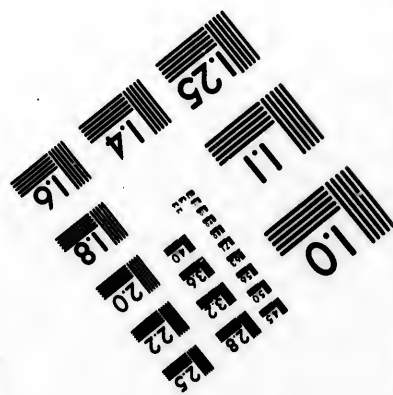
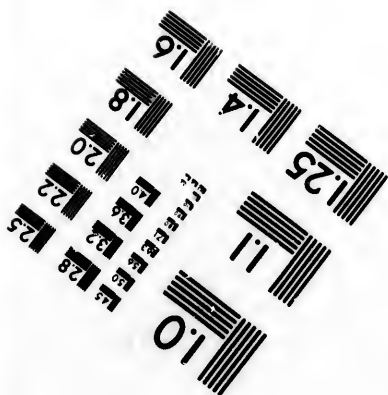
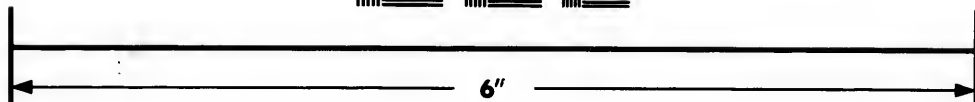
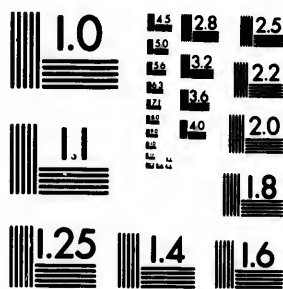


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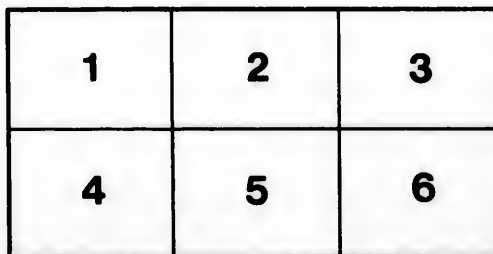
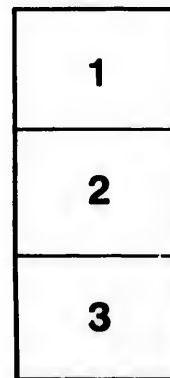
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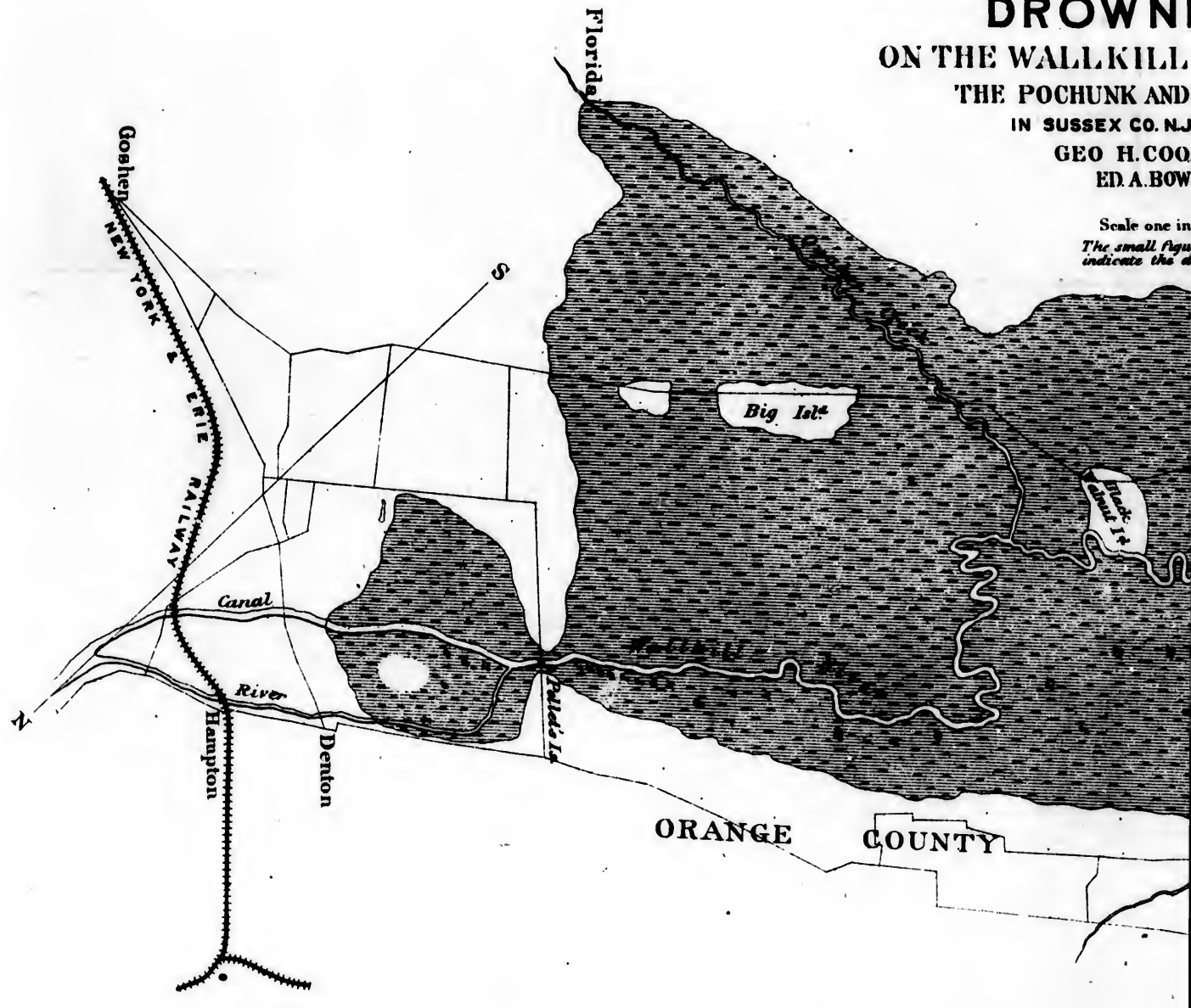
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GEOLOGICAL SURVEY
MAP

DROWN
ON THE WALLKILL
THE POCHUNK AND
IN SUSSEX CO. N.J.
GEO. H. COO
ED. A. BOW

Scale one in
*The small figures
indicate the d*



GEOLOGICAL SURVEY OF NEW JERSEY.

MAP OF THE

DROWNED LANDS.

THE WALLKILL AND ITS BRANCHES

THE POCHUNK AND WAWAYANDA CREEKS,

IN SUSSEX CO. N.J. AND ORANGE CO. N.Y.

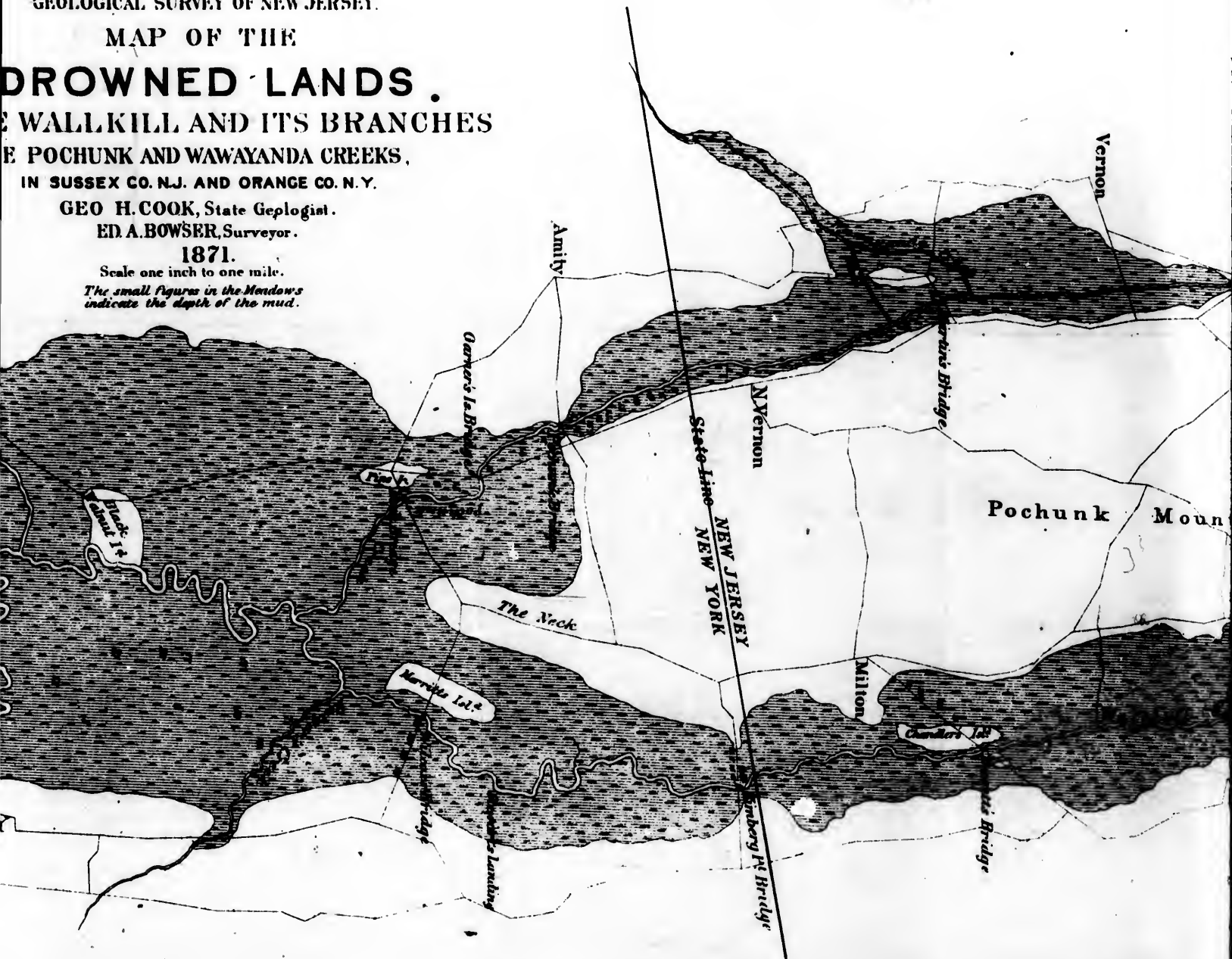
GEO. H. COOK, State Geologist.

ED. A. BOWSER, Surveyor.

1871.

Scale one inch to one mile.

*The small figures in the Meadows
indicate the depth of the mud.*



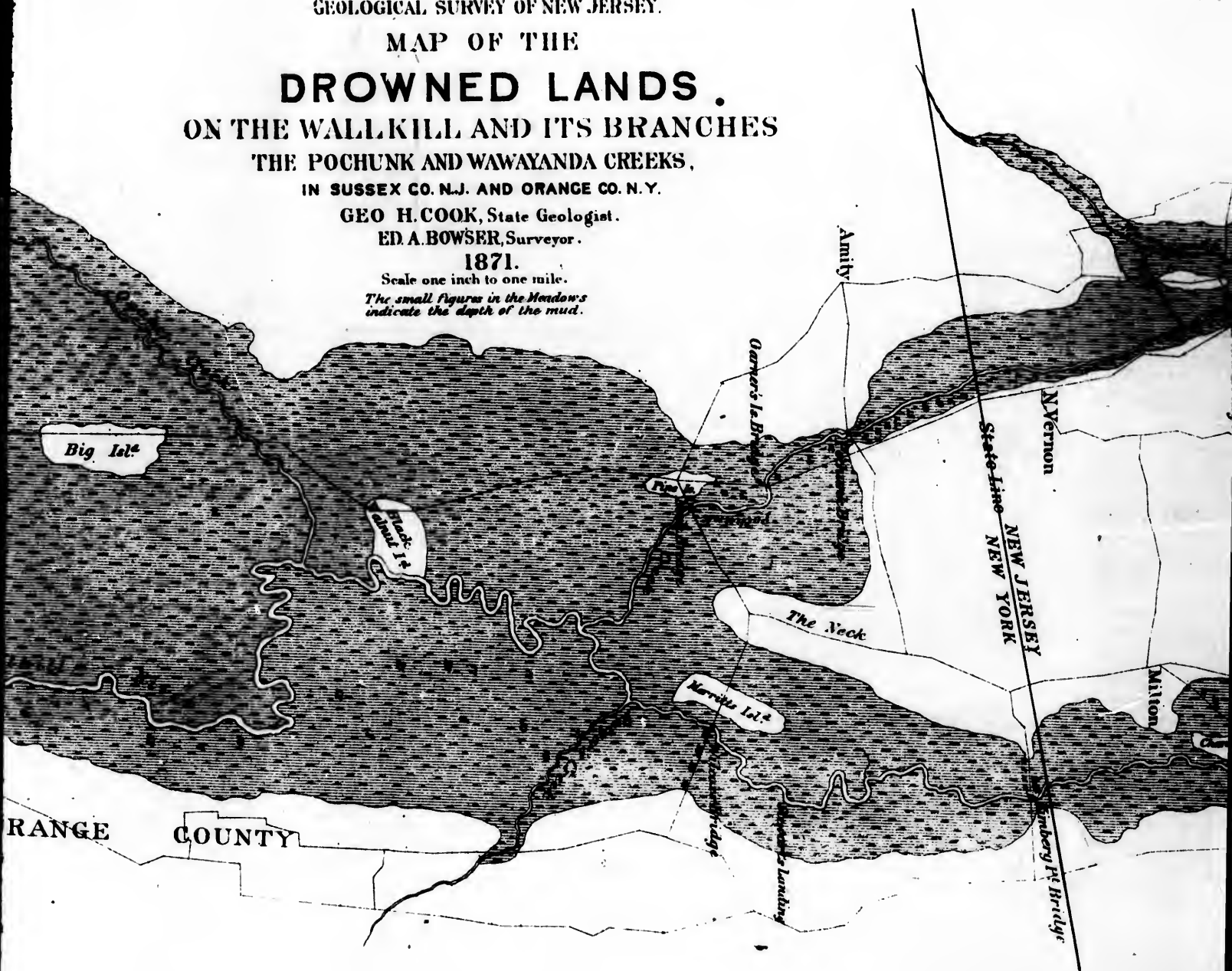
GEOLOGICAL SURVEY OF NEW JERSEY.
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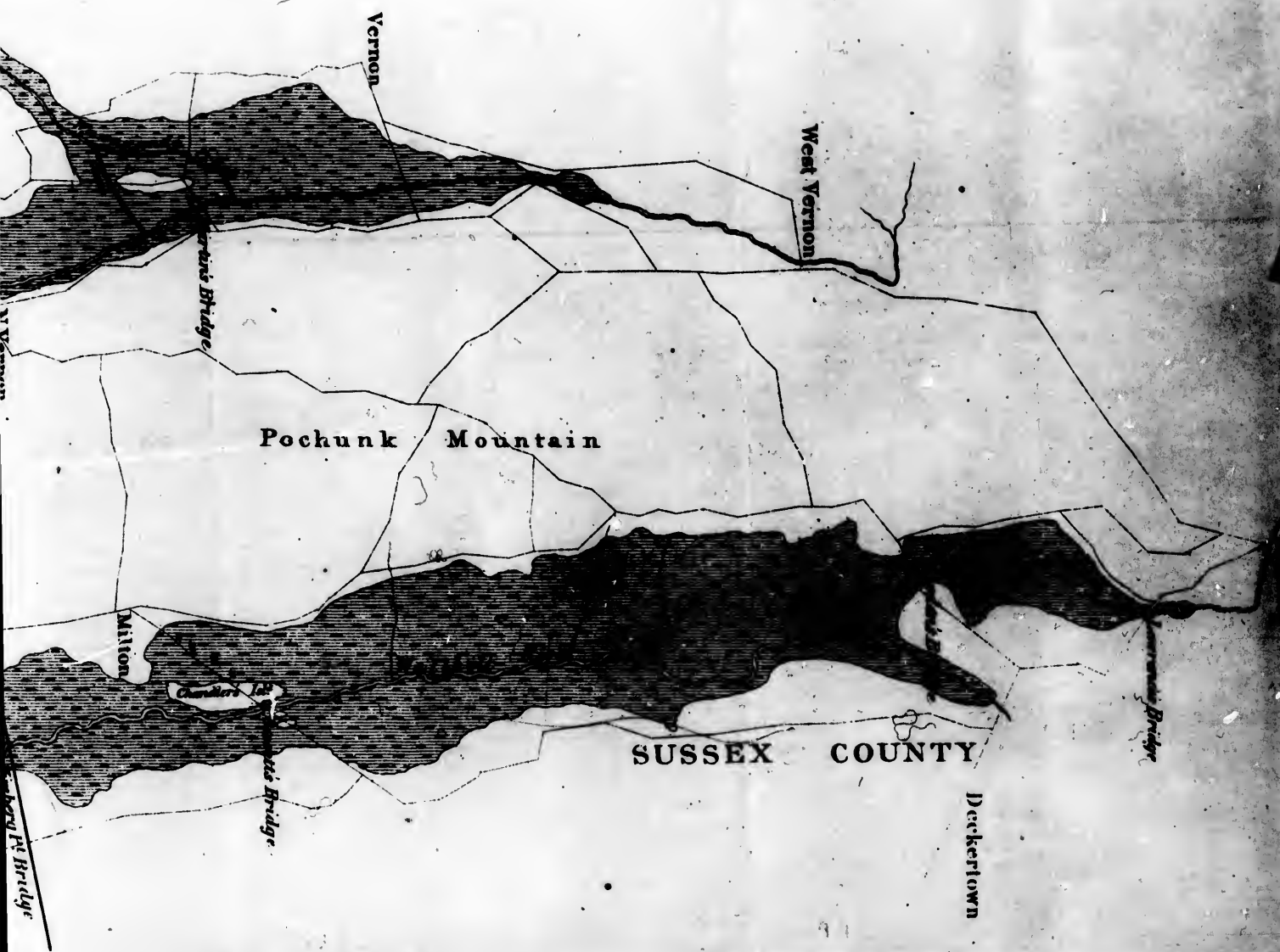
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1871.

Scale one inch to one mile.

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Vernon

West Vernon

Pochunk Mountain

Milton

SUSSEX COUNTY

Deckertown

Carter's Bridge

Candler's Lick

Heron's Bridge

Heron's Bridge

Heron's Bridge

would change an unsightly waste into a field of rural beauty and riches.

The report of Prof. Bowser, with his map and profiles, is presented here.

**Prof. Bowser's Report of the Levels and Soundings taken
on the Wallkill River and its branches, the
Pochunk and Wawayanda Creeks, in
Sussex County, N. J., and Orange
County, N. Y.**

A bench, called "first bench," was made on a large maple tree, on the right bank of the Wallkill, and on the left bank of the "canal," at their junction, or "outlet" of the canal, about 800 yards below Hampton. The datum plane was assumed 10 feet under this bench. A line of levels was run from this bench up the Wallkill to Lawrence's Bridge, distant in a right line about 20 miles, and about 37 miles by following the channel; and also up the Pochunk Creek to the second bridge above the mouth of the Wawayanda Creek; and up the Wawayanda to the second bridge; and benches were located at all the bridges and at intermediate points. The heights along the surface of the river were determined by leveling from these benches. The heights along the bottom were determined by sounding in the channel, and subtracting the depths from the heights of the surface. The heights of the points, both along the surface and the bottom of the river, were measured from the datum plane 10 feet beneath the first bench.

By examining the profile, it will be seen that the bed of the river, from the first bench up to the lower end of the Drowned

Lands, has a rise of 24.6 feet, while the rise from the first bench to the upper end of the canal—inlet of the canal—is but 14 8-10 feet, making the bed of the river at the latter place 9 8-10 feet *lower* than it is at the lower end of the Drowned Lands in the old channel of the river.

The bed of the river at the lower dam is 10 7-10 feet, and at the upper dam, just below the railroad bridge, it is 14½ feet higher than it is at the first bench. Although the bed of the river from the second dam to the lower end of the Drowned Lands rises 10 1-10 feet, yet owing to the *fall* of 9 8-10 feet from the latter place to the inlet, the rise from the second dam to the inlet is only 8-10 of a foot, and from the first dam to the inlet it is only 4 1-10 feet. The top of the lower dam is 4-10 of a foot, and that of the second dam 6 7-10 feet higher than the bed of the river at the inlet.

The rise in the bed of the river, from the inlet to Pellett's Island bridge, is 3½ feet, while from the latter up to Willcox's bridge, distant 12½ miles by the river, the rise is only 1 2-10 feet. The bed of the river at Black Walnut Island is 3½ feet *higher* than it is at Willcox's bridge. The bed of the river at Kimberg Point bridge is 4 3-10 feet *lower* than at Willcox's bridge, and 7 8-10 feet *lower* than at Black Walnut Island, while just above the State Line, it is 3 7-10 feet higher than at Willcox's, or on a level with the bed at Black Walnut Island. The bed at Bessett's bridge, distant ten miles from Willcox's by the channel, is on a level with that at Willcox's bridge, or 3 7-10 feet *lower* than at Black Walnut Island, while from Bessett's to Ogden's bridge, distant nine miles following the channel, owing to the increased shallowness of the river, the rise is 11 7-10 feet, making a rise of 8 feet from Black Walnut Island to Ogden's bridge, or 16 1-5 feet from the inlet to Ogden's. The rise from Ogden's to Lawrence's bridge is 2 7-10 feet.

The profile of the Pochunk Creek shows that its bed at the mouth is 7 4-5 feet *lower* than the bed of the Wallkill at Black Walnut Island, and that its bed at the Neck bridge, Garner's Island bridge and the Pochunk bridge is 1 4-5 feet, 9-10 feet, and 3 1-5 feet, respectively, higher than the bed of the Wall-

from the first bench. the canal—is but at the latter place of the Drowned.

10 7-10 feet, and at ridge, it is 14½ feet. The bed of the river at the Drowned Lands is 9 8-10 feet from the second dam to the first dam to the of the lower dam is 6 7-10 feet higher

the inlet to Pellett's latter up to Willcox's the rise is only 1 2-10 Black Walnut Island is 3½ feet. The bed of the river lower than at Willcox's Black Walnut Island, 10 feet higher than at Black Walnut Island. 10 miles from Willcox's at Willcox's bridge, or at Island, while from the miles following the ness of the river, the et from Black Walnut et from the inlet to Lawrence's bridge is 2 7-10

ws that its bed at the of the Wallkill at Black Neck bridge, Garner's s 1 4-5 feet, 9-10 feet, n the bed of the Wall-

kill at Black Walnut Island. The rise in the bed, from the Pochunk bridge to Martin's bridge, is 6 7-10 feet, from Martin's to the first bridge above the mouth of the Wawayanda Creek it is 4 1-5 feet, and from the latter bridge to the second bridge above the mouth of the Wawayanda the rise is 2 9-10 feet.

The rise of the bed on the Wawayanda Creek, from the mouth to Edsall's bridge is 3 3-10 feet, and from Edsall's to the second bridge the rise is 5 7-10 feet.

The profile of the Canal shows that the rise of its bed is much more uniform than the rise of the bed in the old channel. The rise in the bed from the first bench to the railroad bridge is 2 1-5 feet; from the railroad bridge to Wheeler's bridge it is 8 3-10 feet; and from Wheeler's bridge to the inlet the rise is 4 3-10 feet, and very uniform, excepting a reef about 600 yards above Wheeler's bridge, which is 2 7-10 feet higher than the bed at the inlet. The top of the old dam, 800 yards below Wheeler's bridge, is 28 3-10 feet above the bed of the river at the first bench, or 3 7-10 feet higher than the bed of the old channel at the lower end of the Drowned Lands.

The rise of the water surface on August 16, 1871, from the inlet to Willcox's bridge, 12½ miles, was 6½ feet, and from Willcox's bridge to Ogden's bridge, 9 miles, it was 3 3-10 feet, making a rise of 9 4-5 feet from the inlet to Ogden's bridge, distant 21½ miles. Though it was a very dry time, the water from Black Walnut Island up to Ogden's was on a level with the top of the ground. On September 1st, when there had been considerable rain, the rise of the water surface from the inlet to Willcox's bridge was 7 1-5 feet. Much of this rise was owing to the obstruction at Black Walnut Island, where the water runs over a point of the upland. The surface rise from Willcox's to Ogden's was 1½ feet, and from Ogden's to Lawrence's it was 3 7-10 feet. The water during this week was from 2 to 5 feet deep on the "Drowned Lands." The rise of the water surface, on the Pochunk, during this time, from its mouth to the Pochunk bridge, was 1 foot; from the Pochunk bridge to Martin's bridge it was 3 7-10 feet; and from Martin's to the second bridge above the mouth of the Waway-

anda it was 5 1-10 feet, the water standing 3 and 4 feet deep on the meadow. The rise of the water surface, on the Wawayanda, during the same time, from its mouth to Edsall's bridge was 3 3-10 feet, and from Edsall's to the second bridge on the Wawayanda it was 5 7-10 feet. The country from the lower end of the Drowned Lands to Lawrence's bridge, and on the Pochunk to the second bridge above the mouth of the Wawayanda, was covered with water, in many places 5 feet deep. This water remained upon the land over two weeks.

A fall of 8 inches per mile would give the Walkkill a velocity of about 1½ feet per second. If the river from Ogden's bridge down to the first bench be shortened to 30 miles, which can very easily be done by cutting off some bends, 8 inches per mile would give a fall of 20 feet from Ogden's down to the first bench. Had this been the fall of the Walkkill in the first week of September, and the grade at Ogden's bridge 4 feet below its present bed, which is now entirely too shallow, the water could scarcely have remained above its banks for more than two days.

The grade line on the profile represents this new bed. It begins at Ogden's bridge, 4 feet below the present bed, and falls 6 9-10 inches per mile, following the present channel as it is represented in the profile; or, if the channel from Ogden's bridge to the first bench be reduced to 30 miles, the grade will be 8 inches per mile, giving in either case a fall of 20 feet from Ogden's bridge down to the first bench.

By examining the profile, it will be seen where the grade runs *below* the present bed, and where it runs *above* it. At Bessett's bridge it runs *above* the bed, while 400 yards below the bridge it runs *under* it 6 feet. At Kimberg's Point bridge the grade is again above the bed, while 500 yards below, it is 6 feet beneath it. At Stewart's landing the grade is 10 feet beneath the bed. At Willcox's bridge it is 3½ feet beneath the bed. At lower end of Willcox's Island it is 10½ feet beneath the bed. At the mouth of the Pochunk it is 2½ feet beneath the bed. At the upper end of Black Walnut Island it is 7 feet beneath the bed. At the lower end, 7 feet beneath. At Pellett's Island bridge 9 feet under the bed, and at the inlet of the canal 6 feet under the bed. Following do

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the old channel we see that the grade reaches the lower end of
the Drowned Lands 16½ feet beneath the present bed, the
railroad bridge 11½ feet, the second dam 7 feet, and the first
dam 3½ feet beneath the present bed. It reaches the first bench
7 4-5 feet above the present bed. Following the canal,
whose bed is much more uniform, the grade reaches the reef 9
feet, Wheeler's bridge 3 feet, and the dam below Wheeler's
bridge 1 foot below the present bed of the canal. The cut-
ting in the old channel, the profile shows, greatly exceeds the
cutting in the canal.

The Pochunk Creek, being a smaller stream, requires a
greater fall. At the second bridge above the mouth of the
Wawayanda Creek, the Pochunk at present is entirely too
shallow. Its bed here should be cut down 6 feet, leaving a fall
of 19½ feet from this bridge to the mouth of the Pochunk, dis-
tant 11 miles, or 1 4-5 feet per mile. This grade, as the pro-
file shows, reaches the first bridge above the mouth of the
Wawayanda 5½ feet, Martin's bridge 4 feet, the Pochunk bridge
4½ feet, Garner's Island bridge 5 feet, and the Neck bridge 7
feet below the present bed of the channel. It reaches the
mouth of the Pochunk 2½ feet beneath the present bed, or on
a level with the grade on the Wallkill River.

The Map accompanying this report shows the extent of the
Drowned Lands, the exceedingly crooked channel of the
Wallkill and the Pochunk, and the nature of the surface mate-
rial, whether black muck alone or mixed with mud (blue clay).
The figures on the map denote the depth in feet of the surface
material down to the hard bottom, which is sand or gravel.
The material for drawing the map of that part of the Drowned
Lands which lies in Orange County, was obtained from A. S.
Murray, Esq., of Goshen, who very kindly lent me a map of
these lands, that was made several years ago, when there was
an attempt made to drain them. The material for making the
map of that portion of the Drowned Lands that lies in Sus-
sex County was obtained by traversing the shore line during
high water. The depth of the surface material was ascertained
by running an iron rod down to the solid bottom. Wherever
it was muck alone, the ground was very soft, the rod running

down easily. Where there was considerable clay—which was generally near the banks of the Walkill and the Pochunk, and especially near streams running into these channels—the ground was very firm, the rod running down with difficulty. The nature of the surface material in Sussex County, and also of that portion of the land in Orange County that produces only wild grass, is similar to that in Orange County that is under cultivation, and that produces as fine crops as are to be seen anywhere in the country. There is this difference, however: the surface material in Sussex County, above Bessett's bridge, is not so deep as it is lower down in Orange County. The number of acres of Drowned Lands in Orange County, (by Murray's Map), 15,579; the number of acres in Sussex, 10,000; total number of acres of the Drowned Lands in Orange County and in Sussex, on the Walkill River, and the Pochunk and Wawayanda Creek, 25,579.

As the amount of cutting in the canal will be far less than in the old channel, it will be economy to carry the water down the canal, where it is running at present. If one of the mills below Hampton could be saved, it would be very desirable to carry the water down the old channel. But as the grade runs $3\frac{1}{2}$ feet *beneath* the bed of the river at the lower dam, there will be no possibility of saving a mill. It seems, therefore, that there can be no object in carrying the water down the old channel, when it can be taken down the canal with *far less expense*.

AGRICULTURE AND POPULATION.

The United States census of 1870, though only partially published as yet, gives some information of much interest to Jerseymen. The population of the United States and of the State of New-Jersey is given in the following table, for every ten years, beginning with 1790. The table also shows the percentage of increase for each ten years:

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