A Prospect of Fort Dodge

Two years after a military post was established near the Lizard Fork on the Des Moines River to protect settlers and government surveyors, Assistant Surgeon Charles C. Keeney reported his observations on the "Medical Topography and Diseases of Fort Dodge". Although some of his ideas are erroneous, the description of frontier conditions in northwest Iowa in 1852 is as enlightening as it is unique. The document is here reprinted from the "Statistical Report of the Sickness and Mortality in the Army of the United States", Senate Executive Document, *No. 96, pp. 50–57, 34th Congress, 1st Session, 1856.* — THE EDITOR.

While describing the geographical position of this post, it will be necessary to say, that in consequence of not being able to procure the necessary astronomical instruments for determining the true latitude and longitude, I had to calculate them from maps; consequently, my calculations may not be without a slight error — deviating a few minutes, either way, from the true meridian.

According to my calculations, we are in latitude

42° 28′ north, and longitude 17° 1′ west from Washington, which places us rather in the northwest corner of Iowa, on the Des Moines river, and near the junction of the Lizard forks.

The Des Moines is a large and rapid stream, taking its rise from numerous small lakes in the northwestern part of this State and Minnesota. Its average width is from one hundred to one hundred and fifty yards, with a rapid current, a limestone bottom, and tolerably clear water. The river is very tortuous in its course; but its general bearings are from northwest to southeast, running through the whole course of the State, and emptying into the Mississippi a few miles below Keokuk. It is considered navigable for light-draught steamers up to Fort Des Moines, and probably is up to this fort in high water. The river at this point forms a crescent, which bounds two sides of the fort, while a rolling prairie and a deep ravine, supporting a grove of timber, cover the remaining sides.

The physical aspect of the country about the post is beautiful and picturesque in the extreme. At two points of the compass, east and west, to the utmost extent of vision, a vast undulating prairie, supporting a luxuriant growth of flowers and grass, is in view; while nearly from the north to the south the majestic Des Moines is seen

meandering through the boundless prairie, flanked on either side with high bluffs and ledges of rocks, supporting in many places a dense growth of timber of the choicest kind.

The general physical appearance of this vicinity and the country adjacent is of such a nature as to lead one to suppose that this prairie country has once been the bottom of a vast sheet of water, and at a period long subsequent to the Mosaic deluge. The deep ravines, embosoming small rivulets; the gentle undulations of the prairie uplands; the peculiar geological formations of the bluffs; the fossiliferous depositions on the broad prairie, and particularly of the plutonic and volcanic boulders (granite and trap) that are frequently to be seen on the open prairie, probably hundreds of miles from their parent formations, are almost conclusive evidences that the country, at no very great distant period back, was submerged. Some of these boulders are so large that they may be seen for miles, standing out in bold relief on the prairie. Their general surface is rough and uneven, with few signs of having been worn by rolling, which goes to show that they were transported (probably on icebergs) to their distant and isolated abodes. The uplands, with their *lacustrine*-like appearance, and the bluffs of the rivers, with their apparently modern sedimentary formations, also,

are so many living witnesses to testify to the fact that at least this immediate vicinity was once a vast lake. Numerous physical and geological facts might be brought forward in corroboration of this assertion; but, as the limits of this paper will not permit of more than a general sketch of the physical aspect of the post, and as it is foreign to my subject, I will proceed to give a brief description of the geological formations.

From the above remarks on the physical characters of this vicinity, it will be inferred that no subterranean convulsions, no upheavals, or any other volcanic actions, have visited and raised up the present formations in this part of Iowa; but, on the other hand, it can more easily be imagined that, when the waters covered the surface, the strata of the various rocks were gradually deposited, one upon the other, by the same process as is now daily going on before our eyes in the same formations.

The chief formation in this immediate vicinity is the aqueous, or sedimentary rock, including nearly all its varieties — the calcareous, the gypsum (sulphate of lime), silicious, and argillaceous rocks. The calcareous rock is the chief, and it may truly be said forms the backbone of all the other sedimentary and fossiliferous bodies of this class of rocks. It lies in detached pieces and in

solid masses all along the shores of the Des Moines and its tributaries, forming the bulk of the bluffs and cliffs, and also the beds of the rivers.

Carbonate of lime seems to predominate over all the varieties of this rock. At many points, particularly on the small tributaries of the Des Moines, the form of stratification varies materially. At one point, a series of strata of carbonate of lime forms high bluffs; while, at another point, a stratum of carbonate of lime alternates with one of argillaceous rock; then, again, argillaceous and arenaceous strata are superimposed on layers of carbonate of lime. In many places on the Des Moines are seen beds of shale alternating with beds of lime strata. Not far from this post, and on the river, is an extensive bed of shale combined with argillaceous and calcareous matter. This rock has forced itself out of the banks of the river, at an angle of 50°. The great dip this stratification presents, I am led to believe, from the physical as well as the geological features, was brought about by the sliding of the earth, caused by the action of water. I am further led to this belief from the fact, that the stratification all around this district is nearly horizontal; and, also, from there being no marks or signs of internal commotions having occurred, no dislocation and distortion of strata. This bed of shale bears strongly the physical fea-

tures of coal. Its stratification is well defined, and between many of its laminae are enclosed organic remains, many of which have strong impressions of various plants. These beds of shale (bituminous, I think) are quite numerous on the banks of the Des Moines, and are not unfrequently taken for rich beds of coal. I view them only as so many indications of an inferior quality of coal hidden in the banks.

On one of the small rivulets that empties into the Des Moines is a bed of gypsum (sulphate of lime), a soft, white and yellowish rock, with the stratification (as usual) nearly horizontal, and, like the other rocks, bearing N. W. and S. E. It appears to be free from the other varieties of rock.

In some of the bluffs are deep fissures and rents, and appearances of dykes, that would lead the superficial observer to suppose they were produced by subterranean convulsions and upheavals. A bird's-eye view of their geographical features will show that land-slides and the action of water were their origin.

The only palaeontological evidences observed in these rocks were the fossiliferous plants, and impressions in the shale deposits already spoken of. These fossiliferous remains were so indistinct as to render it impossible either to determine their class, order, or species.

As may be supposed, from the above formations, the metalliferous and other mineral indications are exceedingly few. The great requisites for the metalliferous productions, as trap, conglomerate, basalt, porphyry, and other crystalline rocks, are wanting. The only mineral this formation can produce (as far as my superficial explorations have gone) is coal; and this in such poor qualities, that an attempt to work a mine for profit would be of doubtful expediency.

From the above remarks on the geological structure, it is to be supposed that the general surface of the country supports a good soil. In the bottom lands, bordering the rivers, and where the land has been frequently inundated from the frequent swellings of the streams, the soil is exceedingly rich and productive. It is, for the most part, composed of alluvial deposit lying on a bed of limestone; and superimposed upon this deposit is a thick covering of vegetable mould. The soil of the uplands differs somewhat from this. It consists of a black earth, composed of sand and clay intermixed with calcareous matter. It holds in composition less organic matter than that of the bottom land. But this soil, composed as it is of loam, marl, and here and there of infusorial earth, and having for a base a thick bed of calcareous matter, is capable of producing rich crops of corn,

wheat, oats, &c., year after year, without any material drain on its fertilizing powers.

Next to the physical features of a country, and not second to it in point of health and prosperity, is climatology. I believe it is conceded by all, that a rich and productive soil, with an unequable and treacherous climate, is more pernicious to health, and less to be coveted by the agriculturist, than a less fertilizing soil with a good climate. Such, truly, ought to be so; for while the soil is amendable through the medium of the arts, climate, on the other hand, is beyond the reach of art and science.

Before speaking of the climatic characteristics of this post, it will be as well to premise my remarks by saying that this post is not quite two years old, and only part of this time have meteorological observations been taken; consequently, I can only speak of the climatic peculiarities of one year, which peculiarities may not be in accordance with a series of years of the past or to come. But still, from a careful study of climatology, and with the physical features of a country before the eye, one is enabled, in a great measure, to form a tolerably correct opinion of the general character of the climate of a country.

By reference to the Meteorological Register, it is found that the past winter was rigorous and

changeable in the extreme; not rigorous from the low degree to which the mercury would at times fall, but from the constant hurricane-like winds that rushed from the north, and swept over the prairie, chilling the innermost blood, both of man and beast. The same register shows that this last month (June) was subject to great thermometric changes. During the month of January, 1852, the mercury fell to the lowest graduated degree of our thermometers — namely, 28° below zero; and had the graduation been still lower, (or the thermometer longer, as some are wont to have it,) the mercury would, in all probability, have fallen to 30° or 35° below zero. Last month, as the table shows, the mercury rose to 97° in the shade. During the summer months, the wind almost incessantly blows a gale from the south, which has its salutary effects, as will be seen when we come to speak of disease, &c.

It is needless to remark, that these great atmospheric changes are attributable, in the main, to the following physical causes: At the north, south, east, and west, all is one vast stretch of prairie, and nowhere is there a great body of water to modify and mollify the temperature by evaporation and condensation. Even during the greater part of the summer months, there are no clouds in the sky to parry off the piercing rays of the sun.

The springs are also exceedingly changeable and uncertain. The agriculturist will experience many reverses in his fields, arising from the great atmospheric vicissitudes. He may retire to his bed with his heart light from the growing and thrifty appearance of his crops, and in the morning he will go out and return with his heart saddened and chilled by the frosts of May and June. But there is one redeeming feature in this treacherous climate, which, in despite of the great and sudden changes, renders it quite salubrious. It is this: the atmosphere is exceedingly dry at all times. The salutary influence this hygrometric feature has, will be referred to when we come to speak of disease, &c.

As soil and climate are the fountains from which disease, in its general sense, takes its rise, it will not be out of place here to speak briefly of the nature and causes of the various maladies that occur at this post.

The register of sick shows remittent and intermittent to be the prevailing fevers at this post, and diseases of the respiratory organs to predominate over all others. As regards remittents and intermittents being the prevailing fevers at this place, the fact not only holds good here, but has generally been so at all the various stations at which I have been, particularly at those posts where the

cultivation of the soil has been one of the duties of the command. The secret may be this: trees are felled, the soil is turned up, and a greater surface exposed for the direct rays of the sun to promote decomposition of the tree-tops, the turf, and other vegetable matter brought to light. As a general rule, at all new military posts (and I think the same will hold good in all new agricultural districts) the people are more exempt from miasmatic fevers the first year than the second and third. This exemption may be owing to the cause of the malarious influence brought to light by art (if I may so speak) not having had sufficient time to become thoroughly developed by the action of the sun, and other causes, to make its impressions on the nervous and sanguiferous systems. But not so at posts and in old agricultural districts where there are already natural and living sources for the generation of miasmatic poison. Here the subject immediately imbibes and experiences the effect of the poison in a few weeks, or even in a few days. Adopting the old notions of vegetable decomposition in its various forms as the *"fons et origo"* of bilious remittents and intermittents; and while discarding the cryptogamous and other fanciful theories of the present day, I am prepared to state that all the remittents and intermittents that have occurred at this post were caused by the im-

bibition and absorption of miasmatic poison generated by the vegetable decomposition in the bottom lands, where gardening and farming have been carried on. Nearly all the men who have been the subjects of these fevers were the ablest bodied men of the command, and, when on other duty in the uplands, enjoyed perfect immunity from those fevers; but no sooner would they be detailed for horticultural duty, than they would report sick with one of these fevers. I am aware that some late writers are endeavoring to prove that miasmatic poison is not the source from whence these fevers arise; and, as irrefutable arguments, they cite instances of armies that have been decimated by these forms of fevers, in those places where there was not the slightest evidence of vegetable decomposition, and other sources for the generation of miasmata. But they seem to forget, or at least leave out the important fact, that these same armies, during their long and rapid marches, have encamped one or more nights in miasmatic districts, where the body has taken in the malarious seeds; and after two months, or two weeks' fatigue and exposure to a scorching sun, these seeds have grown up, the fruits of which were a congestive remittent and intermittent fever.

The sick report shows but few cases of rheumatism. Considering the great range which the

thermometer has here in all the four seasons, it might be supposed that rheumatism would form a conspicuous part in the catalogue of diseases. But, on the contrary, it is quite rare here, owing, in all probability, to the hygrometric feature of the atmosphere. At all seasons of the year, and during the greatest thermometric changes, the atmosphere is exceedingly free from moisture.

Most of the diseases of the respiratory system were of the mildest nature, and in the majority of the cases were unaccompanied with febrile action. The only diseases of the chest, involving the substance of the lungs and pleura, were imported cases. The mildest of the diseases of the thoracic organs may also be attributed to the general dryness of the atmosphere during the great thermometric changes.

Dysentery and diarrhœa, in chronic forms, are not known here; and dysentery, in its acute form, is rare.

To sum up, the health of the command is exceedingly good at all times. The following may be the causes why it is so: First, the peculiar hygrometric feature of the atmosphere, being free from moisture at all times; secondly, the pure and limpid waters, both of the running streams, and particularly of the numerous springs that gush out of the bluffs, and from the bottom lands, some of

which are slightly impregnated with the salts of iron and sulphur; thirdly, to the constant winds that carry off all effluvia, as fast as generated, to distant parts; and also to the constant employment of the men in their various duties; to their wholesome diet (salt and fresh meat, combined with a due proportion of vegetable matter); and particularly to *thoroughly baked bread, and no whisky.*

As far as my experience has gone at military posts, I have found bread badly baked, and an undue quantity of alcoholic drinks, to be the chief originators of the diseases of the digestive organs. Too much stress cannot be laid on the importance of having bread thoroughly baked. I have not unfrequently seen two-thirds of a command at a time afflicted with diseases of the digestive organs, arising from one single batch of badly baked bread. The company baker and bake-house should be daily inspected; and as the art of making bread is a chemical process, none are so competent to make this inspection as the medical officer of the post. Stringent orders should be issued, enjoining on the commanding officer of the post to see this important inspection daily made.

As a full development of the FLORA does not take place before the latter part of July and August, only a general outline of the botanical characters can be expected here. The botanical

characters that merit special notice, are the following: The wild rose and strawberry, in this vicinity, seem to be twin brothers, as they are found together, growing in great profusion around the borders of the prairie and timber. The fleur-de-lis (*iris*) is found growing in marshy ground, and flowers in June. The blue violet (*viola caerulea*), the blazing star, and several other species of the liatris, with their long spikes of purple flowers, the calla palustris, the wild turnip (*arum*), the petalostemons, with their luxuriant heads of violets, the cone-flowers (*rudbeckia*), the wild sun-flower (*helianthus*), the golden rod (*solidago*), the eye-bright (*euphorbia corollata*), &c., are found growing in the uplands and bottom lands, and add lustre to the spring and summer dress of the prairie. The wild ginger (*asarum Canadense*) grows in the ravines, and flowers in May and June. There is one plant, everywhere to be found on the prairie, that at all times attracts the attention of the traveller, not only from its height and brightness of flowers, but because its leaves are endowed with peculiar qualities. It is the compass, or polar plant (*silphium laciniatum*). It is a plant that grows from one to five feet high, rather coarse in its general aspect, and with a ferny leaf. The flower is like that of the sun-flower. This plant is celebrated for the peculiar

property of its leaves, pointing due north and south. Some have said the leaves do not always point north and south, but go with the wind. From many and careful observations on this plant, I can say that its polarity can be as much relied on as the magnetic needle; and were I to travel a long distance over the prairie, I would sooner trust to the polarity of this plant than to the magnetic needle, as the former is not influenced by local attraction, while the latter is. As for the leaves being influenced by the winds, I have often seen the stock bent near to the ground by the force of the winds, while the leaves were still pointing north and south. The cause of this peculiar property of the leaves is inexplicable. The magnet reveals none of its secrets, nor does dissection. But still, I am inclined to think that its polarity is dependent on magnetism, influenced by the action of light on its leaves.

Among the shrubs may be mentioned the wafer-ash (*ptelea trifoliata*), being an ingredient in the celebrated Indian tobacco. The red bud (*cercis Canadensis*) puts forth its flowers before its leaves. The burning bush (*euonymus atro-purpureus*), and the coffee-tree (*gymnocladus Canadensis*), also, are found in the timber. In addition to the above, there are in this vicinity the gooseberry (*ribes Missouriensis*), the crab-apple (*py-*

rus coronaria), the wild plum (*prunus Americana*), the black walnut (*juglans nigra*), the butternut (*juglans cinerea*); the two last adorn the forest with their rich and luxuriant foliage.

The beautiful groves of timber that skirt the prairie and rivers are composed chiefly of the following trees: With the addition of the black and white walnut, are the black oak (*quercus nigra*), the sugar maple (*acer saccharinum*), the bass-wood (*tilia*), the white poplar (the American aspen), the white elm (*ulmus Americana*).

This country has so long been the abode of the red man, and his incursions have been so frequent over the prairie, and in the forests, in pursuit of the buffalo, the elk, the deer, &c., that nearly all of these animals have forsaken this ground, and gone farther west and north; and the few that are occasionally seen here, are so wild that it is with the greatest difficulty they can be brought within reach of the rifle-ball. The buffalo is sometimes met with on the open prairie, a few miles west of this post. They appear to be the stragglers of the buffalo army, and wander off, into, or near by, the settlements. The elk is seen in herds of two and three hundred, about the head waters of the Lizard river, some thirty miles from here. Hunting parties frequently pass by our post in pursuit of their young. The parties drive with them cows,

and, when the young elk are taken, the cows suckle and protect them as if their own offspring. They are then driven into the settlements, and, when grown up, are trained to the harness. The deer is frequently seen bounding over the prairie from one grove of timber to another. The prairie is their summer's retreat, while in winter they seek the more comfortable and secluded habitations of the forest. The black bear is now and then met with, prowling about the outskirts of the post. The prairie wolf is a frequent visitor during the fall and winter. He is the most stupid of all animals, and is harmless to everything except to the henroost and sheep-fold. During the spring and fall, the rivers and sloughs swarm with the wild goose, the brant, and numerous species of ducks. They make their appearance in the spring, as soon as the ice is out of the river, sport about for two or three weeks, and then proceed north — following the course of the rivers, where they lay and hatch. On the first intimations of cold weather, they return back to these waters, where they again remain for one or two weeks, and then proceed to a warmer and more genial climate.

The wild turkey — the king of the feathered tribe — makes his appearance in these forests in the fall, and is so wild that none but the best of shots take him.

The streams seem to be only moderately supplied with the finny tribe. The pickerel, the pike, the cat, and the bass, are the principal, if not the only fish that swim in these waters.

On the tributaries of the Des Moines are numerous beaver-dams, where large numbers of these most sagacious of all animals make their winter-quarters. In the immediate neighborhood of these dams, acres are cleared, and trees, from one to eight inches in diameter, are felled by the teeth of these animals. No animal is more sagacious and ingenious than the beaver. The architectural and engineering tact displayed in the construction of these dams would reflect credit on a genus of animals much higher on the scale of existence than they.

But few varieties of reptiles are seen here. The prairie rattle-snake presents the same physical characters as the common rattle-snake everywhere in the United States. The moccasin, a venomous snake, is also found on the prairie, in common with the striped snake. The above two are the only venomous reptiles found in this district. The bull-snake (*boa Americana*) is common on the prairie and in the timber. He grows to an enormous size, and is frequently found to be ten feet in length. This reptile is harmless to man, but is a deadly enemy to the rattle-snake when-

ever they come in contact. This snake is held in great esteem by the Indian, and killing it would, by him, be considered more than sacrilege. Well might it be so esteemed by the white man, as they are so great a scourge to that most venomous of all reptiles — the dread of the prairie.

The country, as yet, is new and very sparsely settled. There are scarcely twenty persons in as many miles of the post. The few who have settled in this district are chiefly from Missouri and Indiana. Before the establishment of this post (in the summer of 1850), there were not half a dozen settlers this side of Fort Des Moines. The few who have located here are engaged in the cultivation of the soil. They are of the poorest class of settlers from the above States; and, judging from the general aspect of their farms, from their lean, lank, and half-fed cattle, their squalid and hungry-looking children — huddled in the same room in common with pigs, chickens, &c. — one would be apt to infer they were more indolent than enterprising, and more filthy than cleanly.

The red man has long since deserted these his old hunting-grounds, and gone to seek abodes farther west, where the buffalo, the elk, and the deer roam in greater numbers and with less fear of the rifle. A few scattering bands, however, principally of the Sioux and Chippewa tribes, are still

hanging on the outskirts of this State. During the winter season, small parties of these scattered tribes come into the neighborhood of this post for the purpose of hunting, trapping, and trading. The same bands not unfrequently make incursions into the settlements, carry off cattle, horses, &c., and commit other like depredations on the defenceless inhabitants. In their nature, they are treacherous and predatory; and even the small parties who visit us, and who receive many hospitalities, are not wanting in the above characteristic traits; and were it not for fear of the bayonet, they would, undoubtedly, practise some of their barbarous cruelties on those from whom they receive hospitalities. When driven to extreme hunger, there are no bounds to their inhumanity; they become cannibals in the strictest sense of the word. The following facts, which I have from undoubted authority, and almost from an eyewitness, go to show that even those on the borders of the States are capable of practising the most sickening and inhuman customs. During the winter of 1850-'51, a band of this tribe (Sioux) were wintering in the forests in the northwestern part of this State. There being no snow to track the footsteps of the deer, they were in consequence driven to the very verge of starvation. In one family of this band were a father, mother, and three children. The

mother doted on her youngest child, a boy of three years. On him rested her fondest hopes, and on him were lavished her dearest affections. Being driven to despair by the torturing pangs of hunger, she caressed him, folded him in her arms, and put him into a sleep. No sooner was the mother's darling boy in a sweet sleep, when the concealed knife was taken from her bosom and drawn across his throat — severing all to the very bone. She quenched her thirst by sipping his warm blood, and satisfied her hunger by feeding on his quivering flesh. In the course of ten or twelve days, the pangs of hunger returned. Her second boy, a youth of ten years, like the first, was made the food of her morbid appetite. After the lapse of two weeks, the pangs of hunger returned again, but with redoubled vigor. She resolved on destroying her third son, a boy of sixteen years of age, the firstborn and the father's favorite. By her caresses, he also was put to sleep, and, while asleep, she poured molten lead into his ear. This more novel way of extinguishing life proved fatal to her. The pangs soon awakened the boy, and caused him to scream aloud. The father, although frantic with hunger, was nevertheless attracted by the cries of his beloved boy. The deed was still fresh before him. His eyes were then opened to the fate of his lost children. He

clenched his tomahawk and felled the mother to the ground. His knife soon finished the stroke, by taking her scalp from her head. He, in turn, feasted on her carcass.

There being so few Indians about here, it will be impossible to collect any vital statistical knowledge worthy of note. As far as I am informed, the numerous Indian tribes west and north of us are fast becoming extinct by cholera and smallpox — by the latter disease in particular. As far as my observations have gone with the Indian tribes heretofore, I have generally observed that when disease, particularly a fever, takes hold of the Indian, (if he is at all sick,) he succumbs to the fever in spite of the "medicine man." Their mode of living, habits, and customs, are all conducive to staving off disease — particularly in its chronic form. Their articles of diet alone, could they only be introduced into civilized circles, would banish dyspepsia in all its protein forms; the name itself would soon be forgotten.

There is a common article of diet, principally used by the half-breeds employed in the Hudson Bay and American Fur Companies on their long marches, and who also subsist on it at their permanent winter-quarters. It supplies both the place of bread and meat, and, for its remarkably nutritious qualities, ease of digestion, and for the great

facilities of transportation which the compactness and small bulk of this article afford, make it well worthy the notice of the Department. It is called *pemican*. Lieutenant Corley, U. S. A., who has subsisted on it for some time, and to whom I am chiefly indebted for the information of this invaluable article of diet, says it is composed of buffalo meat and buffalo tallow. The process for preparing it is this: the buffalo meat is first thoroughly dried in the sun, and then pounded until it is about the consistence of meal; the tallow is melted, and freed from all impurities, and is then poured on the meat and well stirred. The proportions should be about equal, or, if any difference, there is a little more tallow than meat. The mixture, being well stirred, is then poured into sacks made of untanned buffalo hide, and allowed to cool; no salt is used — probably to prevent thirst. The sacks contain from twenty to forty pounds, for convenience of transportation. The mixture being poured in the sacks while in a liquid state, it, of course, packs itself into a small space. It keeps well without salt, and, when properly made, will be perfectly good at the expiration of a year. This article is used almost entirely by the fur-traders of the Hudson Bay and American Fur Companies as their only food when travelling. Lieutenant Corley also says he was informed by the traders of

the fur companies, that they know of no articles of food that could supply its place in convenience of transportation, in cheapness, and in nutritious qualities. It is also highly palatable.

Some estimate can be made of the quantity of this article it would take to sustain a healthy working man, from the quantity it takes to sustain the train-dogs the fur-traders use. The dogs they use for drawing their sledges and carrying their packs, are of a large breed, and travel fifty miles a day; they give to the dogs one pound of pemican a day; this is as much as they can eat, and it not only keeps up their strength, but keeps them fat.

Knowing that one pound is sufficient to sustain a dog of the above description, and while travelling with a heavy burden fifty miles a day, it might be supposed that fifteen pounds would be an ample allowance for a soldier on twenty days' march, carrying with him, at the same time, his musket, his knapsack, and his pemican.

I can conceive no other article of diet to be so invaluable to the soldier as the above, where transportation is limited, and difficult marches are to be made, as inevitably will be the case hereafter, with our whole army, on the great prairies east and west of the Rocky Mountains.

CHARLES C. KEENEY