

Appendix A

REPORT MADE BY LIEUTENANT ALBERT MILLER LEA
ON THE DES MOINES RIVER¹

Fort Des Moines,
8 Sepr. 1835.

To Lieut Colonel Kearny;
Sir,

In compliance with your order of 9th August last, I descended the Des Moines River from the Raccoon Fork to the mouth, and have the honor to make the following report on its susceptibility of navigation.

The general course of the Des Moines is southeast and its length from the Raccoon to the mouth is about 266 miles. The Raccoon river is its chief tributary, affording two thirds as much water as the main river itself. Below the junction the river varies from 100 to 80 yards in width and in depth at low water, from 11 inches to 4 feet; frequent rocky bars divide it into a succession of rapids and eddies; it is also obstructed by numerous bars of loose white sand changeable by every rise of water; many snags projecting rocks render it dangerous to boats in rapid motion; and its bends are often so sudden as to render difficult for descending boats to clear them.—This is its character until it receives the Cedar River, which increases its volume of water by about one third. It is 96 miles from the Raccoon to the Cedar; and in this distance there are 19 places affording a channel not more than 14 inches deep, excluding a very rough, rocky rapid, dangerous even in high water.

Below Cedar River, it becomes much wider, being usually about 160 yards wide as far as Keokuk's Village, a distance of 80 miles; the bends also are less sudden, and scarce a snag is visible; but the general depth is less; 22 places in this distance do not afford a depth of more than 14 inches, and a great part of it did not admit the free passage of a canoe, requiring a depth of only 12 inches. Several rocky rapids occur on this part of the river, none however

¹ Reprinted from a photostatic copy of the report on file in the office of the Adjutant General, Washington, D. C.

opposing any serious obstacle in high water except the one just below Opanoose's Village, where there is a sudden fall of 13 inches.

Below Keokuk's village it increases in width to 200 or 225 yards; its course is remarkably free from sudden bends; the current is regular at about 2 miles per hour in low water; the depth is very uniform, & is seldom under 15 inches; the bottom is a smooth blue limestone, sometimes covered with sand and fine gravel; and not a single extraneous obstruction presents itself save a few loose rocks at one place, until within 11 miles of the mouth. The far famed "Rapids of the Des Moines" are near the lower end of the Great Bend; about 10 miles north of the Missouri State line. There is here a fall of 11 inches in 100 yards, but by the removal of a few loose rocks a good channel may be had.

About 11 miles above the mouth, the influence of the Mississippi begins to be felt; the river becomes much narrower, being reduced in width to 80 or 100 yards; the channel becomes crooked; the banks frequently caving in, and snags are abundant; but there is sufficient water wherever there are snags. For 10 miles the river is thick set with snags; but they would admit the passage of large boats in daylight, and this part of the river can never be navigated by night. The backwater from the Mississippi causes frequent collections of drift wood, and renders this part of the river very liable to change its bed as it has recently done to a great extent. It empties into the Mississippi by 4 outlets; the first is a narrow slue, $\frac{3}{4}$ mile long, deep and entirely filled with logs and snags; 1 mile lower down, two other slues put out near together, very short; and $\frac{1}{2}$ mile further, the main river is lost in the Mississippi.

Between the mouths of Raccoon and Cedar rivers, the shores are generally rough and broken, being usually formed by hills jutting into the river on alternate sides; sometimes however alluvial formations occur where logs may be seen projecting from a bank bearing the largest forest trees. There is much timber on this part of the river and of excellent quality, including oak, ash, walnut, elm, maple, cypress[?] and cotton wood. From the Cedar to Keokuk's Village, the country is almost destitute of timber except narrow skirts on the banks of the river and of the creeks; but nothing can exceed the richness and beauty of the prairies, gradually rising as they recede from the river and occasionally crowned by a grove of neat looking oaks, free from all inferior growth. Below Keokuk's Village, the shores present alternate hills and bottoms, both covered

with vigorous trees, standing erect and unmolested by the washing of the current, as the river is straight its entire bed is formed of fixed rock; these bottoms are high, level and luxuriant, very inviting to emigrants, as evinced by the number that have recently thrust themselves upon them.

The mineral productions of the river are interesting. Sandstone suitable for building is abundant as far down as Tollman's, 14 miles above the mouth; Limestone highly silicious, occurs near Racoon river; Metalliferous Limerock shows itself on a level with low water 15 miles above the Cedar, and gradually but slowly rises until it reaches, $4\frac{1}{2}$ or 5 feet above the water near the Missouri line; where it is supported by a bluish limestone forming a smooth bed for the river; no stone suitable for making lime is to be found above Tollman's. Bituminous coal, of excellent quality, occurs abundantly above Cedar; and I also found large masses of rich iron ore Sulphacite or[?] native Sulphate of iron, Lignite and the earths usually found in coal formations.

As to the practical navigation of the river, I must necessarily have recourse to the statements of others. I was fortunate enough to meet with two gentlemen, well acquainted with the river, upon whose knowledge and veracity I can rely; and I also met a keelboat ascending the river.

Several snags and logs near the mouth of the river and a few loose rocks at various rapids must be removed to admit of any safe Navigation, and to admit the passage of boats at low water. This might be done at an expense of \$500. These obstructions removed there is nothing to interrupt the navigation as far up as the mouth of Cedar, but the want of depth of channel.

The average annual rise of the river in this part is about 8 feet, which would give an entire depth on the shoals of about $5\frac{1}{2}$ feet. These freshets are of short duration and give impetuous currents. There are usually two annual freshets; the first, and by far the greatest, takes place at the melting of the snows in the spring; the second is produced by the Autumnal rains in the humid regions about the sources of the river. During the Winter the river is obcluded by the ice; in the Summer and early Autumn, the water is very shallow.

I met on 15th August, above Keokuks Village, a Keelboat built to carry 18 tons, but having only 9 tons on board drawing 16 inches Water, & well manned. She had consumed $12\frac{1}{2}$ days in

coming from the mouth, a distance of 88 miles. At the same rate, 7 miles per day, it would require 24 days to reach the Cedar, and 38 days to reach the Racoon River.

The following is a succinct statement of the classes of Boats that may be best employed on the river, as far up as the mouth of Cedar & of the time that they may be so employed, from the best information that I can get, and I believe it may be relied on. The times given are of course only approximations.

1. Steamboats drawing $3\frac{1}{2}$ feet, from 1 April to 15 June.
2. Steamboats or Keelboats, drawing $2\frac{1}{2}$ feet, from 20 March to 1 July.
3. Keelboats, drawing 20 inches, from 15 March to 15 July and from 15 October to 25 November.

Of that part of the river between Cedar and Racoon, I can only say that it affords a greater depth of channel than the river below, and that I believe that Steamboats of 80 tons may run it with less risk than keelboats, though both would be somewhat endangered in descending.

A sketch of the River is given in the general map of our Summers Campaign.

Allow me to remark in conclusion, that the Des Moines is the most beautiful stream that I have ever traversed: and that it is destined soon to become the outlet of great mineral and agricultural wealth. The country is now open to settlers for 76 Miles up the river, and numerous boats will soon be put in requisition to supply the wants of the rapidly growing population.

About 3 miles below the Raccoon there is a position that may serve as a site for a garrison. A series of hills rise gently from the river, on the right hand, and stretch back into the country; they are covered with a slight growth of scrub oak only, but good timber is to be found within a mile or two. A fine spring breaks out from between two of these hills, 40 feet above high water, and another runs out of the bank, about 3 feet above low water. There is a good and convenient landing for boats; and a rich prairie stretches out from the foot of these highlands. This prairie does not afford good grass, but there are probably others within convenient distance that would supply the Garrison with hay.

There is another locality about 9 miles, and a third 15 miles below the Raccoon, either of which might serve as a site. They are both more handsome than the first, as seen from the river, and they

both have timber and good prairie convenient, but I saw no springs near them. The position at the mouth of Cedar, however, is the most beautiful, convenient and healthy on the River.—

Very respectfully,

A. M. LEA, of Tenn.

2. Lt. Dragoons.

Appendix B

REPORT MADE BY ALBERT MILLER LEA ON THE
IOWA-MISSOURI BOUNDARY¹

Baltimore, (Md.,) *January 19, 1839.*

SIR: I have the honor to transmit herewith my report on the southern boundary of the Territory of Iowa, and a map² showing the relative position of the several lines in dispute.

The continued illness of the surveyor, and my own indisposition, will account for some delay in the report, and for want of completeness in the map.

Very respectfully,

ALBERT MILLER LEA,

Commissioner, &c., for U. S.

JAMES WHITCOMB, Esq.,

Commissioner of the General Land Office.

Report of the commissioner appointed by the President under the provisions of an act entitled "An act to authorize the President of the United States to cause the southern boundary of the Territory of Iowa to be ascertained and marked," approved June 18, 1838.

Baltimore, (Maryland,)

January 19, 1839.

SIR: Having received at this place on the 14th of August last, through your office, the President's instructions to me as commissioner on the part of the United States under the act above cited, I promptly repaired to St. Louis, where I had previously informed the Governors of Missouri and Iowa that I would receive their

¹ *House Executive Documents, 25th Congress, 3rd Session, Vol. IV, Document 128, pp. 2-10.*

² See page 254 following.