EARLY REPORTS CONCERNING THE DES MOINES RIVER

[The following reports of topographical surveys of the Des Moines River by Captain W. Bowling Guion and Lieutenant John C. Frémont in 1841, are reprinted from the *House Executive Documents*, 3rd Session, 27th Congress, No. 38, pp. 13–20. They were discovered by Mr. Jacob Van der Zee when preparing an article on *The Opening of the Des Moines Valley to Settlement* which appeared in THE IOWA JOURNAL OF HISTORY AND POLITICS for October, 1916. — EDITOR.]

REPORT OF W. BOWLING GUION

ST. LOUIS, *October* 9, 1841.

SIR: In obedience to your instructions of December 1, 1840, directing me to make a survey of the Des Moines and Iowa rivers, for which purpose there was an appropriation of $1,000, after having completed the work upon which I was then engaged, and so soon as favorable weather in the spring and other contingent circumstances permitted, I proceeded to perform the duty thus assigned to me. Upon the results of my examinations I have the honor to make the following report.

The appropriation being too small to allow the execution of a minute and instrumental survey of any considerable portion of either of the two rivers, I determined to make such a general examination of them as would show their general character, the nature and extent of obstructions to the navigation of them, and as would enable me to make an approximate estimate of the cost of removing these obstructions.

Accordingly, I advanced with a suitable party to the trading establishment of the American Fur Company, on the Des Moines river, 100 miles above its mouth, the highest

point at which I could obtain a boat, and, having procured a very small and light draught keel boat, moved up that stream an estimated distance of 17 miles above the mouth of Rackoon Fork, one of its principal tributaries, or 137 miles above the trading house. Here, so much of the funds in my hands, as, with a due regard to an examination of the other stream, I could expend, being exhausted, I turned about and descended the river to its junction with the Mississippi, opposite the town of Warsaw, and 4 or 5 miles below the foot of the Des Moines rapids of the Mississippi.

The chief characteristics of this river are, a great declination in the plane of its bed, causing in time of flood a very swift current, unusual uniformity in the depth of water in its channel, great sinuosity of course, and a lesser amount of obstructions in the upper than in the lower parts. These obstructions consist of slight rapids, termed by the boatmen "riffles," and a small number of snags and trees which have fallen from its banks. Besides these natural obstacles, there are two others, caused by the erection of mill dams across the stream — one at Keosauqua, about 60 miles above its mouth, and the other about 10 miles lower down. These effectually prevent the passage of loaded keel boats as well as steamboats; but as the proprietors of the mills are required by a law of the territory to construct locks in the dams, perhaps no importance should be attached to them. Of these "riffles," counting those upon which the dams are built, there are 12, of which 10 are caused by masses of rock, chiefly loose, but some fixed, extending across the channel, and the other two by gravel bars. Six of these are found in the first hundred miles in ascending from the mouth of the river to the trading house; namely, one in 40 miles, having a gravel bottom, and three in the 40 miles above the mill dam at Keosauqua, caused by masses of rock protruding from the bottom. Between the trading

house and Rackoon Fork (120 miles) five more occur; the first at the distance of five miles from the former point, and nearly opposite the village of the Indian chief Appanoose; the second, 13 miles above the trading house; two others, severally at the mouth of Cedar, and one above the mouth of White Breast, two small tributary rivers; and the 5th, 5 miles below the mouth of Rackoon Fork. Above the mouth of this stream, and at the distance of 12 miles, is the last one which I met with. At all of the six designated points, except the first and sixth, where it was hard gravel, the bottom of the river was rock. These rapids are all very short, varying from one to three hundred yards in length; but it would be impossible for me to state with accuracy the depth of water to be found upon them at any particular stage of the river; for, as I was met in my ascent by a considerable flood, the depth was constantly varying; yet, from soundings which were taken throughout, from observations upon the water line, made whenever the boat was not in motion, and from information received from others, I am induced to believe that at a medium stage there will be found, from the mouth of the river to the trading house, nowhere less than two feet of water, which is reduced at certain very dry seasons to ten inches. From the same sources of information, I entertained no doubt, that from the trading house to the point, where I terminated my observations, at the same stage of water, there will be found nowhere less than three feet, which is reduced in the dry season to one foot and a half. During the season of high water, which lasts ordinarily three or four months, and sometimes six, there would always be from five to fifteen feet water in the channel.

The removal of the projecting rocks from a space wide enough to admit the free passage of boats would render the channel singularly uniform in depth, and, with the destruction of the snags, logs, and a few overhanging trees, would

seem to be all that should be done; for, in many of the intervals between the rapids, where the current is more gentle and the bottom fine sand, the depth of water is not greater than upon them. To deepen the channel in such places would be idle, for the same causes which produced would reproduce these obstructions.

There are some other features in this river which would render its navigation difficult, though not impracticable, in any season. These are the extreme abruptness of a few of its many bends, which, by measurement, I found to be equal to and sometimes greater than a right angle, frequently bringing the lower part of its course parallel with the upper, around a point no more than 200 yards wide; the other, the great swiftness of its current at those points, which, from observations made, I believe to be fully at the rate of five miles the hour. But the practicability of its navigation is placed beyond a doubt by the facts, that the American Fur Company have repeatedly transported their supplies to their principal depot in a steamboat of the size ordinarily used on the upper Mississippi in low water, and that a heavily laden keel boat has been taken up nearly to the mouth of Rackoon Fork. And the propriety of making the improvements which I have indicated, I do not hesitate to assert; for the Des Moines is a beautiful river, 220 feet wide where I ceased operations, and increasing in width from 440, below the mouth of Rackoon Fork, to 630, at the trading house, whilst its banks present one of the most fertile and lovely countries nature ever presented to the view of man, abounding in immense fields of bituminous coal from Rackoon Fork nearly to its mouth. Iron, too, I found scattered along the banks of the river, but to what extent it exists I had neither time nor opportunity to determine. In fine, such are the temptations which this country offers, that the portion now in the possession of the Indians will no sooner

pass into the hands of the United States than it will be crowded with whites, as that which lies below the Indian country is becoming already.

In conclusion, I do not perceive a necessity for a more minute survey of this river; for the obstructions are plainly perceptible at low water, and, if it should be attempted to remove them, will point themselves out.

As I was confined to the house by sickness a great part of the summer, I directed my assistant, Mr. Burgess, under proper instructions, to make an examination of Iowa river; and the result of his observations is embraced in the annexed report from him, which, it is believed, will convey all the desirable information in relation to that stream. In the subjoined estimates I have made no allowance for Iowa river higher than the raft below Poweshiak's village, in consequence of Mr. Burgess's report of the immense number of snags and logs above.

I am, sir, very respectfully, &c.

W. Bowling Guion,
Captain Top. Eng.

Estimate of the expense of removing obstructions in the Des Moines river — i. e. opening a passage 100 *feet wide through the shoals, and removing all projecting rocks, snags, and logs, from the channel.*

From the mouth to trading house of American Fur Company:

10,000 cubic yards of rock, at $1	$10,000
2,000 snags and logs	2,000

From trading house to head of survey:

9,000 cubic yards of rock, at $1	$ 9,000
3,000 snags and logs	3,000
Boats and machinery	5,000
Total	29,000

REPORTS OF JOHN C. FRÉMONT

WASHINGTON, *April* 14, 1842.

SIR: In pursuance of orders received at this city in June, 1841, I left on the 27th of the same month the small settlement of Churchville, on the west bank of the Mississippi, a few hundred yards below the mouth of the Des Moines river. The road for about nine miles lay over a luxuriant prairie bottom, bordered by the timber of the Fox and Des Moines rivers, and covered with a profusion of flowers, among which the characteristic plant was psoralia onolaychis. Ascending the bluffs, and passing about two miles through a wood, where the prevailing growth was quercus nigra, mixed with imbricaria, we emerged on a narrow level prairie, occupying the summit of the ridge between the Fox and Des Moines rivers. It is from one and a half miles to three miles in width, limited by the timber which generally commences with the descent of the river hills. Journeying along this, the remainder of the day and the next brought us at evening to a farm-house on the verge of the prairie, about two miles and half from Chinquest creek. The route next morning led among, or rather over the river hills, which were broken, wooded, and filled with the delicate fragrance of the clanothus, which grew here in great quantities. Crossing Chinquest about four miles from the mouth, we forded the Des Moines at the little town of Portland, about ten miles above the mouth of the creek. The road now led along the northern bank, which was fragrant and white with elder, and a ride of about twelve miles brought us to the little village of Iowaville, lying on the line which separates the Indian lands from those to which their title has already been extinguished. After leaving this place, we began to fall in with parties of Indians on horseback, and here and there, scattered along the river bank, under tents of blankets stretched along the boughs, were Indian families; the

men lying about smoking, and the women engaged in making baskets and cooking — apparently as much at home as if they had spent their lives on the spot. Late in the evening we arrived at the post of Mr. Phelps, one of the partners of the American Fur Company. Up to this point there are three plants which more especially characterize the prairies, and which were all in their places very abundant. The psoralia onolaychis, which prevailed in the bottom near the mouth of the Des Moines, gave place on the higher prairies to a species of causalia, which was followed, on its disappearance further up, by parthenium integrifolium. The prairie bottoms bordering the river were filled with lyatris pycnostachya; and a few miles above Portland, on the north bank of the river, were quantities of lyatris resinosa, mingled with Rudbackia digetata.

On the bluffs here, the growth was principally quercus alba, interspersed with tuictoria and malrocarpa, and sometimes carya alba. All these now and then appear in the bottoms, with carya oliveformis and tilia. Ulmes Americana and fulvia betula rubra, with osteya Virginica and gymnoeladus canadensis, are found on the bottom land of the creeks. Populus canadensis and salex form groves in the inundated river bottoms, and the celtis accidentalis is found every where.

Having been furnished with a guide and other necessaries by the uniform kindness of the American Fur Company, we resumed our journey on the morning of the 1st of July, and late in the evening reached the house of Mr. Jameson — another of the company's posts, about twenty miles higher up. Making here the necessary preparations, I commenced on the morning of the 3d a survey of the river valley.

A canoe, with instruments and provisions, and manned by five men, proceeded up the river, while, in conformity to instructions which directed my attention more particularly

to the topography of the southern side, I forded the river and proceeded by land. The character of the river rendered the progress of the boat necessarily slow, and enabled me generally to join them at night, after having made during the day a satisfactory examination of the neighboring country. Proceeding in this way, we reached Rackoon Fork on the evening of the 9th of July. I had found the whole region densely and luxuriantly timbered. From Mule creek to the eastward, as far as Chinquest, the forests extend with only the interruption of a narrow prairie between the latter and Soap creek. The most open country is on the uplands bordering Cedar river, which consist of a prairie with a rich soil, covered with the usual innumerable flowers and copses of hazel and wild plum. This prairie extends from the mouth of Cedar river to the top of the Missouri dividing ridge, which is here at its nearest approach to the Des Moines river, the timber of the Chariton, or southern slope, being not more than twelve miles distant. From this point to the Rackoon Fork, the country is covered with heavy and dense bodies of timber, with a luxuriant soil and almost impenetrable undergrowth.

Acer saccharium of an extraordinary size, inglans cathartica and nigra, with celtis crassifolia, were among the prevailing growth, flourishing as well on the broken slopes of the bluffs as on the uplands. With the occasional exception of a small prairie shut up in the forests, the only open land is between the main tributaries of the Des Moines, towards which narrow strips of prairie run down from the main ridge. The heaviest bodies lie on the Three Rivers, where it extends out to the top of the main ridge, about thirty miles. On the northern side of the Des Moines, the ridge appeared to be continuously wooded, but with a breadth of only three to five miles, as the streams on that side are all short creeks. A very correct idea of the relative quality

and disposition of forest land and prairie will be conveyed by the rough sketch annexed.

Having determined the position of the Rackoon Fork, which was one of the principal objects of my visit to this country, I proceeded to make a survey of the Des Moines river thence to the mouth. In the course of the survey, which occupied me until the 22d of July, I was enabled to fix four additional astronomical positions, which I should have preferred, had time permitted, to place at the mouth of the principal tributaries.

From the Rackoon Fork to its mouth, the Des Moines winds a circuitous length of two hundred and three miles through the level and rich alluvium of a valley one hundred and forty miles long, and varying in breadth from one to three, and sometimes four miles.

Along its whole course are strips of dense wood, alternate with rich prairies, entirely beyond the reach of the highest waters, which seldom rise more than eight feet above the low stage. Acer eridcarfurm, which is found only on the banks of such rivers as have a gravelly bed, is seen almost constantly along the shore, next to the salex and populus canadensis, which border the water's edge.

The bed of the river is sand and gravel, and sometimes rock, of which the rapids generally consist. All of these which presented themselves, deserving the name, will be found noted on the accompanying map, and two of the more important are represented on a large scale. After these, the most considerable rapid above the Great Bend is at the head of the island above Keokuk's village. The bend in the river here is very sharp, the water swift, with a fall of about one foot, and a bottom of loose rocks, with a depth of two feet at the lowest stage. At the mouth of Tohlman's creek is only a rocky rapid, used as a ford, whose depth at low water is one foot. The rapid of the Great Bend, 4½

miles below Chinquest creek, has a fall of 12 inches, and, so far as I could ascertain, had formerly a depth of 18 inches at low water. A dam has been built at this place, and the river passes through an opening of about 40 feet. Another dam has been built at a rapid 12 miles lower down, where the river is 650 feet wide. The fall, which I had no means to ascertain correctly, was represented to me as slight, with a depth of 18 inches at lowest water. Four and a half miles lower down, at Farmington, another dam and mill are in course of construction, but the rapid here is inconsiderable, and the low water depth greater than at the other two.

I regret that I had neither the time nor the instruments requisite to determine, accurately, the velocity and fall of the river, which I estimated at six inches per mile, making a total fall of about 100 feet from the Rackoon to the mouth. It is 350 feet wide between the perpendicular banks at the mouth of the Rackoon, from which it receives about one-third its supply of water, and which is 200 feet wide a little about the mouth. Its width increases very regularly to over 600 feet, at Mr. Phelps's post, between which and 700 feet it varies until it enters the Mississippi bottom, near Francisville, where it becomes somewhat narrower and deeper. At the time of my visit, the water was at one of its lowest stages; and at the shallowest place above Cedar river, known as such to the fur company boatmen, I found a depth of 12 inches. The principal difficulties in the navigation, more especially above the Cedar, consist in the sand bars. These, which are very variable in position, sometimes extend entirely across the river, and often terminate abruptly, changing from a depth of a few inches to 8 and 12 feet. From my own observations, joined to the information obtained from Mr. Phelps, who has resided about twenty years on this river, and who has kept boats upon it constantly during that period, I am enabled to pre-

sent the following, relative to the navigation, as data that may be relied upon.

Steamboats drawing four feet water may run to the mouth of Cedar river from the 1st of April to the middle of June; and keelboats drawing two feet, from the 20th of March to the 1st of July; and those drawing 20 inches, again, from the middle of October to the 20th of November. Mr. Phelps ran a Mississippi steamer to his post, a distance of 87 miles from the mouth, and a company are now engaged in building one to navigate the river. From these observations it will be seen that this river is highly susceptible of improvement, presenting nowhere any obstacles that would not yield readily, and at slight expense. The removal of loose stone at some points, and the construction of artificial banks at some few others, to destroy the abrupt bends, would be all that is required. The variable nature of the bed and the velocity of the current would keep the channel constantly clear.

The botany and geology of the region visited occupied a considerable share of my attention. Should it be required by the bureau, these may form the subject of a separate report. In this I have notice the prevailing growth and characteristic plants, and those places at which coal beds presented themselves will be found noted on the map.

Very respectfully, sir, your obedient servant,

J. C. Fremont,
2d Lieut. Top. Engs.

Colonel J. J. Abert,
Chief Topographical Engineers.

Table of Distances

	Miles	Miles
From Rackoon Fork to upper Three Rivers...	13¾	
From upper Three Rivers to middle Three Rivers	9	22¾

	Miles	Miles
From middle Three Rivers to lowest Three Rivers	5¼	28
From lowest Three Rivers to Red Rock rapids	16¾	44¾
From Red Rock rapids to White Breast river	9¼	54
From White Breast river to Eagle Nest rapids	8¼	62¼
From Eagle Nest rapids to English river	3¾	66
From English River to Cedar river	11	77
From Cedar River to Vessor's trading house, A. F. C.	17	94
From Vessor's trading house, A. F. C., to Phelps's trading house, A. F. C.	22	116
From Phelps's trading house, A. F. C., to Soap Creek	12¾	128¾
From Soap creek to Shoal creek	15¾	144½
From Shoal creek to dam at rapid of the Great Bend	8	152½
From dam at rapid of the Great Bend to second dam	12	164½
From second dam to Indian creek	6	170½
From Indian creek to Sweet Home	7¼	177¾
From Sweet Home to Francisville landing	9½	187¼
From Francisville landing to Sugar, on Half-breed Creek	7¼	194½
From Half-breed creek to the mouth	9	203½

Washington City, *December* 10, 1842.

Sir: It will be a reply to a greater part of the questions contained in your favor of the 7th, to say that the survey which I made of the Des Moines in July, 1841, was simply geographical, and principally to determine some astronomical positions, particularly at the mouth of the Rackoon Fork. Any examination, therefore, of the rapids, or other obstructions to the navigation, would be merely incidental; and to those within the territorial line, more especially the

rapids of the Great Bend, which had been made the subject of a particular survey, I gave very little attention. There are some 10 or 12 rapids in the space between the Rackoon Fork and the Great Bend, a distance of 145 miles. Of the two largest, the Eagle Nest and Red Rock rapids, you will find drawings on an enlarged scale on the map which accompanies my report; the former is 108 and the latter 90 miles above the rapids of the Great Bend. At this last place, I estimated the perpendicular fall to be 12 inches; and it is very probable not less than two feet in 80 or 100 yards. The rapid at Lexington is two miles and 1,000 yards south of that at the Great Bend, and by the river 11¾ miles below. Heavy and continuous rains had occasioned a rise of some feet when I made the survey of the lower part of the river, and the rapid at Farmington, which is 15½ miles below that at the Great Bend, and 5¼ miles south of it, was then scarcely a ripple, and below this point I remarked no rapids worthy the name.

In the course of surveys on the western tributaries of the upper Mississippi, I found, among their numerous shoals, and in the lower part of their course, one to which was usually given the name of falls or rapids, by way of distinction. The "St. Peter's rapids," which form a serious obstruction to the navigation of that river, occur about 60 miles from the mouth. Those of the Embarrus river, of which there are two, about one mile apart, with a perpendicular fall of three feet each, are within the distance above mentioned from the mouth of the river. To this line of falls, extending across these rivers from north to south, and occasioned perhaps by a change in the formation, I supposed that the rapids at the Great Bend might belong.

Very respectfully, your obedient servant,

J. C. FREMONT,

Hon. J. C. EDWARDS. *Lieut. Top. Engineers.*