a manner that won for him unstinted praise from the scientists of Europe and America, and the hearty commendation of the Secretary of War.

Thus the experiment first suggested by Col. Crozman, was carried out by Major Wayne, who has modestly given great credit for its full success to Lieutenant Porter and his cousin, Mr. G. H. Heap, who was appointed Secretary of the Commission. This gentleman had lived many years in Tunis during his father's consulship, and was quite familiar with the habits, manners, customs and languages of the East, which enabled him to render most valuable service in the selection and purchase of the camels secured, and in other important details.

Such, and very briefly sketched, are some of the leading facts connected with the introduction and acclimation of camels in the United States for army transportation purposes in the frontier territory of the far West. Of the habits, characteristics and uses of the camel, viewed from a critical and practical stand-

point, I am indebted to Major Wayne for the following interesting sketch, which is the substance of an address delivered by him recently before the Georgia Historical Society at Savannah:

KNOWLEDGE OF THE CAMEL.

Although among the domestic animals earliest mentioned in the history of man (see Genesis, Ch. xii: v, 16—"And he entreated Abraham well for her sake: and he had sheep and oxen, and he asses, and men servants, and maid servants, and she asses and camels"), yet from its limited use to a small zone of the earth, but little is known in the world at large of the nature, qualities, diseases and anatomy of the camel, and we find many vague and erroneous ideas in regard to it prevailing, even among those classes generally well informed in Zoology. The limits of "Camel land"—that is, where the camel has been known and used—are said by Johnson in his Physical Atlas, to lie between the 15th and the 52nd degrees of north latitude, and the 15th degree of longitude west of Greenwich to about the 120th degree east of it. The animal then, is not of the torrid zone as is often supposed, but rather of the North temperate. Indeed it suffers as much, if not more from great heat than it does from intense cold.

LIMITS OF "CAMEL LAND."

According to Johnson, "Camel land" embraces, the Canaries, Morocco, Algiers, Tunis, Tripoli, The Great Desert south of these countries, and Egypt, on the continent of Africa: Arabia, Turkey in Asia, Persia, Cabool, Beloochistan, Hindoostan, Burmah, Thibet, Mongolia, a small portion of the southern part of Siberia, and Independent Tartary, in Asia; the Crimea, and a small tract of country around and near Constantinople, in Europe. For two hundred years the camel has existed in Tuscany, not in general use, but on the private estate of the Grand Duke, at Pisa, as we are informed by Graeburg de Hensso, who has written an interesting pamphlet on their introduction into, and use in Tuscany. To this limited portion of the earth has the use of the camel been confined; and though efforts have been made, as stated by several writers, to extend its usefulness to the Western world, even to our own Virginia, as reported by J. Ross Browne in the Patent Office Report, part 2nd

Agriculture, for 1853, p. 61, as early as 1701, they have all proven unsuccessful; either from a want of knowledge of their care, or from neglect, or superstition, or jealousy on the part of those whose peculiar avocations it was thought they would interfere with.

CLASSIFICATION OF THE CAMEL.

The English word *camel* (Latin *camelus*) is without doubt originally derived from the Hebrew *gamel*, or Arabic *djmel* or *djemel*, or *gimel*, meaning, according to Carbuccia, and other writers, "the riches, or the wealth, or the gift of Heaven." Our science has classified the animal into "the camel" or two humped species, and "the dromedary" or one humped groups. This division as Linant Bey justly observes in his "Notes on the Camel," would exclude "the camel" or "gimel" altogether from Africa, and from all of Asia except a small region about Tartary. Yet throughout "Camel land" the one humped animal is universally known as *gimel* or *gamel*, the word *dromedary* or anything like it being entirely unknown. Moreover, the word *dromedary*, from the Greek *dromeus*, meaning "a runner," "a racer," "a courser," is applicable to but one variety of the camel, that devoted to riding purposes, and is only so applied by the Europeans living in the countries where that variety is known and used. The Europeans there, recognize with the natives of Camel land, the generic term of *camel* or *gimel*, and add the word *dromedary* to the Arabic and African terms *delool*, *devideh*, *hagine*, *herie*, etc., to distinguish the particular variety used as the saddle or riding animal, without regard to its blood, whether it be fine or common.

Guided, then, by the actual nomenclature of Camel land rather than by what is apparently an arbitrary and erroneous distinction of our hitherto accepted science, I shall use the word *camel* as generic, including both the two humped and the one humped species which I shall distinguish from each other by the qualification of the countries from which they are said to have originally come, Bactria and Arabia. I shall call the two humped animal "The Bactrian" camel; and the one humped "The Arabian" camel; limiting the term *dromedary* to the saddle or riding variety of the Arabian camel; there being no riding animals, as far as I have been able to ascertain, of the Bactrian species.

The Bactrian Camel 7

This camel is found only on the southern border of Siberia; in a portion of Tartary; and in the Crimea; and is a much heavier built, stouter limbed, and stronger animal than the Arabian. From the difficulty of loading it, because of its two humps, its usefulness as a beast of burden is limited. It is sometimes, however, used for draught, yoked to a wagon as oxen are. Its great value is as a breeder, for crossing the male Bactrian upon the female Arabian, the product being a powerful one humped hybrid, and for this purpose it is kept throughout Asiatic northern "Camel land" as breeding stallions are with us, where it is called *bouhoum* or *bouhour*. It is altogether unknown in Africa; and a Bactrian camel there would be as great a curiosity as it is with us in the United States.

THE ARABIAN CAMEL.

This is the species with which we have particularly to deal. It is found throughout Camel land and furnishes varieties for both burden and riding; and is one of the most useful, if not the most useful, of the domestic animals of the East. Its powers and hardiness vary with climate and breeding, and as a general rule, its strength and endurance are greater the farther north it is found. With the many unmixed varieties of this species may be classed the cross of the Bactrian male upon the Arabian female, before mentioned, and which always follows the mother in the number of its humps. This hybrid known in Persia as the *booghdee*, and in Turkey in Asia, the male as *tiulu* and female as the *maya* is, like the mule, incapacitated from continuing its race, or should it produce, its offspring is but feeble and worthless; but combining, as it does, the power of the Bactrian with the quicker movement of the Arabian, it is peculiarly valuable as an animal of burden.

The name of the different varieties, and of the sexes, of the Arabian camel vary with the dialects of the several countries and provinces in which it is found.

TEMPER.

Meek and docile as the camel is usually represented to be, it will hardly be supposed that many are trained for the arena. Yet so it is; and one of the amusements of Oriental life is contests between *pehlarans* or fighting camels, in which one or the other is general-

ly seriously hurt, and not unfrequently killed by a dislocation of the cervical vertebræ. The females are often vindictive nursing for months the remembrance of an injury which they will promptly resent on the first opportunity to do so; and the males, especially at the rutting season, are rather savage and obstreperous. For these reasons camel drivers always carry, slung over their shoulder, for convenient use, a heavy club of from two to three feet in length.

NATURE AND DISEASES.

The camel belongs to the class of ruminants, and in its general character and diseases resembles more the ox than any other division of animals. Its four stomachs as a ruminant are distinctly recognized, doubt has hitherto existed as to his possession of a fifth attributed to it by some writers, to account for its ability to carry within itself a supply of water to meet the exigencies of desert life. On this point I give briefs of the autopsies made by Dr. S. Allen Engles, U. S. N., on shipboard; and by Dr. Joseph R. Smith, U. S. A., at the camel ranch in Texas; both agreeing with those made by French Medical officers in Algeria.

ANTERIOR WALL OF THE ABDOMEN.

The anterior wall of the abdomen of the camel is much stronger than that of other animals; the white line which divides it into two parts in the middle is very prominent. The muscles of that region cross each other in the most solid manner.

COMPARTMENTS OF THE STOMACH.

The ox has his stomachic apparatus composed of four stomachs; it is the same with the camel; those of the last, although having different and better defined forms, can receive the same names. We will, nevertheless, designate them by their numbers of order.

THE PAUNCH, OR FIRST STOMACH,

Contains a great number of pockets, closed by fibres or longitudinal bridles, which do not communicate with each other; these pockets, or troughs, which give to the interior of that part of the paunch the appearance of a melon with very prominent slices, were filled with from 50 to 60 pounds of grass drowned in a considerable quantity of greenish water, and are more developed than in the paunch of the ox.

THE SECOND STOMACH.

The second stomach of the camel is composed of a number of tendinous bridles forming a great many small cells divided among themselves by the membrane of the stomach; the passage from the second to the third stomach is an opening of about one and one-tenth inches in diameter, formed in a very strong muscular bridle.

THIRD AND FOURTH STOMACHS.

These two stomachs present membranous partitions forming very numerous compartments in the third stomach, which partitions are held by strong bridles of a muscular character, the walls being furnished with thin laminae close together or parallel; whilst in the fourth stomach the interlacing of the blood vessels takes place through simple membranes.

EXISTENCE OF A FIFTH STOMACH.

The appendix to the paunch designated by naturalists under the name of reservoir of water, and which occupies the position of the "bonnet" in the ox, to which, however, it offers a different interior structure, has long been considered by some of them as forming the fifth stomach. This distinction, established wrongfully, between the two parts composing the first stomach, has been abandoned. Other naturalists, renouncing the design of making a special stomach of the appendix to the first stomach, but pre-occupied also with the thought that there ought to be five stomachs in the camel, have counted as a stomach a dilatation of the digestive canal placed at the beginning of the duodenum. We believe this to be equally incorrect. To sum up, by an attentive comparison between the stomachic apparatus of the ox and that of the camel, it appears that the fifth stomach cannot be admitted to exist.

HEALTH AND STRENGTH.

Naturally hardy, the camel will undergo much exposure and fatigue without serious inconvenience; and beyond the ordinary ailments of the ox tribe, it has but two diseases of consequence, the mange, and a violent pneumonitis or inflammation of the lungs, which is apt to carry it off in two or three days. The first proceeds too often from neglect and dirt; the last from exposure to extreme cold, or chilly dampness when overheated.

The camel will wade streams, even up to the hump, but reluctantly, and it is said by many writers to be unable to swim. Mr. Ayrton, (agent for the estates of Il Hamid Pasha, son of the late Viceroy) told me, though, that it can swim. He is the only authority for this assertion I have met with.

The camel belongs also to the class of re-tromigents.

THE HUMP.

This particular characteristic of the camel viewed, when its purpose is understood, in connection with its ability to carry its own supply of water for several days, exhibits one of those wonderful adaptations by the Almighty, of animals to country, that excite our admiration and reverence. Composed of gelatinous fat it contributes a stock of provision that by re-absorption, furnishes the animal with sustenance when the nature of the country, or other unfortunate contingency, deprives it of a supply of food sufficient for its exertions. Stored thus by the wise arrangement of Providence with water and with food to meet, for several days, should necessity or misfortune require them, the exigencies of an arid and unproductive country, the camel has not inaptly been called the "Ship of the Desert." So well is the hump understood in the East, that the condition of the animal is judged of, and its improvement, after a long and severe journey, measured by it. It is not uncommon to see camels come in after long and painful journeys with backs almost as straight as those of cows, exhibiting but little, if any, hump. Beyond this supplying with food by re-absorption, the hump does not seem to be intimately connected with the animal's vitality.

USEFULNESS OF THE CAMEL.

The usefulness of the Bactrian, as far as known to me, has been already mentioned. That of the Arabian will be considered—first, generally; and then separately, as an animal of burden and of the saddle. From its formation, the Arabian camel is calculated for burden, and not for draught, though it is used occasionally for plowing, and has been harnessed by the English in India to their batteries. Its deep chest and strong forelegs enable it to support well a load placed over them; but its narrow loins and long, ungainly hind legs, deprive it of the force necessary for longitudinal strain. Its additional joint, too,

in the hind legs, by which it is enabled to kneel down and take a position particularly suited to the packing of burdens upon its back, and of readily rising with them, indicate unmistakably its especial qualifications for that kind of service. Unfitted by the formation of its nostrils and lungs for violent exertion, its long and regular strides, however, with its capacity for continuous labor, enables it to make extensive journeys in comparatively good time. It is said, and I believe it, that the camel will, in emergency, travel at its regular gait for sixty successive hours without stopping.

Formed for level rather than a broken country, the camel meets, though without inconvenience, a fair amount of mountain and valley, and is not distressed in ascending or descending moderate slopes, though they be long. Those of Asia Minor, Syria, Persia, Cabool, Northern Hindostan and Tartary, for instance, cross in their journeys, continually, ranges of mountains and high hills, and frequently at seasons of the year when they are covered with snow and ice.

THE FOOT OF THE CAMEL,

clothed with a thick, tough skin of true horn, enables it to travel with facility over sand, gravel or stones. It will also stand a tolerable degree of volcanic *aebris*, or rocky soil; and, aided by art, (provided with a shoe of hide, iron shod at the bottom, and which is fastened around the fetlock joints,) it traverses these impediments without difficulty, and also ice and snow. In wet, clayey and muddy soils, the camel moves with embarrassment, as it is apt to slip and slide in it (unless shod), without the ability to gather itself quickly, and is often, it is stated, split up by the straddling of its hind legs, for which there is no cure, death soon following the accident. It should be driven cautiously over them; and the straddling of the hind legs is sometimes prevented by hobbling above the gamble joint.

FLESH OF THE CAMEL.

The flesh of the camel is good for food, resembling beef, and esteemed by many as more delicate and tender. Its resemblance to beef is such that it can be readily imposed for it upon the unsuspecting without detection. Its milk is good to drink, and is not distinguishable from that of cows. I have used it in my tea every morning for some weeks, knowing

it to be camel's milk, without perceiving any difference in color or taste.

The *pile* of the camel, though coarse, is applied to the manufacture of many useful articles, such as carpets, coarse cloths and ropes, but not to any of fine texture, not even to that particular commodity, the desire and pride of the fair sex, the shawl, to which it has falsely given its name, but which is really made from the fine, delicate hair of a particular kind of goat.

FEEDING OF THE CAMEL.

A recommendatory characteristic of the camel is its pasturing upon almost every shrub and plant that grows, even upon the thistle, prickly pear, and other thorny vegetables, thereby reducing materially the cost of providing it with food. A little, besides, thanks to its hump, goes a great way; so that, in comparison with other animals of burden or draught, it requires less provision of forage—an economy at any time, and especially an advantageous arrangement for a journey. The camel can also, in emergency, travel three, four, even seven, days without water or food; and it is serviceable from four to twenty-five years of age.

Barley, wheat, and beans ground, made into a thick paste or dough, with other grains of the East, and cut straw, form the usual nourishment of the camel; to which, in this country, we add oats and corn, both ground; and it takes, also, readily and kindly to good hay (timothy and clover). It takes, however, to the coarser articles of food by preference, as I noticed, and being a ruminant, requires less at a feed than a horse or a mule.

THE BURDEN CAMEL.

The power of the camel for burdens depends upon its stock, and, measurably, upon climate, those of Central Asia being, ordinarily, stronger and more vigorous than those of Africa or India. A very strong camel will carry, for short distances, from about 1,000 to 1,200 pounds. On long journeys the loads for the strongest camels range from 450 to 600 pounds, and of the common kinds, from 300 to 450 pound; and these they will carry from eighteen to thirty miles a day, according to the character of the country, whether broken or level, over which they travel, and moving for the usual daily traveling time of from eight to ten hours. With lighter loads they will travel somewhat faster. The average traveling

oads of camels of different countries and provinces may be stated as follows: of Morocco, Algiers, Tunis and Tripoli, from 300 to 400 pounds; of Egypt, from 350 to 550 pounds; of Syria, Asia Minor, and other portions of Turkey in Asia, of Persia and of Tartary, the strongest, including *loks*, or males, and the hybrid *booghdee*, or *viulus* and *mayas*, from 500 to 600 pounds, and the common stock, including the *arvanas*, or breeding females, from 300 to 450 pounds; of Cabool, Beloochistan, Hindoostan, Burmah, Thibet and Mongolia, from 300 to 400 pounds; around Constantinople, imported into Europe almost altogether from Asia Minor, not bred there, from 300 to 600 pounds, according to quality.

THE RIDING CAMEL OR DROMEDARY.

The capacity of this camel for burden is little, its conformation to qualify it for riding being necessarily lighter, but it compensates by speed for its comparative want of power. The average load for a dromedary ranges from 200 to 350 pounds, and this it will carry continually, traveling from eight to ten hours a day, about fifty miles a day. On emergencies, dromedaries can make from seventy to ninety miles a day, but only for two or three days and over a level country. Instances of greater speed being kept up for several successive days are related, but they are few and far between. Wonderful stories are told by the Arabs of the speed of their *maharis*, *el heries*, *delools*, etc., but they are held by M. Linant de Bellefonds (Linant Bey), chief engineer of roads and bridges in Egypt, to be exaggerations. He told me, though, that he had ridden a dromedary once ninety miles in eleven hours, and had gone twelve miles in forty minutes.

THE PRICES OF CAMELS.

The prices of camels vary, as do those of horses and mules with us, according to stock, size, training, soundness, etc., and range from \$15 to \$1,000. In Egypt, sound burden camels, capable of carrying from 400 to 600 pounds, may be purchased for from \$50 to \$100 and \$130; and dromedaries for from \$45 to \$1,000; common stock, from \$45 to \$150. Blooded animals sell for from \$150 to any fancy price within the limits stated. In Arabia prices are about the same, with perhaps a trifling diminution. In Asia Minor, the prices of burden camels may be set down as follows: Males and *tiulus* and *mayas*, at from \$75 to

\$200; females at from \$50 to \$120, Bactrian breeders at from \$300 to \$600. In Morocco, Algiers, Tunis and Tripoli, the prices of burden camels and of dromedaries are about the same as those of Egypt, in some instances a little lower.

TRAINING OF CAMELS.

The training of camels for burden is begun at four years of age. They are taught to kneel for their loads by raising one of the fore feet and binding a leg in a bent position, when the halter is jerked downward, which brings the animal to his knees, when the other leg is bound, and he is thus compelled to sit. The jerking or bearing down of the halter is accompanied with a peculiar sound of "*khrr*," "*khrr*," "*khrr*," as if hawking to spit, and after a few lessons the camel learns always to kneel when he hears the "*khrr*," and feels the jerk of the halter.

Dromedaries are not broken to riding until they are between two and three years old. To put it off longer would be to risk their becoming restive. The training of a young dromedary is first begun by saddling him for several days without mounting him. When accustomed to the saddle he is then mounted and ridden only at the pace, being constantly kept up to it, and restrained from exceeding it. Afterwards, he is taught to run, and is urged and excited to pass other dromedaries that may run with him. In the first stages of training the dromedary should not be made to lie down, for the rider to mount or dismount but should be mounted standing. Without this precaution a young dromedary will acquire the habit of lying down without orders whenever a little fatigued.

MILITARY USES OF THE CAMEL.

For ages the camel has been used in military operations for artillery and infantry purposes, and for transportation. For a detailed account of "the zembourek" or camel light artillery of Persia, its equipment, armament, and drill, see part iii, page 201—243, inclusive of the Senate Document No. 62, hereafter mentioned.

In the Crimea I was fortunate enough to meet with Colonel McMurdo, Deputy Quartermaster General of British Army, who had been Quartermaster General to General Napier on his expedition against Seinde.

On that expedition the Colonel informed me he had in service about twenty-five thousand camels, and that from his experience he esteemed them highly; so much so, that he had then at Sinope three thousand of them, in addition to those then in use in the Crimea, in readiness for the coming spring campaign. The loads they will carry depend much, he said, upon the service on which they are employed, rapid movements naturally requiring light burdens; but their average loads under favorable circumstances, he stated to be about 600 pounds, and these they will carry easily without pushing, twenty-five to thirty miles a day. He mentioned the interesting fact that during the expedition against Scinde, General Napier organized a most efficient corps of one thousand men mounted upon five hundred dromedaries, two men to each dromedary, the men sitting back to back, one facing the head the other the tail, and both armed with rifles and sabres. The man facing the head was the animal's groom and driver, and the manner of using the corps was as follows: Upon arriving upon the scene of operations the dromedaries were made to kneel "in square," under the charge of their five hundred drivers, forming as it were a base of operations from which the other five hundred men acted as light infantry. As the advanced body moved the square, or squares, if more than one was formed, were also moved if required to do so; in case of extremity the square offered a cover under which the one thousand men could find comparative shelter behind the animals, who were prevented from rising by a hopple on the fore leg, and used their rifles most effectively. This corps, Colonel McMurdo informed me, could be readily marched seventy miles in any direc-

tion, in twelve hours (5 5-6 miles per hour), and rendered throughout the campaign most efficient service.

General Simpson, the commander of the British forces in the Crimea, told me that he also was in the same campaign, with General Napier, against Scinde, and found the camel so serviceable, that he procured five or six for his own personal use, and that with them he frequently went seventy miles between sunset and sunrise. To a direct question, whether he would not have preferred the best English horses to camels, could he have obtained them? the General answered, no! that he would have preferred the camel, as packing his baggage upon them in light loads he could move more quickly and continuously.

GAIT OF THE DROMEDARY.

Contradictory accounts are given of the gait of the dromedary, some describing it as smooth and pleasant, while others represent it to be rough and disagreeable, not unfrequently producing nausea. This discrepancy proceeds from the habit of generalizing from single instances. The gait of the dromedary like that of the saddle horse, depends upon breeding, the structure of the individual animal, and upon training.

As the above is but a brief synopsis of the subject, any reader of THE SOUTHERN CULTIVATOR who desires to more fully study the camel question, will find much additional valuable information in Major Wayne's report to the Secretary of War, under date of April 10, 1856, and published, with many interesting illustrations furnished by Mr. Heap, in Senate Executive Document, No. 62, of the thirty-fourth Congress, third session.

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