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no. 12, Atlas

DEPARTMENT OF THE INTERIOR

UNITED STATES GEOLOGICAL SURVEY

CLARENCE KING DIRECTOR

ATLAS

TO ACCOMPANY A MONOGRAPH. NO. 12.

ON THE

GEOLOGY AND MINING INDUSTRY

OF

LEADVILLE

COLORADO

BY

SAMUEL FRANKLIN EMMONS

U. S. GEOLOGICAL SURVEY
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LEGEND.

TOPOGRAPHY.

The map of Central Colorado is a reproduction of a portion of the Hayden Atlas, corrected topography having been introduced in the areas, covered by maps of this Division, of the Mosquito Range, and of the Ten-mile District.

The maps of the Mosquito Range and of Leadville and Vicinity were made by A. D. Wilson, Chief Topographer, with assistants Reichel, King, and Holman; the former by a triangulation based upon geodetic points determined by the Hayden Survey, elevations being obtained by depression angles from points of known altitude; the latter by triangulation developed from a base measured at Leadville, slopes and elevations being determined by numerous profiles run with the level. The elevations, indicated by imaginary horizontal lines at stated vertical intervals, known as contours, are given as above mean sea level, the original datum point from which they were calculated being the threshold of the First National Bank in Leadville. The altitude of this point is assumed as 10,125 feet, which is the mean of three determinations obtained by connection with three points to which level lines had been run, viz.: bench-marks of the Colorado Central and Denver & Rio Grande Railroads, and the summit of Mt. Lincoln. Where numbers denoting altitude are given in only three figures, they are to be taken as so many feet above the 10,000 feet contour. Shafts and tunnels are indicated by small circles on the Leadville map; when these are full it indicates that the mine was producing ore at the time of location. They are numbered independently in each lettered square, formed by meridians and parallels of latitude; names corresponding to each number, where known, will be found in the Index. They were located by Wm. H. Leffingwell.

Of the mine maps, the topography of those of Fryer and Carbonate Hills is by Mr. Wilson; the mine workings were compiled and drawn, in great measure from their own surveys, by G. H. Robinson and F. G. Bulkley, respectively.

Both topography and mine workings of the two Iron Hill maps are by H. Huber.

All profiles are constructed from the maps with equal vertical and horizontal scales. The scales to which the respective maps are drawn are as follows:

Central Colorado—About 4 miles to one inch, or $\frac{1}{250,000}$. Contours at 200 feet vertical interval.

Mosquito Range—Topographical, one mile to one inch, or $\frac{1}{63,360}$. Geological, a half mile to one inch, or $\frac{1}{31,680}$. Contours, 100 feet.

Leadville and Vicinity—Eight hundred feet to one inch, or $\frac{1}{9600}$. Contours, 25 feet vertical interval.

Mine Maps—One hundred and sixty feet to one inch, or $\frac{1}{1920}$. Contours, 10 feet vertical interval.

GEOLOGY.

In field work, and in the preparation of all maps, the geologist in charge has been most efficiently aided from the beginning by assistant geologist Ernest Jacob. Assistant geologist Whitman Cross and Prof. Arthur Lakes took part in the field work of the Mosquito Range. All lithological determinations have been based on microscopical examinations by Mr. Cross. All palæontological determinations were made by Prof. R. P. Whitfield.

Geological colors on the surface maps give the form of outcrops, projected on a horizontal plane, as they would appear if all loose detrital material were removed. Where the recent formations, however, are of sufficient importance, they are shown in the cross-sections.

On the Mosquito Map, the formations Weber Grits and Weber Shales are both included under the color of the former; so the Mt. Zion Porphyry is included under the color of the White Porphyry, and all other varieties indicated by the single color p.

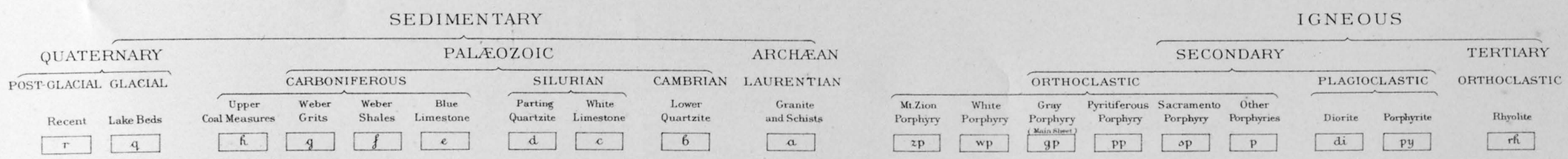
On the Leadville maps, the color gp denotes only the main intrusive sheet of Gray Porphyry, other smaller bodies of this rock which do not form part of this sheet being indicated by the color p.

All cross-sections are drawn to natural scale, and the thicknesses there given to sedimentary formations are averages obtained from several measured sections. Data in regard to depths, faults, and folds, are, in the vicinity of Leadville, mainly derived from underground workings. Where these occur on or near the plane of a section, they are indicated thereon in full or dotted lines respectively.

The inclination of sedimentary beds is indicated by a line in the direction of the strike, crossed by an arrow in the direction of the dip, whose length is inversely proportional to the angle with the horizon.

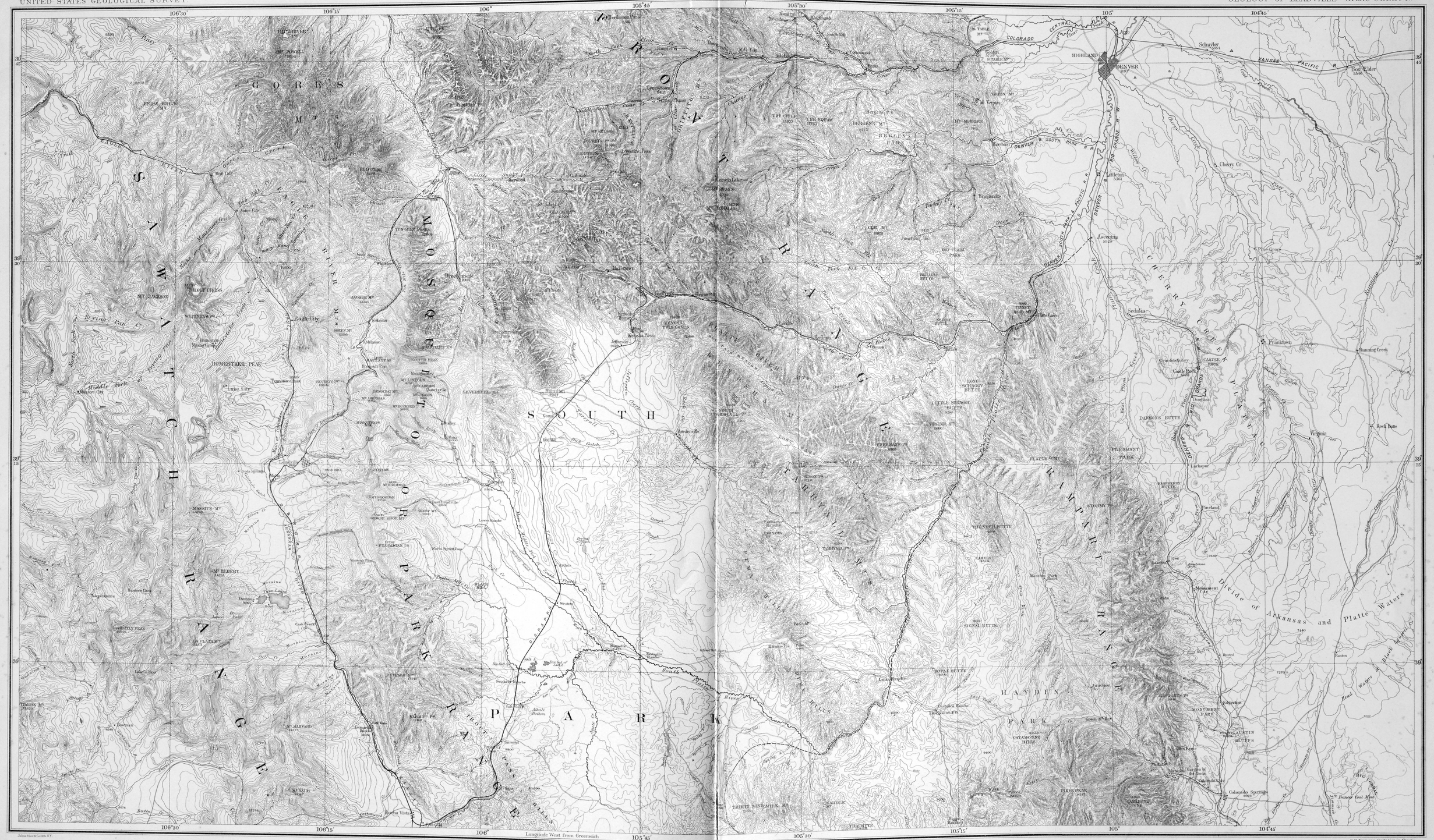
Fault plane intersections are given in heavy black lines; lines of cross-sections in blue. Other special conventional signs are indicated on the respective maps.

The following legend gives the local names of all formations and rocks represented on the maps, and their respective letters, grouped systematically.



CENTRAL COLORADO

Reproduction of a portion of the maps of the Hayden Atlas of Colorado.



TOPOGRAPHICAL MAP OF MOSQUITO RANGE

A.D. Wilson, Chief Topographer

Scale: one inch = one mile or 1:63360.

Contours 100 ft. vertical interval

S.F. Emmons, Geologist-in-Charge.

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GEOLOGICAL MAP OF MOSQUITO RANGE

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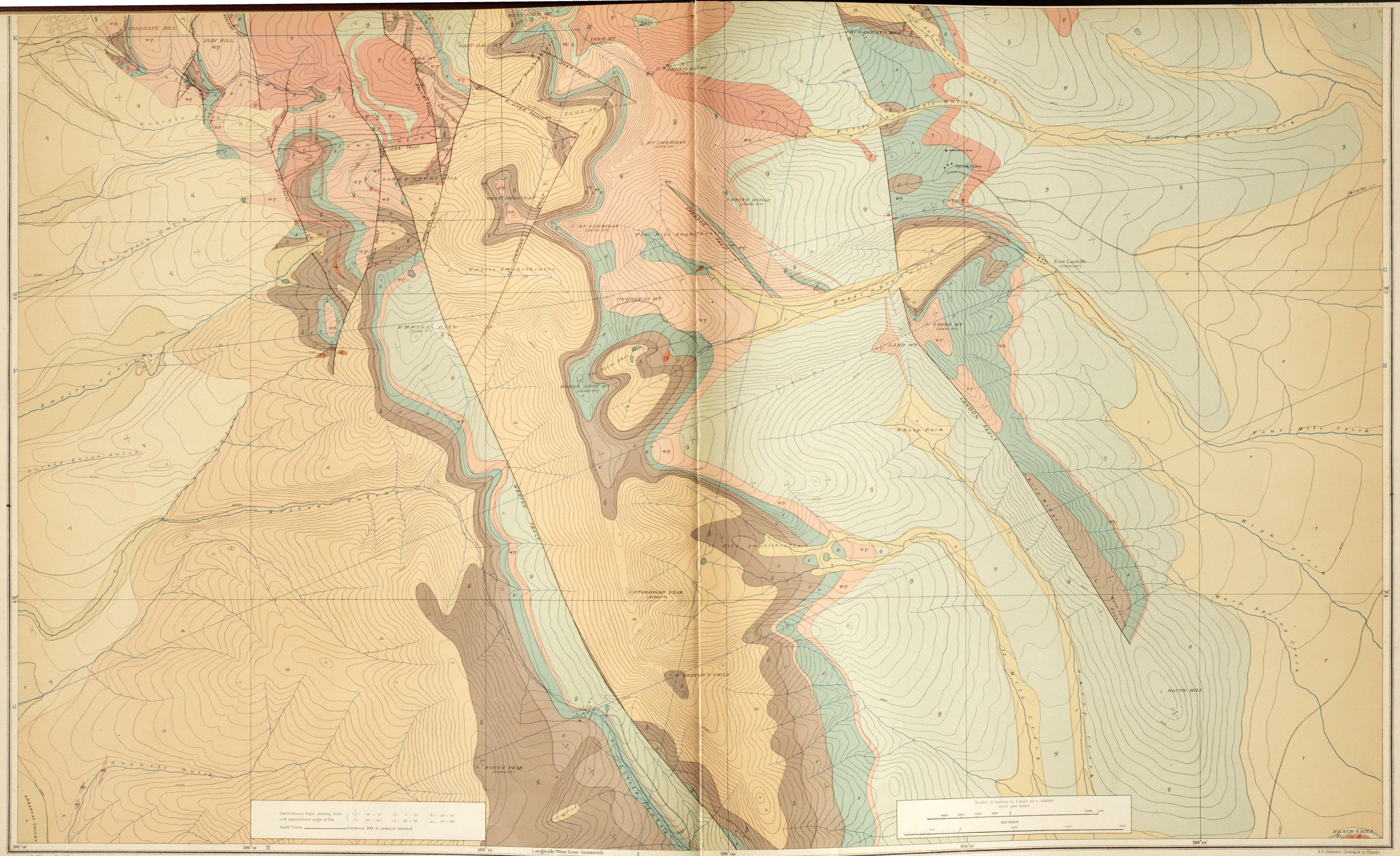

A. D. Wilson, Chief Topographer

S. F. Emmons, Geologist in Charge.

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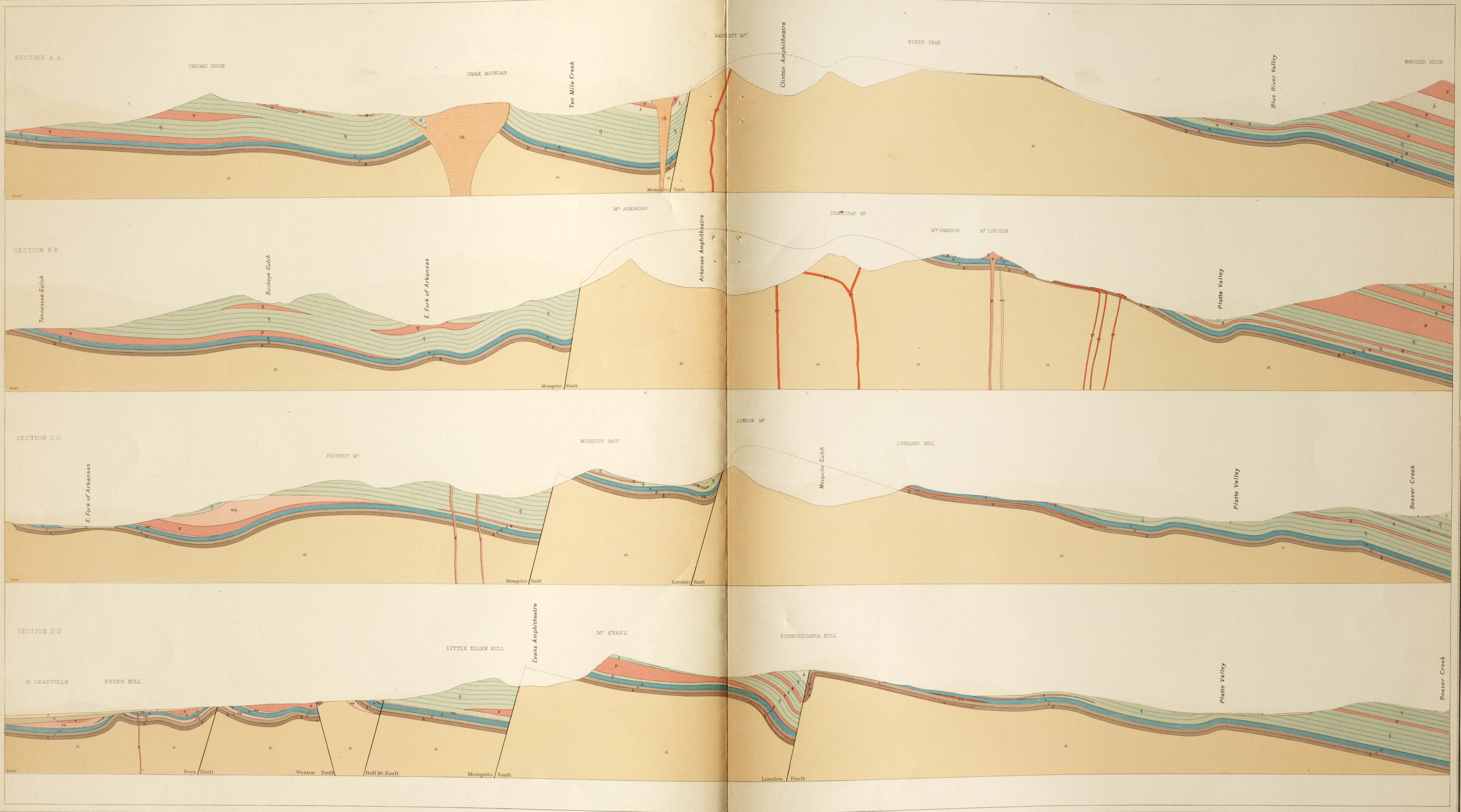
MOSQUITO RANGE

SECTIONS I

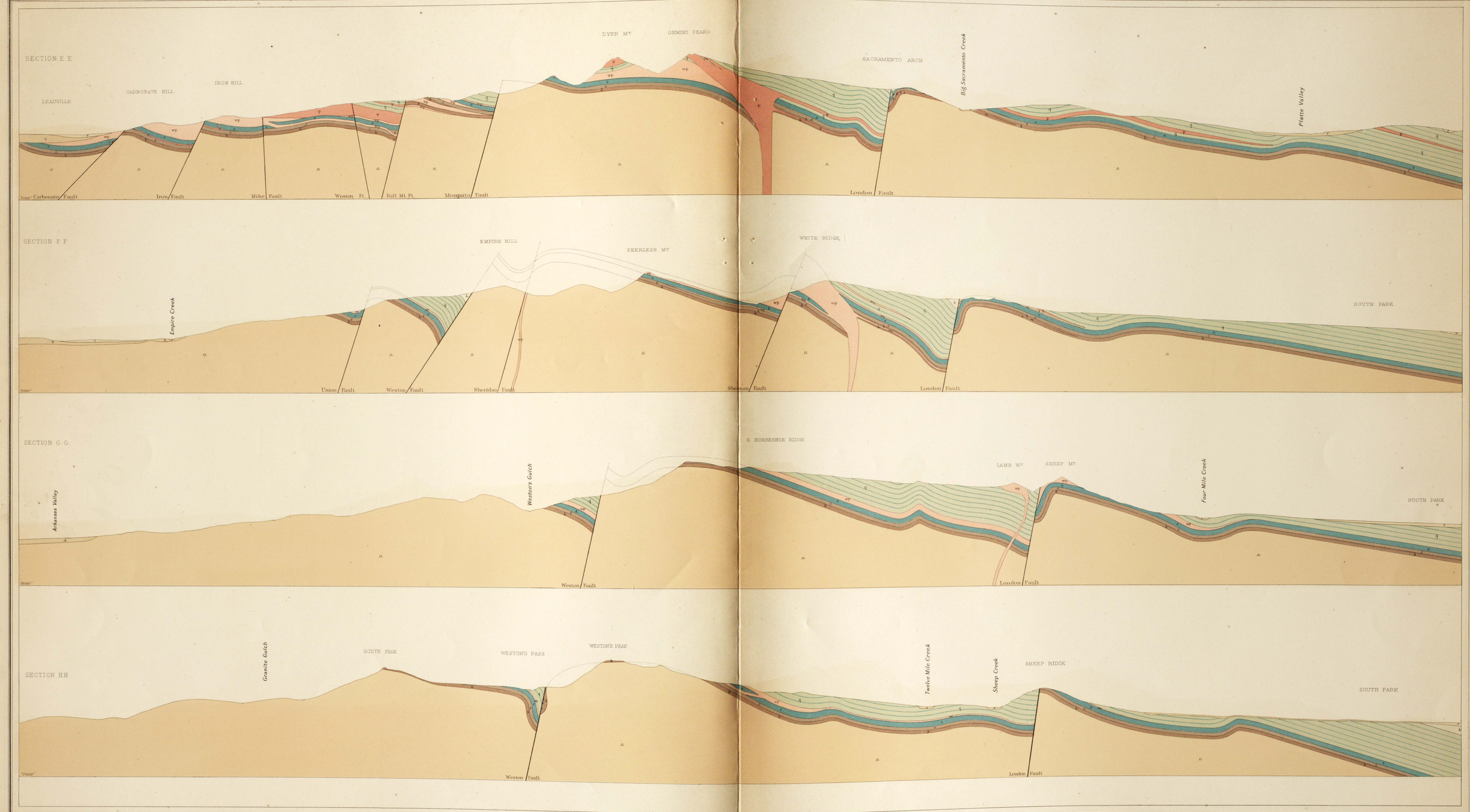


Julius Bien & Co. lith.

S. F. Emmons, Geologist-in-Charge.

MOSQUITO RANGE

SECTIONS II

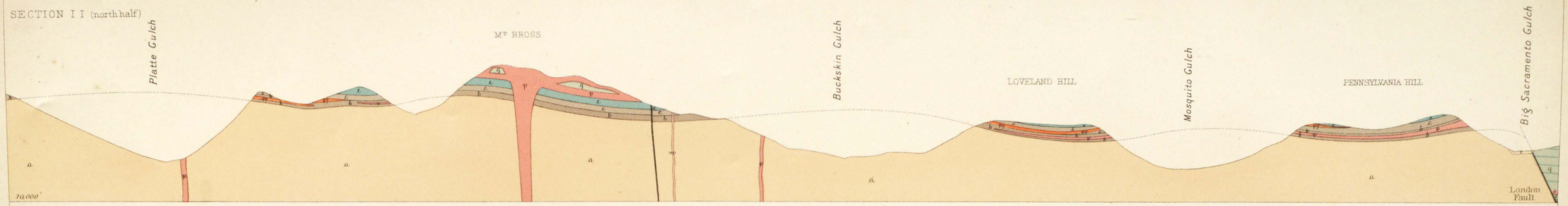


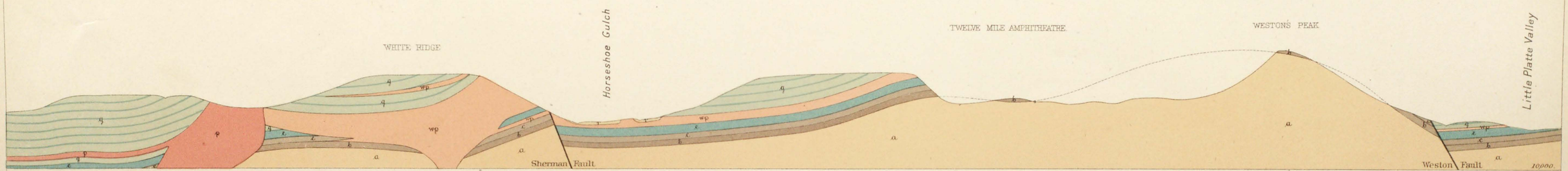
Julius Bien & Co. lith.

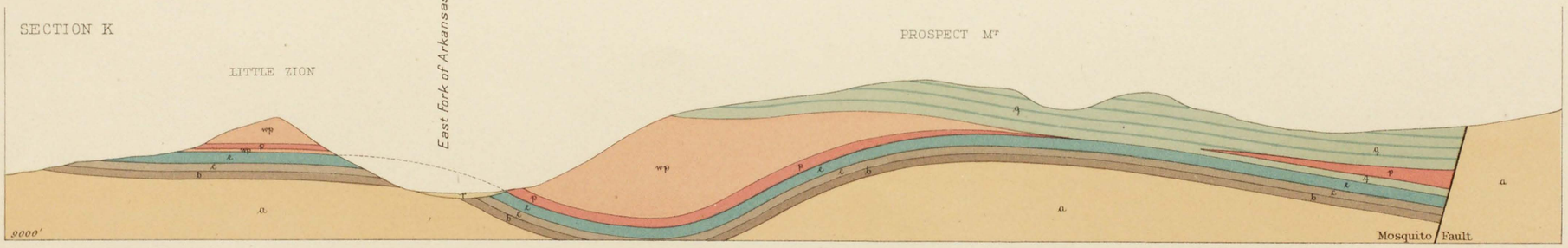
S. F. Emmons, Geologist-in-Charge

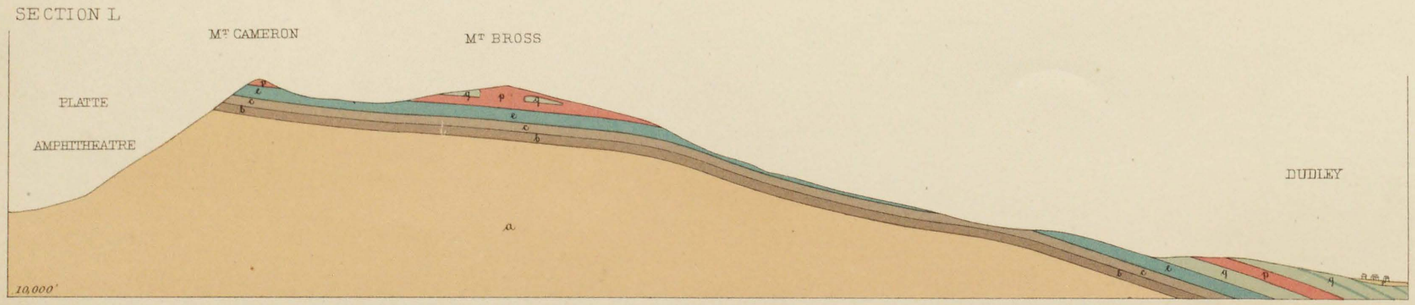
MOSQUITO RANGE

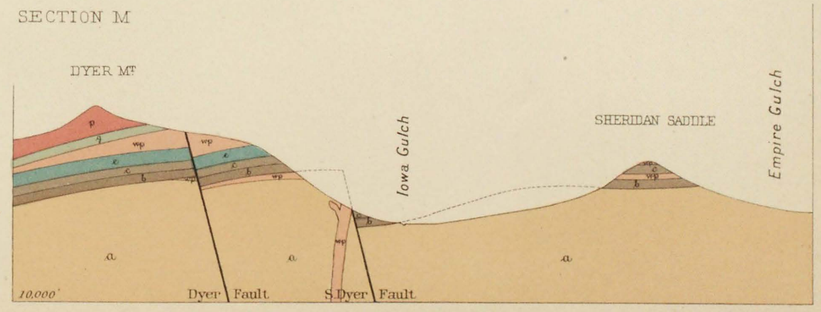
SECTIONS III











Julius Bien & Co. lith.

FEET AND MILES 4000 3000 2000 1000 0 5000 1 mi. 10000 2 mi.

Horizontal & Vertical Scales: 2 inches to 1 mile or 1: 31680

METERS 500 0 1000 2000 3000 4000

S. F. Emmons, Geologist in Charge.

Recent	Weber Grits	Blue Limestone	White Limestone	Lower Quartzite	Granite and Crystalline Schists	White Porphyry	Other Porphyries	Porphyrite
r	g	ε	c	b	a	wp	p	py

UNITED STATES GEOLOGICAL SURVEY

GEOLOGY OF LEADVILLE. ATLAS SHEET X

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TOPOGRAPHICAL MAP OF LEADVILLE AND VICINITY

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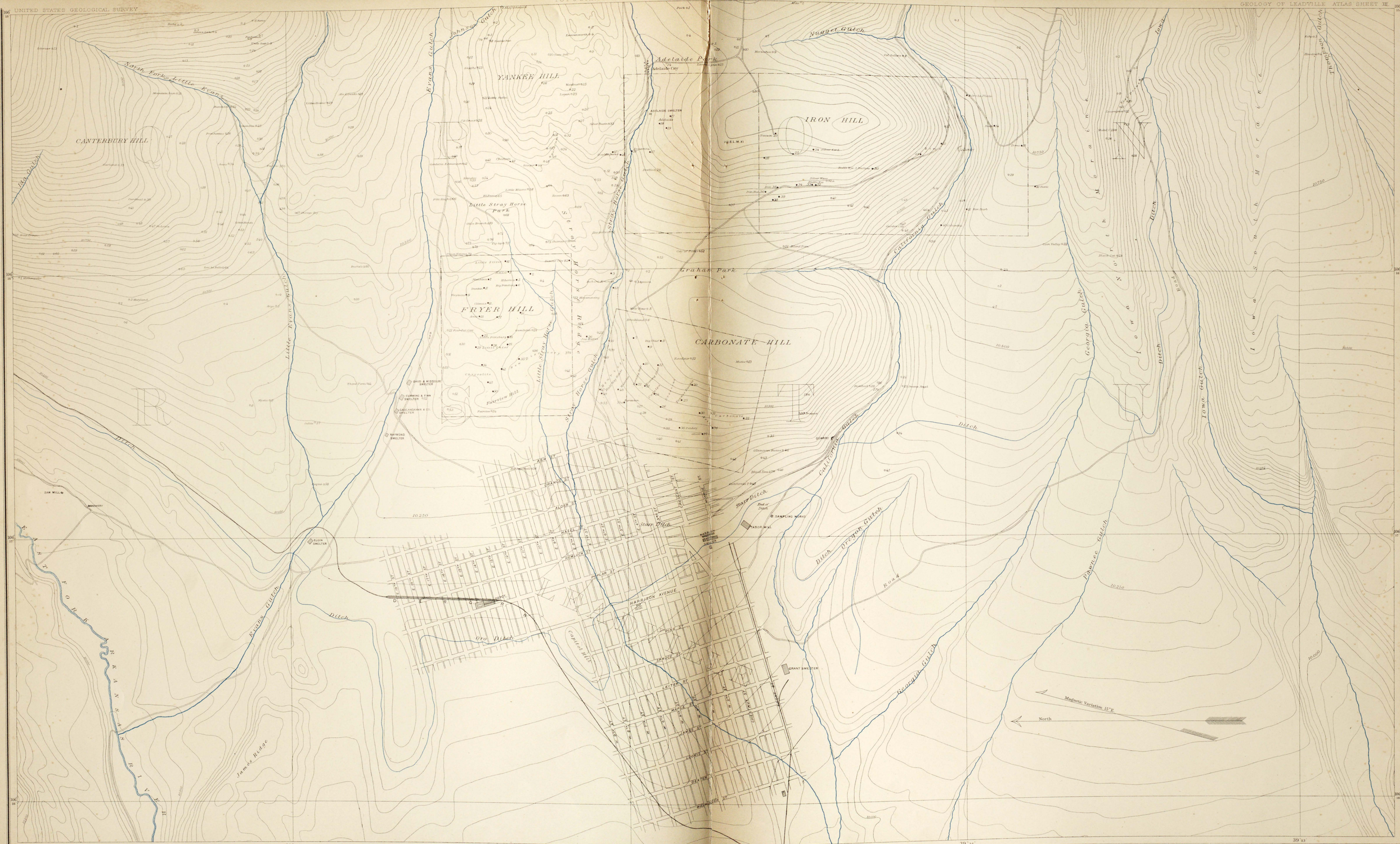
CANTERBURY HILL
YANKEE HILL
IRON HILL
FRYER HILL
CARBONATE HILL
Adelaide Park
Adelaide City
Little Stray Horse Park
Stray Horse Hills
Graham Park
Fairview Hill
Capitol Hill
Nugget Gulch
Evans Gulch
Johnson Gulch
Little Evans Gulch
North Fork Little Evans
Stray Horse Gulch
California Gulch
Georgia Gulch
Iowa Gulch
Iowa Mountains
Pennsylvania Gulch
Star Ditch
Oro Ditch
Ditch
Road
James Ridge
EAST FORK ARKANSAS RIVER
ADELAIDE SMELTER
OHIO & MISSOURI SMELTER
CUMMING & FINN SMELTER
CHECHAGAMAN & CO. SMELTER
RAYMOND SMELTER
ELGIN SMELTER
GRANT SMELTER
SAW MILLS
SAMPLING WORKS
HARRISON AVENUE
ASH ST
ORANGE ST
ALDER ST
HAZEL ST
PINE ST
SPRUCE ST
LEITER ST
MAPLE ST
ELM ST
LAKE ST
LOUIS ST
BEAVER ST
WASHINGTON ST
Magnetic Variation 15° E.
North
39°16'
39°15'
39°14'
39°13'
A. D. Wilson, Chief Topographer
FEET AND MILES
Scale 1 inch to 2000 feet or 1:9600
METERS
S. F. Emmons, Geologist in Charge.

13

13

GEOLOGICAL MAP OF LEADVILLE AND VICINITY

14

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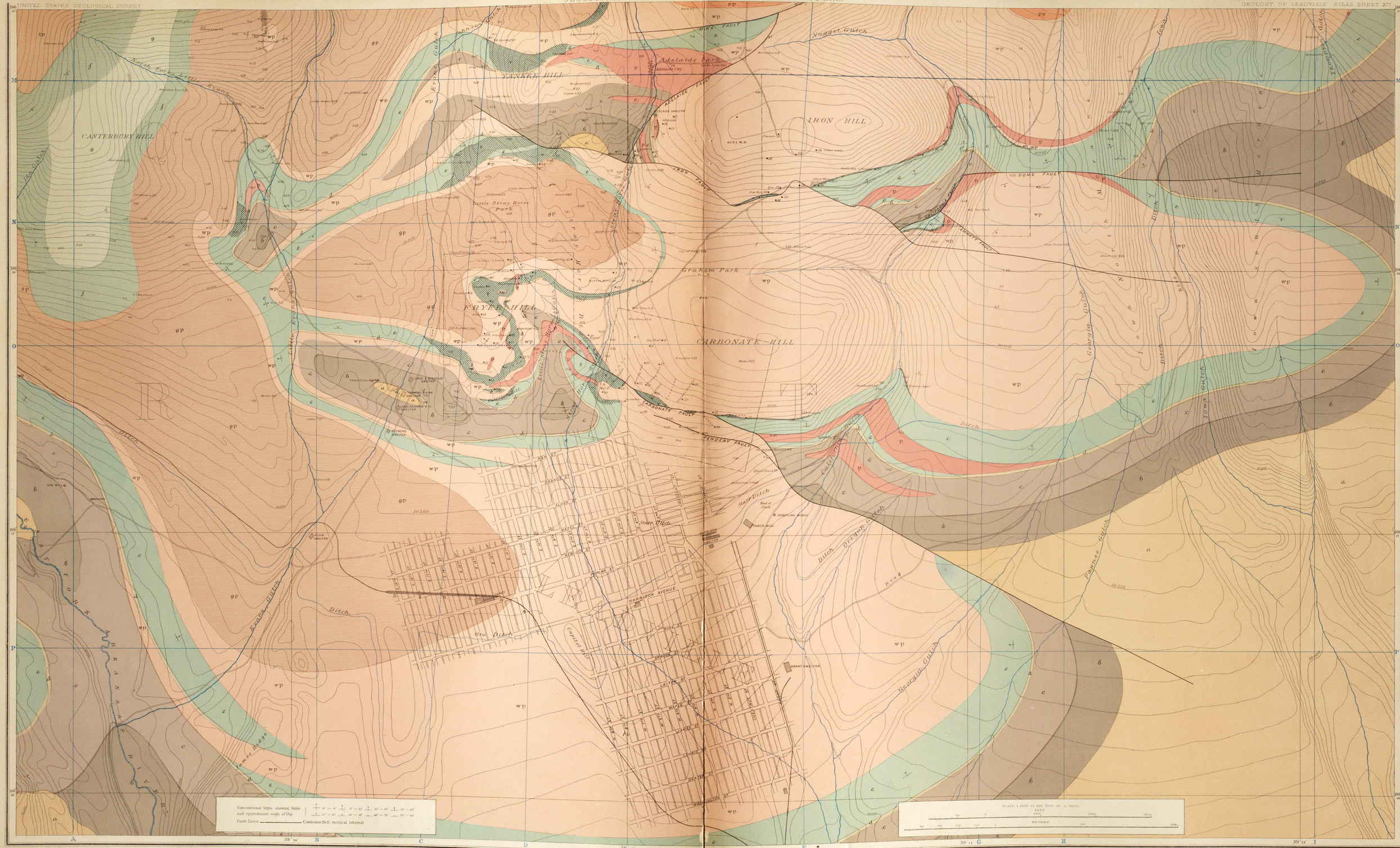
GEOLOGICAL MAP OF LEADVILLE AND VICINITY — WEST HALF



A. D. Wilson, Chief Topographer

S. F. Emmons, Geologist in Charge.

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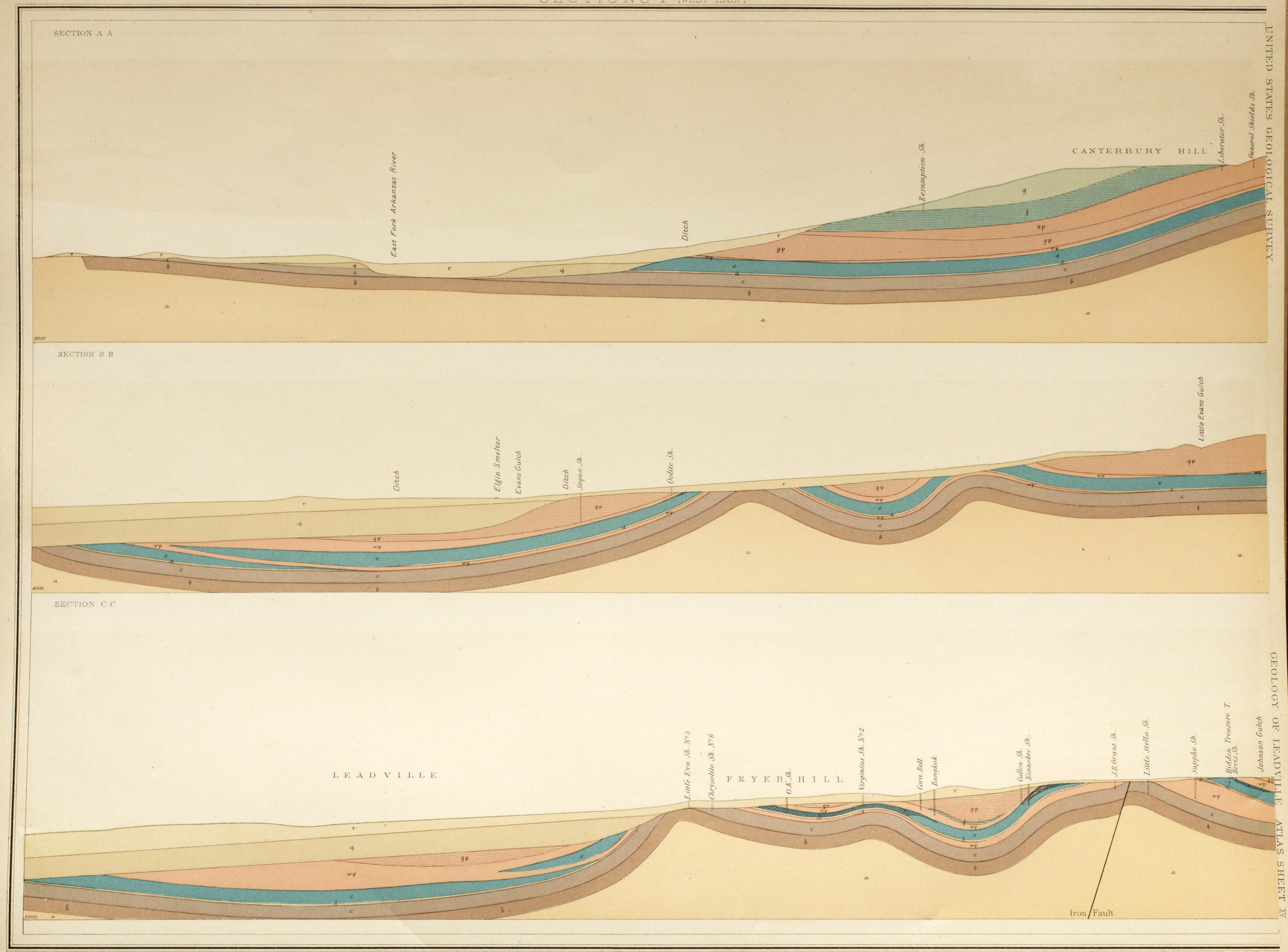
15-16

LEADVILLE AND VICINITY

SECTIONS I (WEST HALF)



Julius Bien & Co. lith.

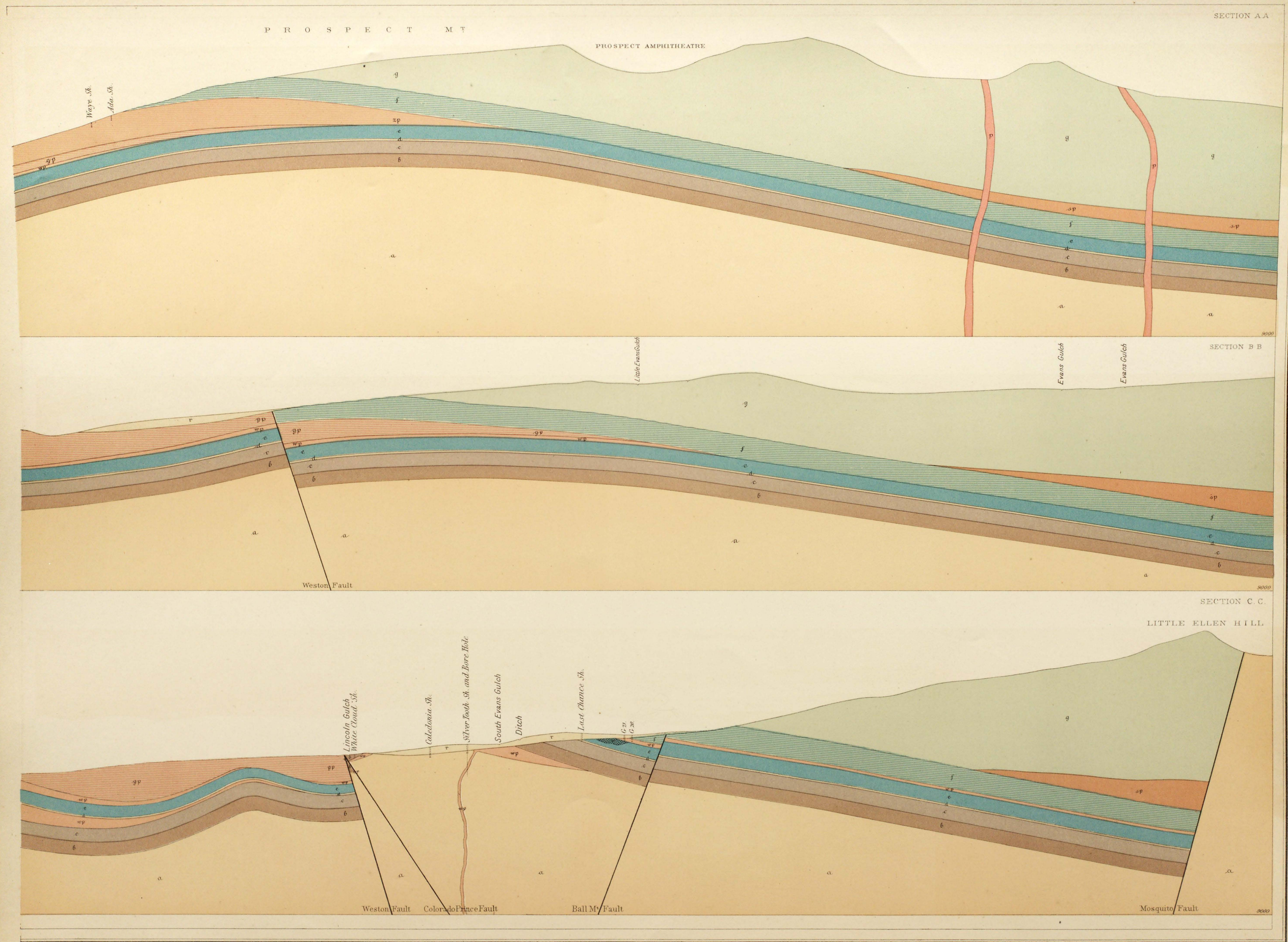
S. F. Emmons, Geologist-in-Charge.

UNITED STATES GEOLOGICAL SURVEY

GEOLOGY OF LEADVILLE ATLAS SHEET XV

LEADVILLE AND VICINITY

SECTIONS I (EAST HALF)



Julius Bien & Co lith.

Horizontal & Vertical Scales: 1 inch to 800 feet or 1:9600.

S. F. Emmons, Geologist-in-Charge.

FEET: 500, 0, 1000, 2000, 3000, 4000

METERS: 400, 300, 200, 100, 0, 500, 1000

Recent	Weber Grits	Weber Shales	Blue Limestone	Parting Quartzite	White Limestone	Lower Quartzite	Granite and Crystalline Schists	Vein Material	White Porphyry	Mt Zion Porphyry	Gray Porphyry (Main Sheet)	Sacramento Porphyry	Other Porphyries
r	g	f	e	d	c	b	a	x	wp	zp	gp	sp	p

UNITED STATES GEOLOGICAL SURVEY

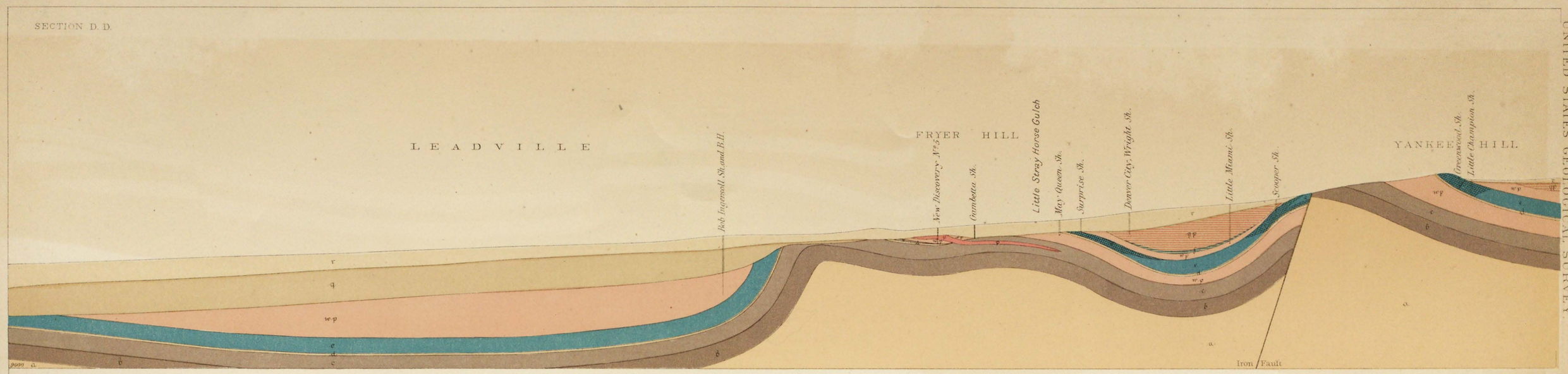
GEOLOGY OF LEADVILLE. ATLAS SHEET XVI

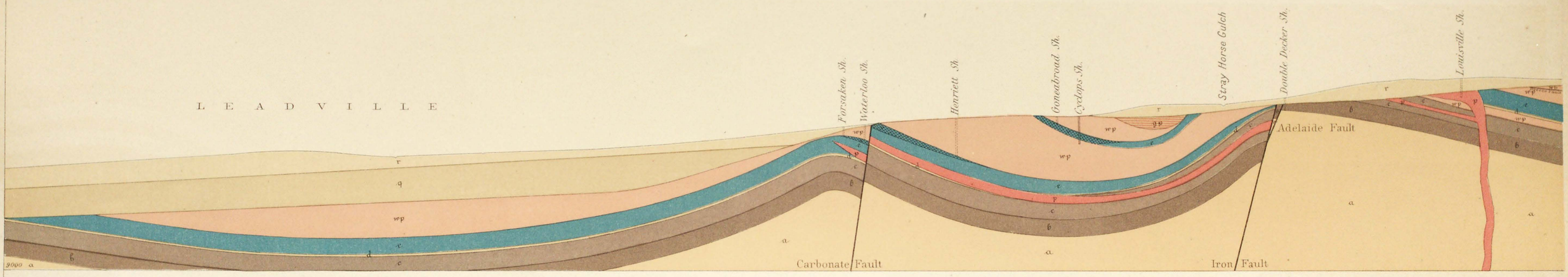
17- 18

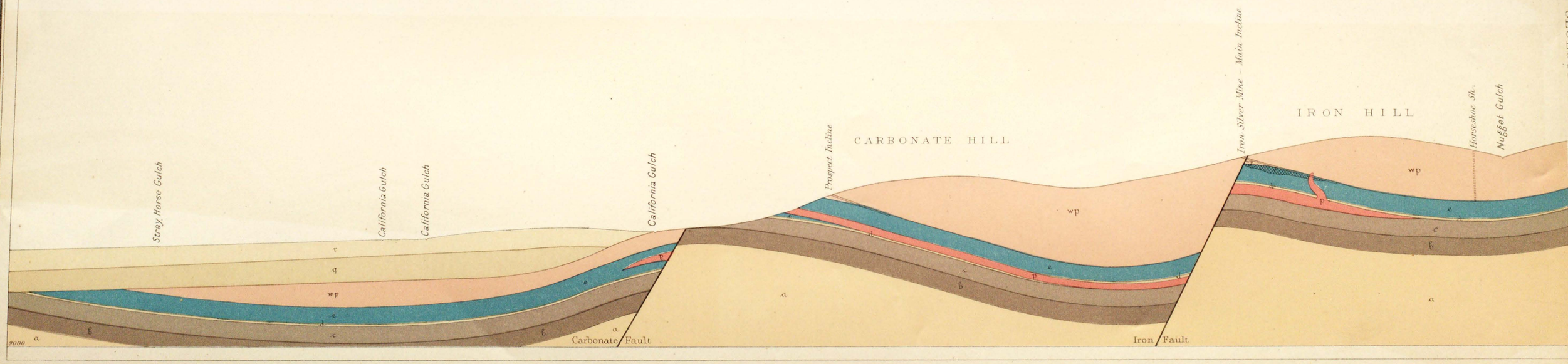
17- 18

LEADVILLE AND VICINITY

SECTIONS II (WEST HALF)







Julius Bien & Co. lith.

Horizontal & Vertical Scales: 1 inch to 800 feet or 1:9600.

FEET 500 0 1000 2000 3000 4000

METERS 400 300 200 100 0 500 1000

Recent	Lake Beds	Weber Shales	Blue Limestone	Parting Quartzite	White Limestone	Lower Quartzite	Granite and Crystalline Schists	Vein Material	White Porphyry	Gray Porphyry (Main Sheet)	Other Porphyries
r	q	f	e	d	c	b	a	v	wp	gp	p

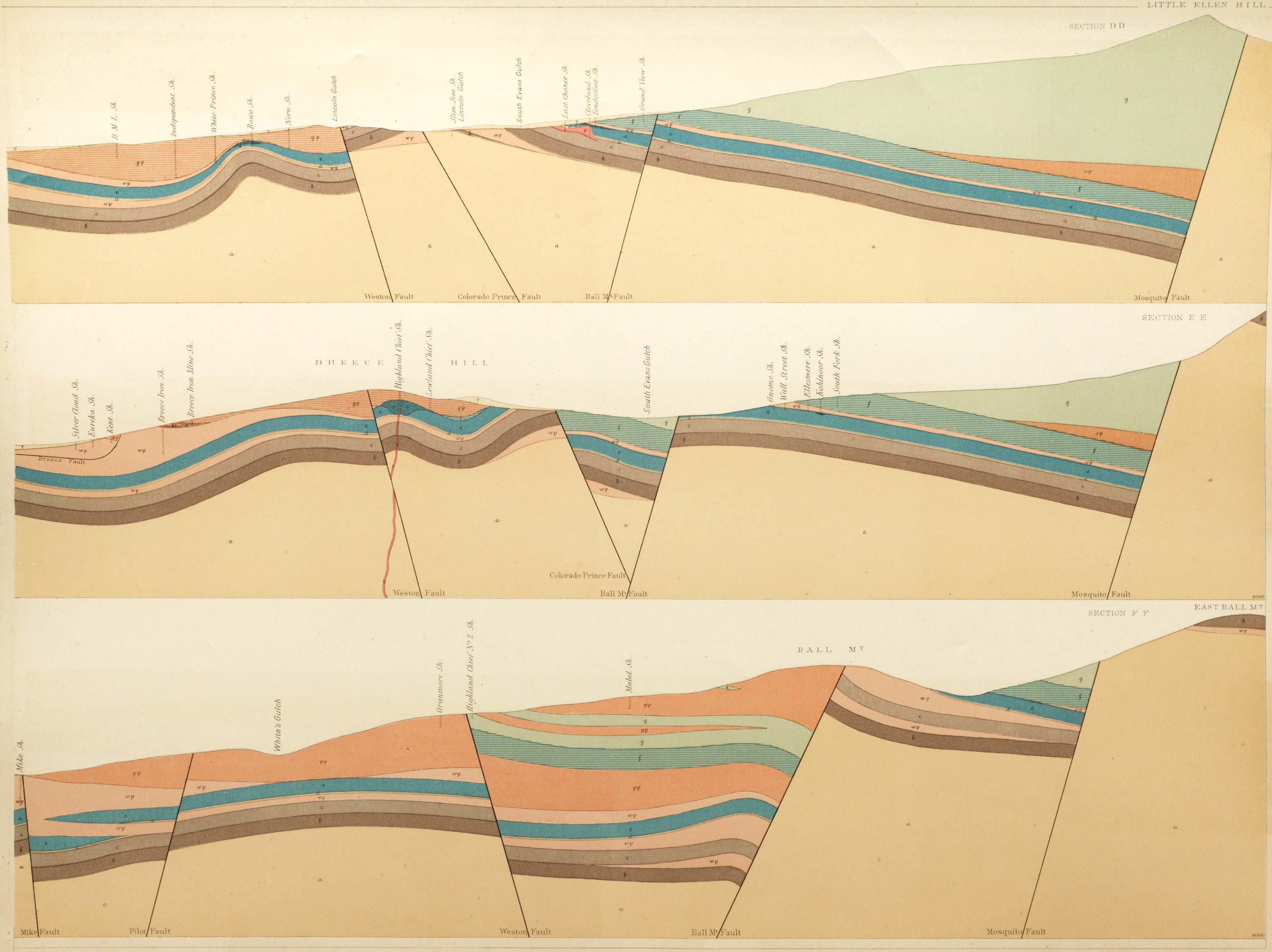
S. F. Emmons Geologist-in Charge.

UNITED STATES GEOLOGICAL SURVEY.

GEOLOGY OF LEADVILLE ATLAS SHEET XVII

LEADVILLE AND VICINITY

SECTIONS II (EAST HALF)



Julius Bien & Co. lith.

FEET 500 0 1000 2000 3000 4000

Horizontal & Vertical Scales: 1 inch to 800 feet or 1:9600.

METERS 100 50 250 150 0 200 1000

S. F. Emmons, Geologist-in-Charge.

Recent	Weber Grits	Weber Shales	Blue Limestone	Partung Quartzite	White Limestone	Lower Quartzite	Granite and Crystalline Schists	Vein Material	White Porphyry	Gray Porphyry (Main Sheet)	Pyritiferous Porphyry	Sacramento Porphyry	Other Porphyries
r	g	f	e	d	c	b	a		wp	gp	pp	sp	p

UNITED STATES GEOLOGICAL SURVEY

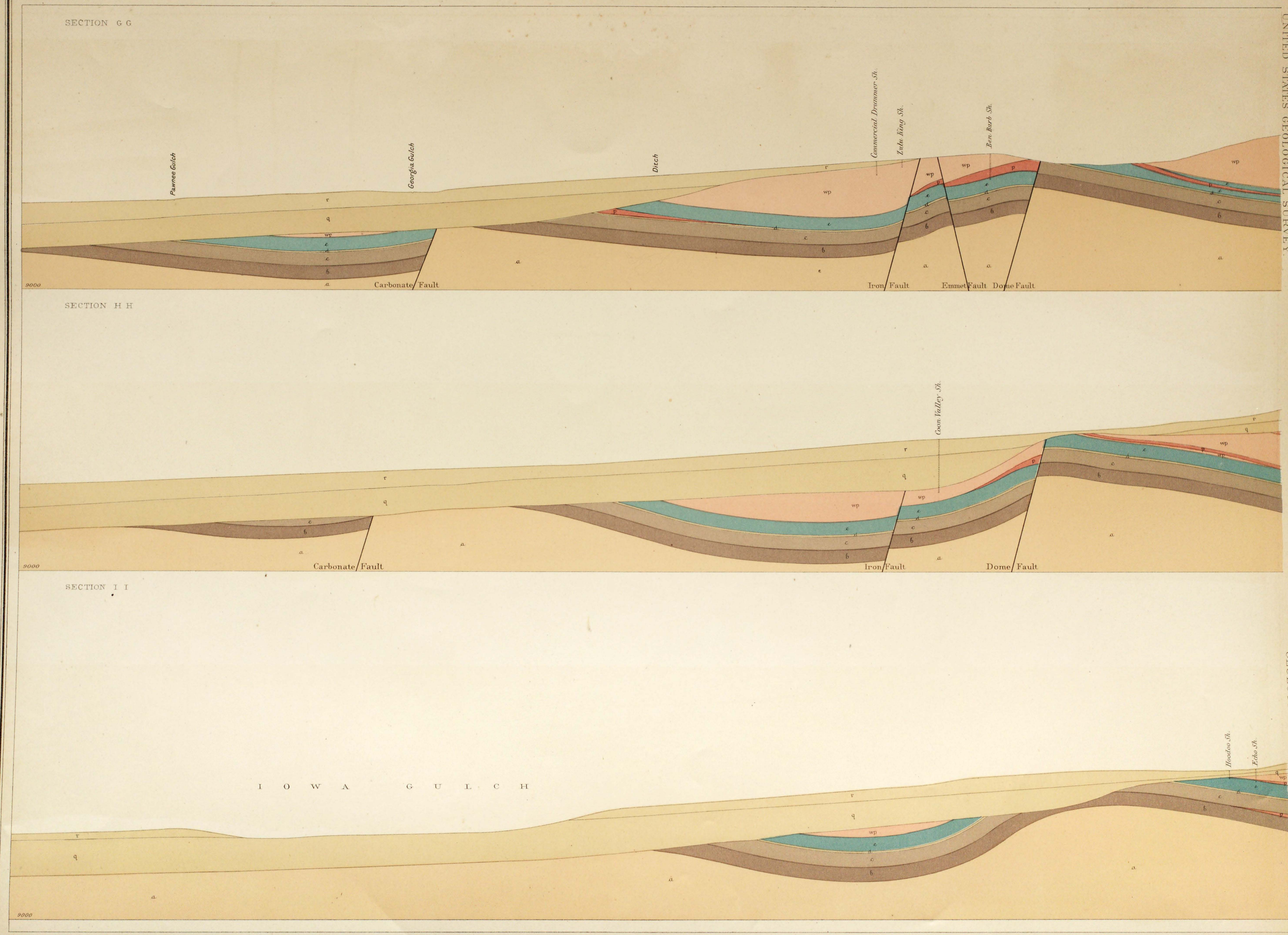
GEOLOGY OF LEADVILLE. ATLAS SHEET XVIII.

19-20

19-20

LEADVILLE AND VICINITY

SECTIONS III (WEST HALF)



UNITED STATES GEOLOGICAL SURVEY

GEOLOGY OF LEADVILLE ATLAS SHEET XIX

Julius Bien & Co. lith.

Horizontal & Vertical Scales: 1 inch to 800 feet or 1:9600.

FEET 500 0 1000 2000 3000 4000

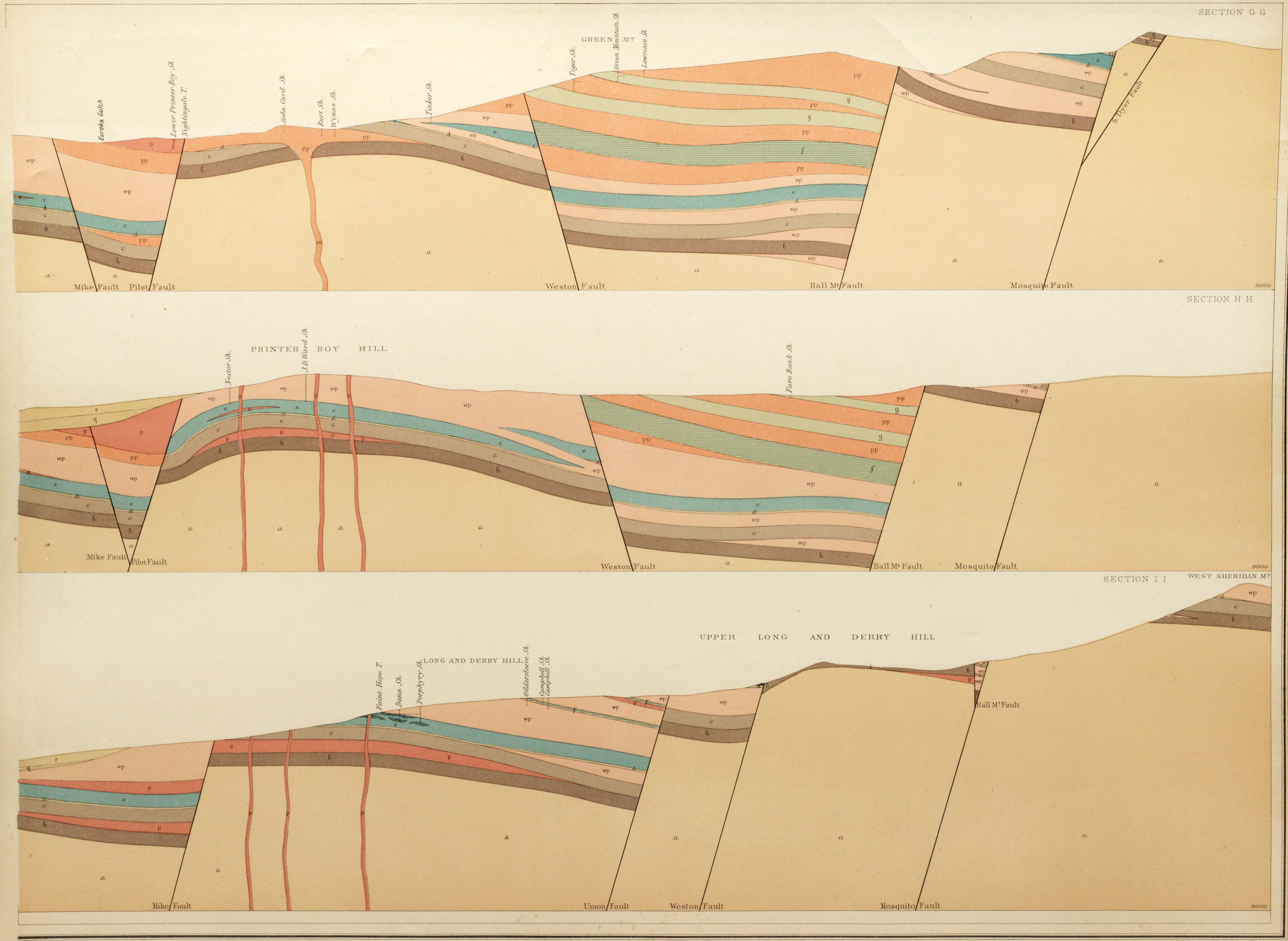
METERS 400 300 200 100 0 500 1000

S. F. Emmons, Geologist-in Charge.

Recent	Lake Beds	Blue Limestone	Parting Quartzite	White Limestone	Lower Quartzite	Granite and Crystalline Schists	White Porphyry	Other Porphyries
r	q	e	d	c	b	a	wp	p

LEADVILLE AND VICINITY

SECTIONS III (EAST HALF)



Julius Bien & Co. lith.

Horizontal & Vertical Scales: 1 inch to 800 feet or 1:9600.

S. F. Emmons, Geologist-in-Charge.

FEET: 500, 0, 1000, 2000, 3000, 4000

METERS: 400, 300, 200, 100, 0, 500, 1000

Recent	Lake Beds	Weber Grits	Weber Shales	Blue Limestone	Parting Quartzite	White Limestone	Lower Quartzite	Granite and Crystalline Schists	Vein Material	White Porphyry	Pyritiferous Porphyry	"Other Porphyries"
r	q	g	f	e	d	c	b	a	v	wp	pp	p

UNITED STATES GEOLOGICAL SURVEY

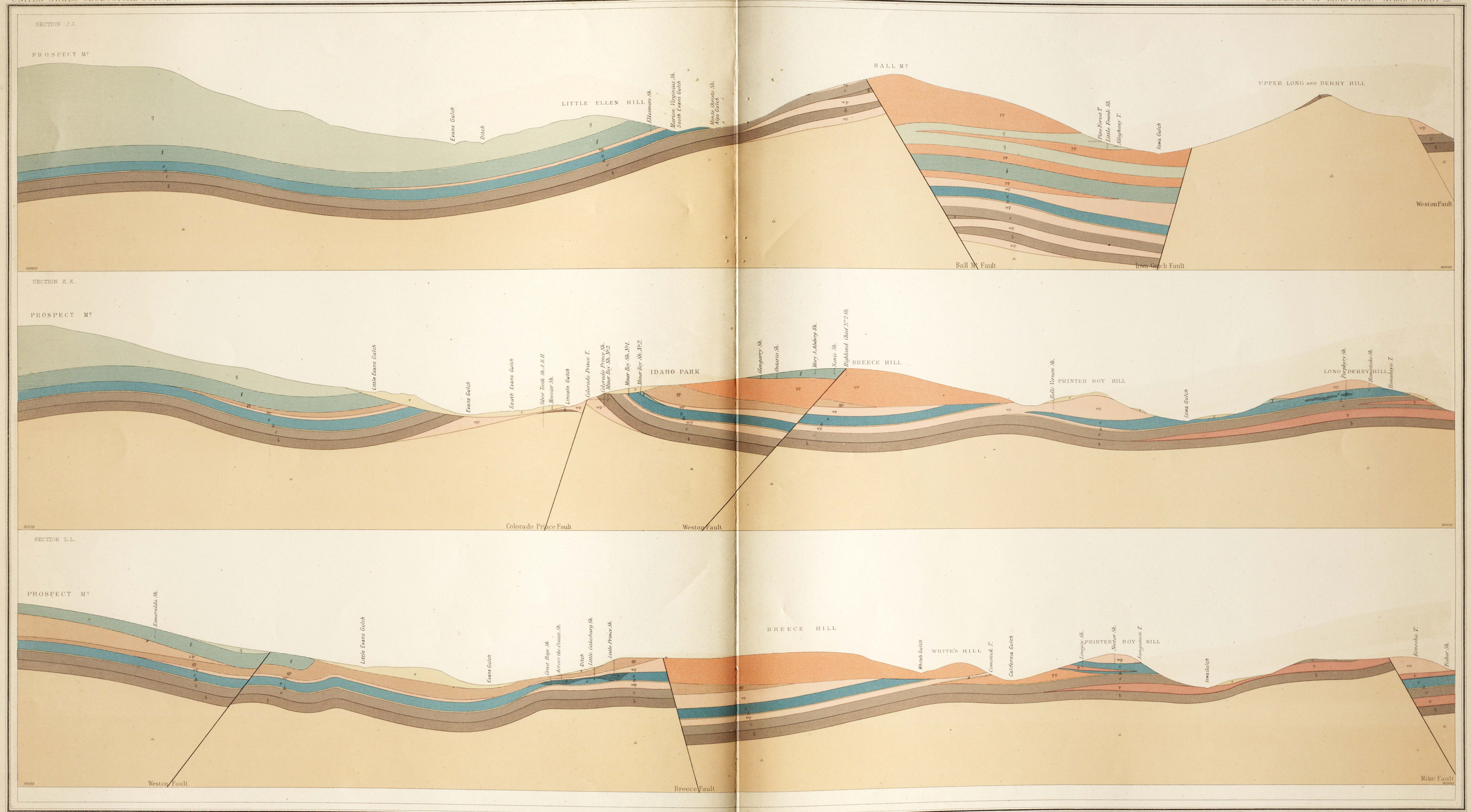
GEOLOGY OF LEADVILLE. ATLAS SHEET XX

21

21

LEADVILLE AND VICINITY

SECTIONS IV



Julius Bien & Co. lith.

Horizontal & Vertical Scales 1 inch to 800 feet or 1:9600.

FEET

METERS

Recent r | Weber Grits g | Weber Shales f | Blue Limestone e | Parting Quartzite d | White Limestone c | Lower Quartzite b | Granite and Crystalline Schists a | Vein Material v | White Porphyry wp | Mt Zion Porphyry zp | Gray Porphyry (Main Sheet) gp | Pyritiferous Porphyry pp | Other Porphyries p

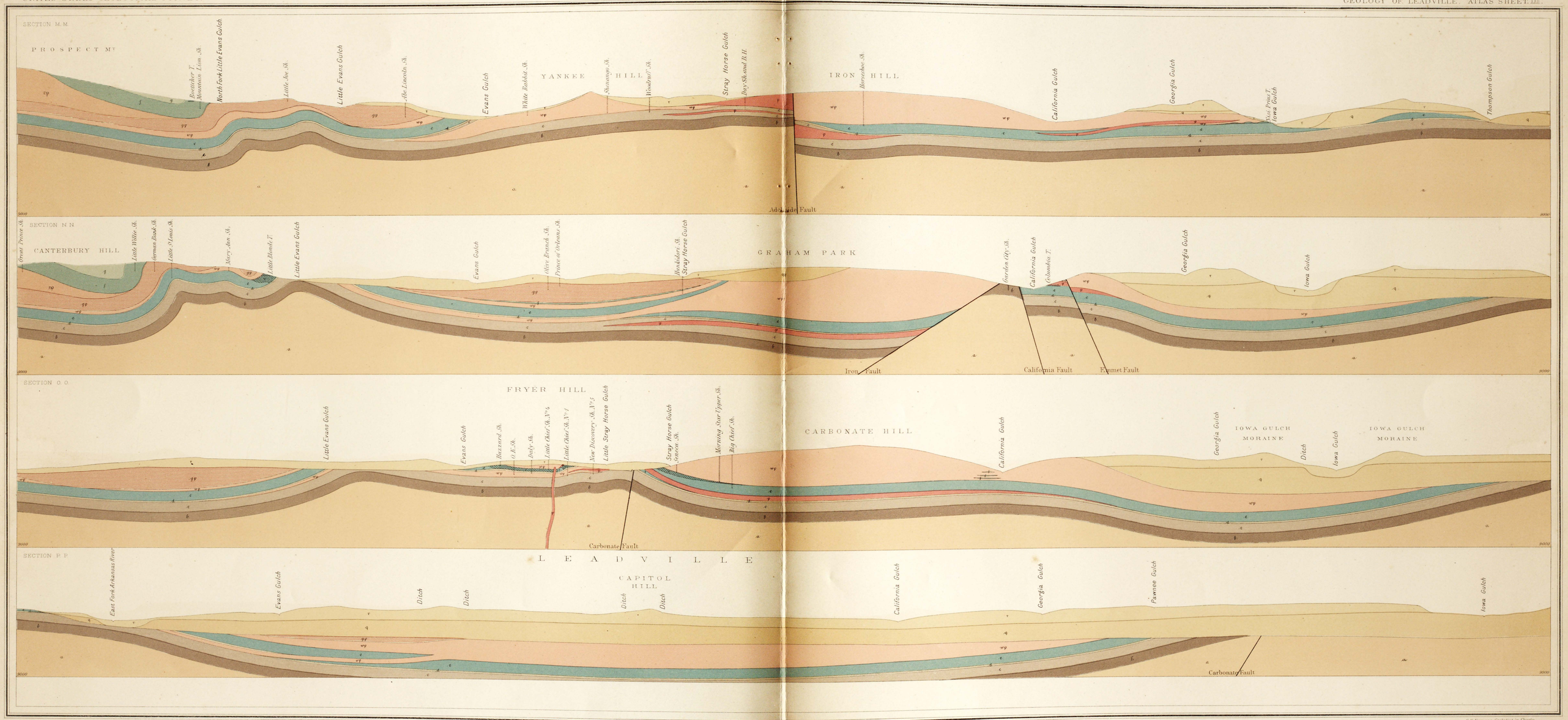
S. F. Emmons, Geologist in Charge.

2a

2a

LEADVILLE AND VICINITY.

SECTIONS V.



FEET 1000 2000 3000 4000

Julius Bien & Co. lith.

Horizontal & Vertical Scales: 1 inch to 800 feet or 1:9600.

METERS 100 200 300

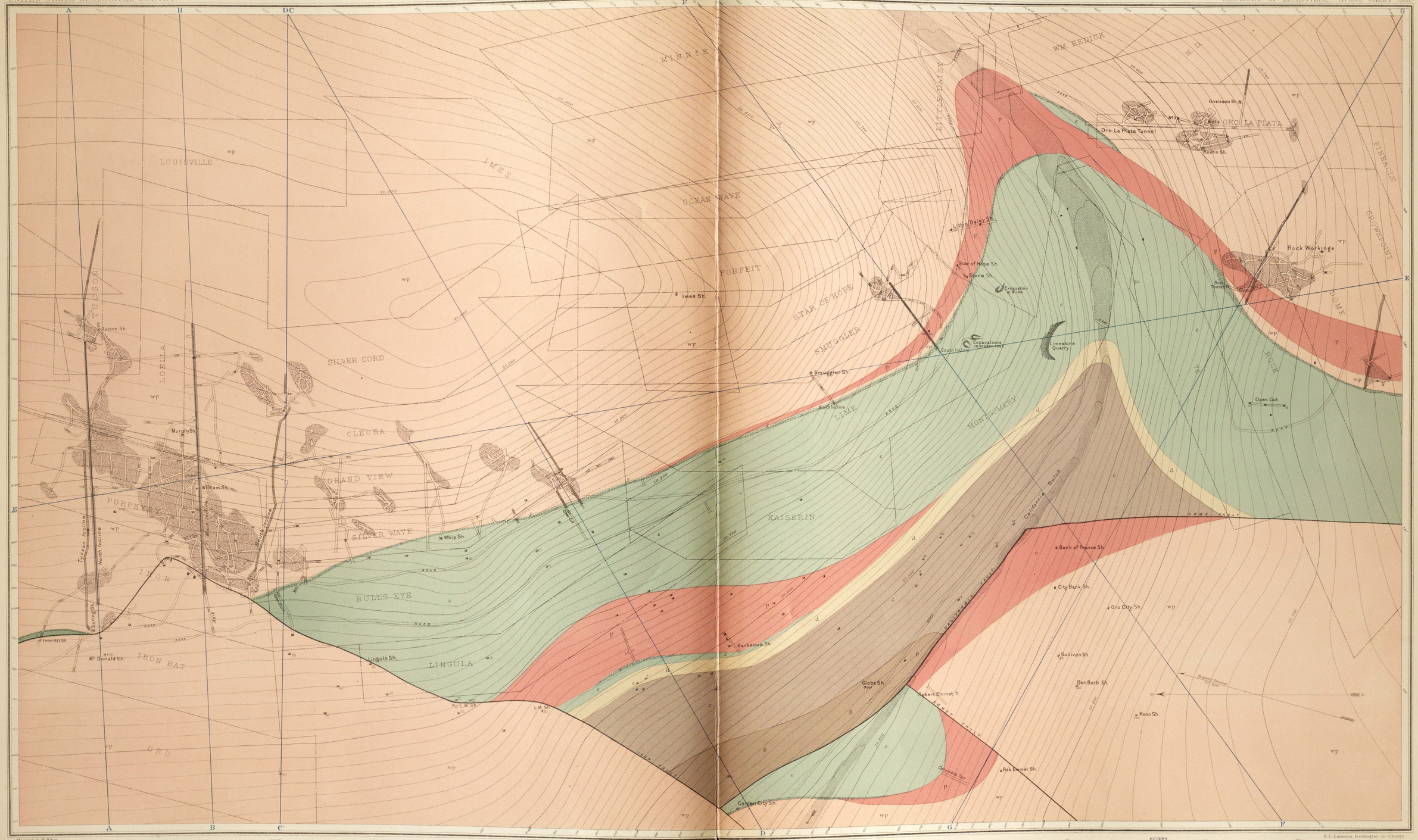
S. F. Emmons, Geologist in Charge.

Recent	Lake Beds	Weber Grits	Weber Shales	Blue Limestone	Parting Quartzite	White Limestone	Lower Quartzite	Granite and Crystalline Schists	Vein Material	White Porphyry	Mt. Zion Porphyry	Gray Porphyry (Main Sheet)	Other Porphyries
r	q	g	f	e	d	c	b	a		wp	zp	gp	p

25

27

IRON HILL



Mapwork by H. Baker

FEET

Figures within drills denote their dravage above the mean feet curve. Figures at shafts, where there are no drills, denote depth below surface. Contour-lines denote actual surface of ground. Geological colors denote inspection-outcrops of rock on plan, as they would appear if all loose material were removed. Underground workings and outlines of ore bodies are projected on a horizontal plane, as if seen through a transparent medium.

Julius Bien & Co. lith.

Scale 1 inch to 100 feet or 1:1200.

Weber Shales	Blue Limestone	Parting Quartzite	White Limestone	Lower Quartzite	Vein Material	Ore	White Porphyry	Other Porphyries
f	e	d	c	b			wp	p

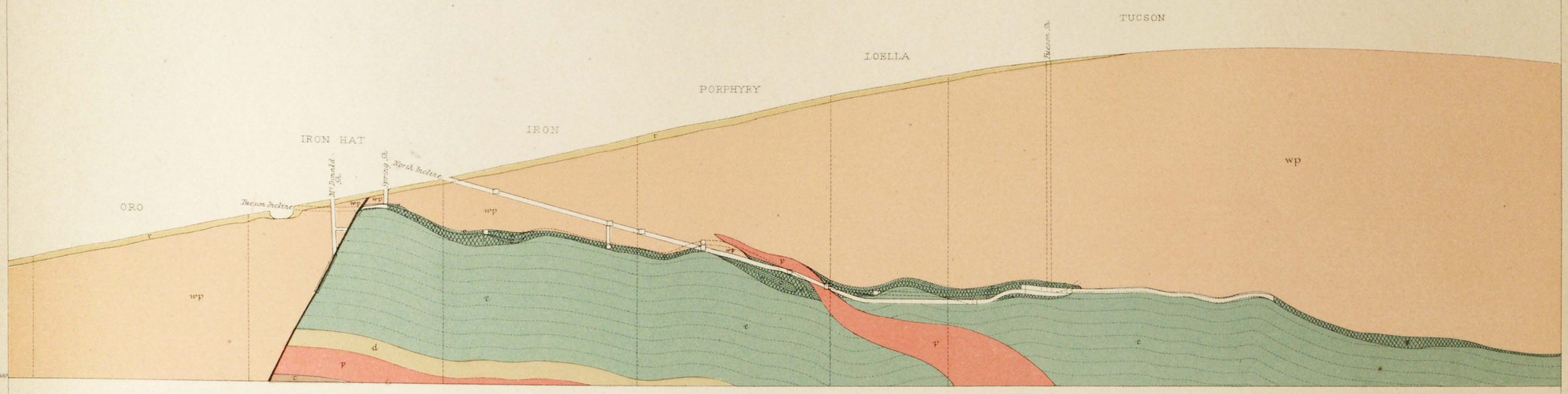
METERS

Boundaries of claims indicated by broken lines. Bulkhead Lines. Shafts. Winzes. Bulkhead Lines. Gunboxes 10 Ft. vertical interval. Ore-chutes.

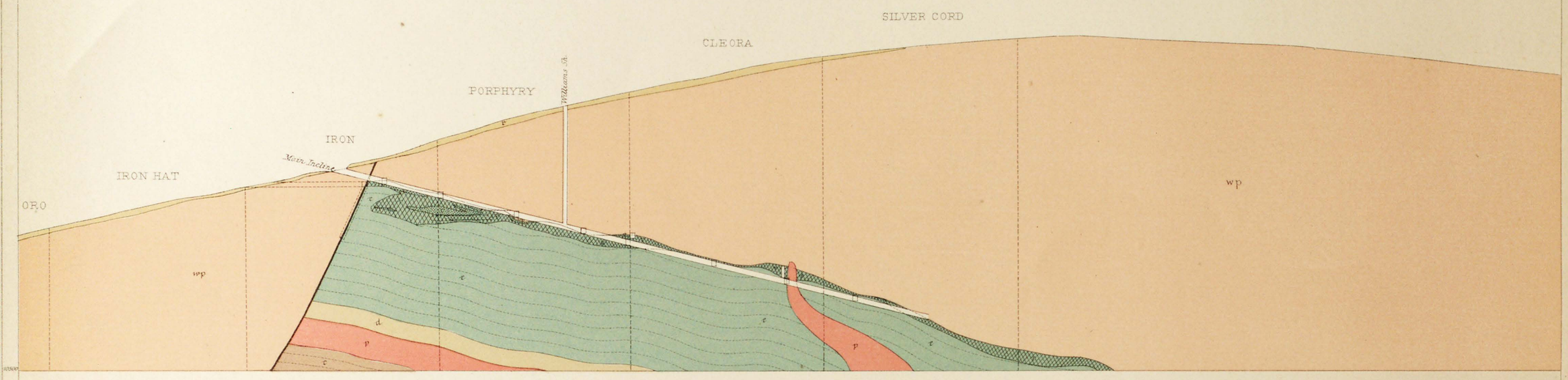
S.F. Emmons, Geologist-in-Charge

IRON HILL
SECTIONS I

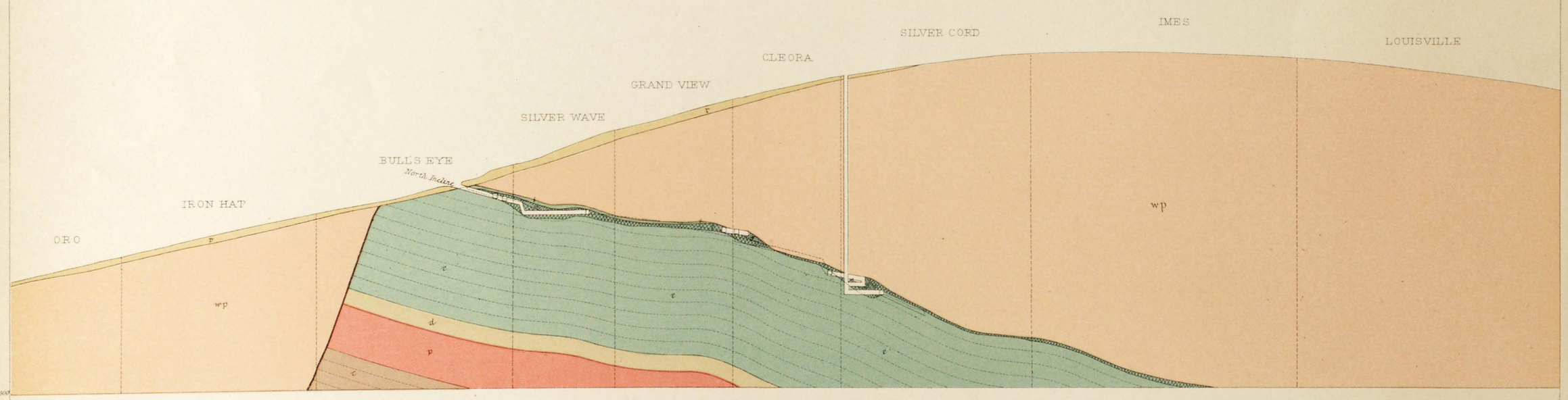
Section AA. Through N Incline Iron Mine



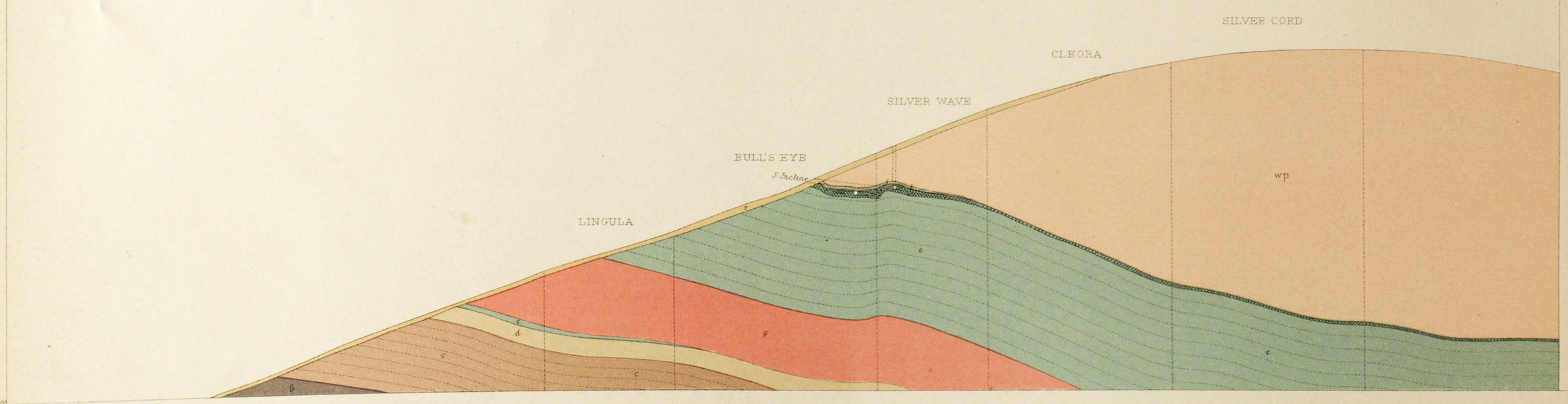
Section BB Through Main Incline Iron Mine



Section CC Through South Incline Iron Mine.



Section DD Through South Bull's Eye



Julius Bien & Co. lith.

Horizontal & Vertical Scales: 1 inch to 160 feet or 1:1920.

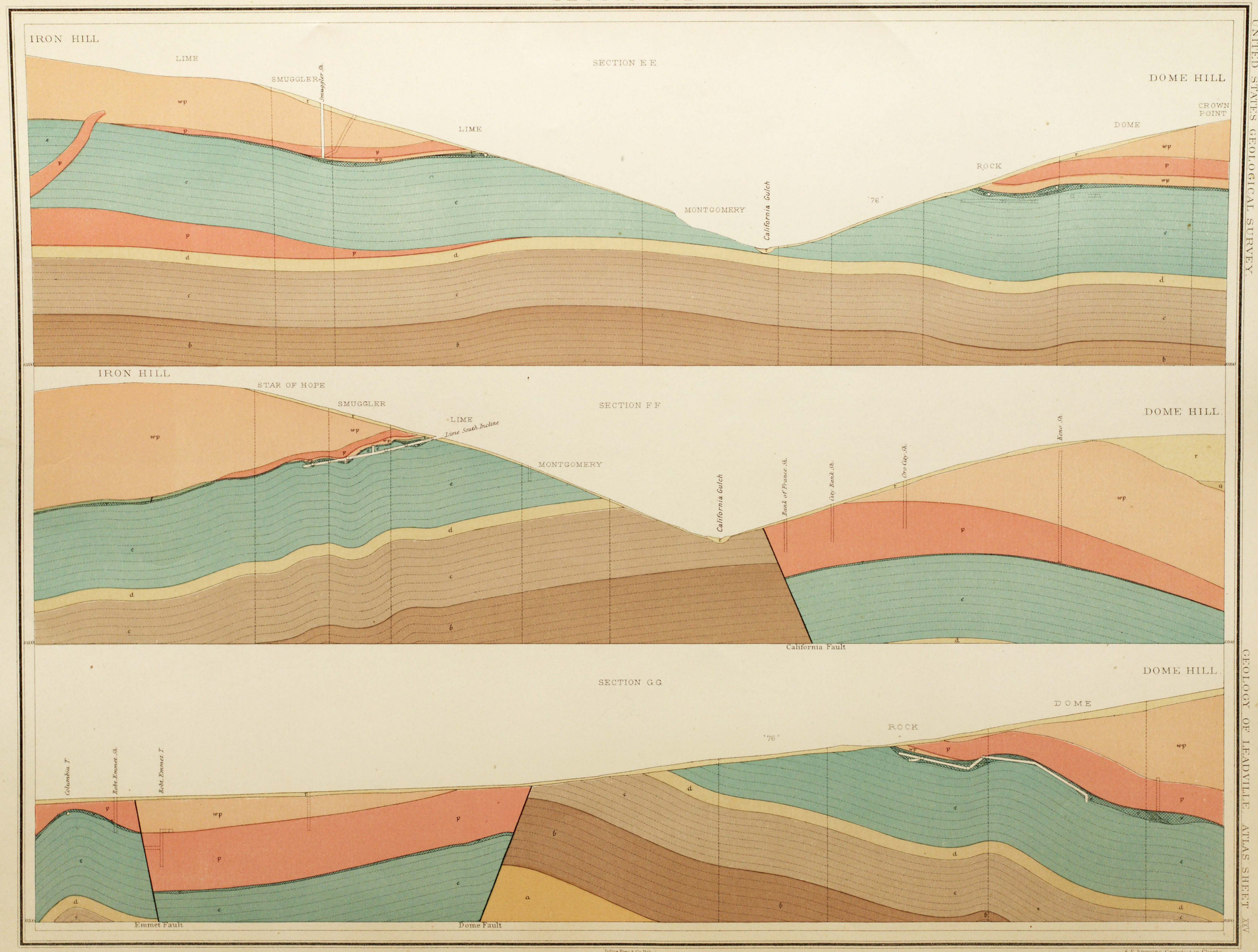
FEET 50 0 100 200 300 400 500 600 700 800 900 1000

METERS 50 0 50 100 200

Recent	Weber Shales	Blue Limestone	Parting Quartzite	White Limestone	Lower Quartzite	Vein Material	Ore	White Porphyry	Other Porphyries
r	f	e	d	c	b			wp	p

S. F. Emmons, Geologist-in-Charge.

IRON HILL
SECTIONS II



Julius Bien & Co. lith.

Horizontal & Vertical Scales: 1 inch to 160 feet or 1/1920.

S. F. Emmons, Geologist in Charge

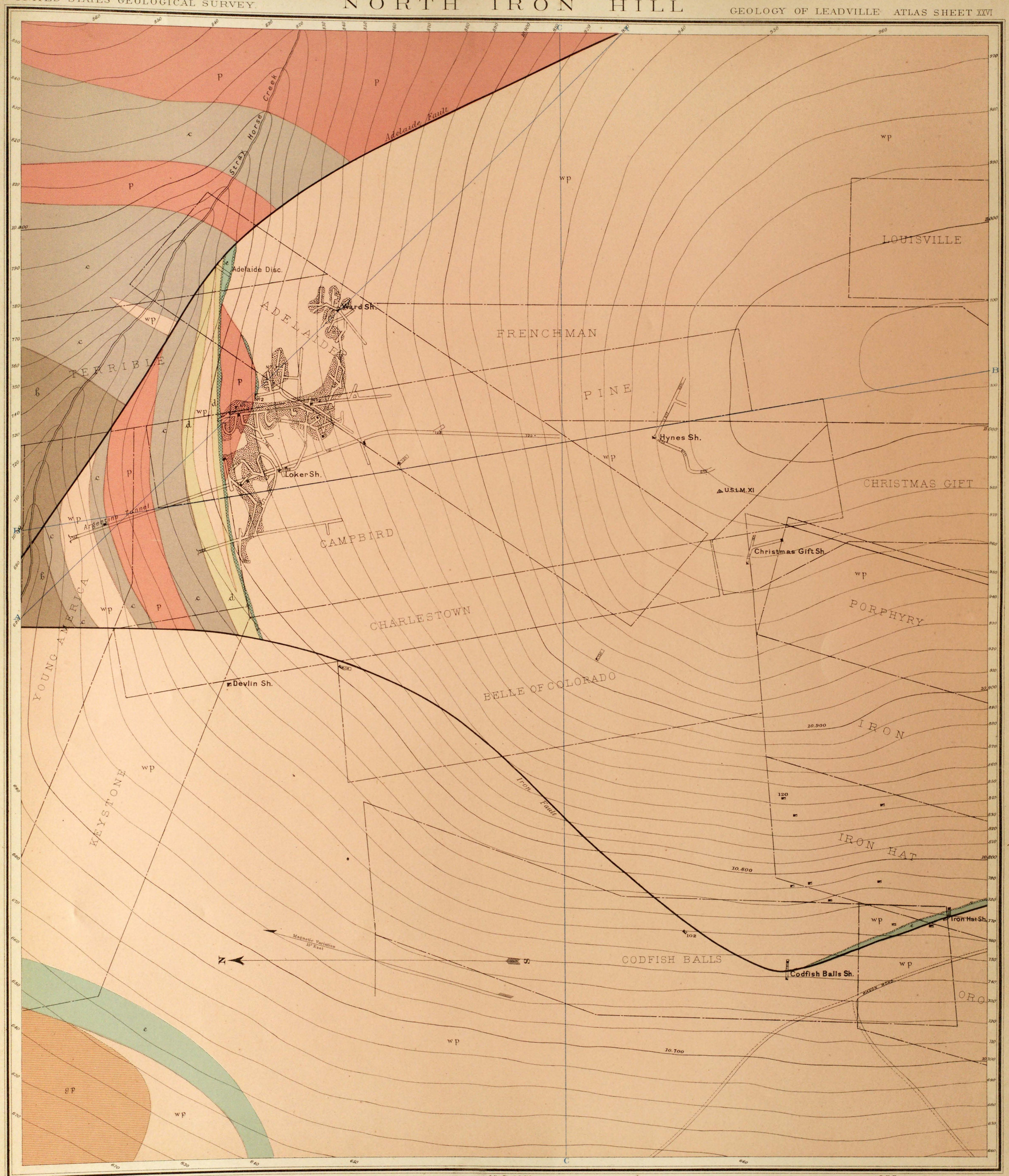
FEET 50 0 100 200 300 400 500 600 700 800 900 1000

METERS 50 0 100 200

Recent	Lake Beds	Weber Shales	Blue Limestone	Parting Quartzite	White Limestone	Lower Quartzite	Granite and Crystalline Schists	Vein Material	Ore	White Porphyry	Other Porphyries
r	q	f	e	d	c	b	a	v	o	wp	p

UNITED STATES GEOLOGICAL SURVEY
GEOLOGY OF LEADVILLE, ATLAS SHEET XXV

NORTH IRON HILL



A.D. Wilson, Chief Topographer

Julius Bien & Co. lith.

FEET. 50 0 100 200 300 400 500

Scale 1 inch to 160 feet or 1:1920

METERS 50 0 50 100

S.F. Emmons, Geologist-in-Charge.

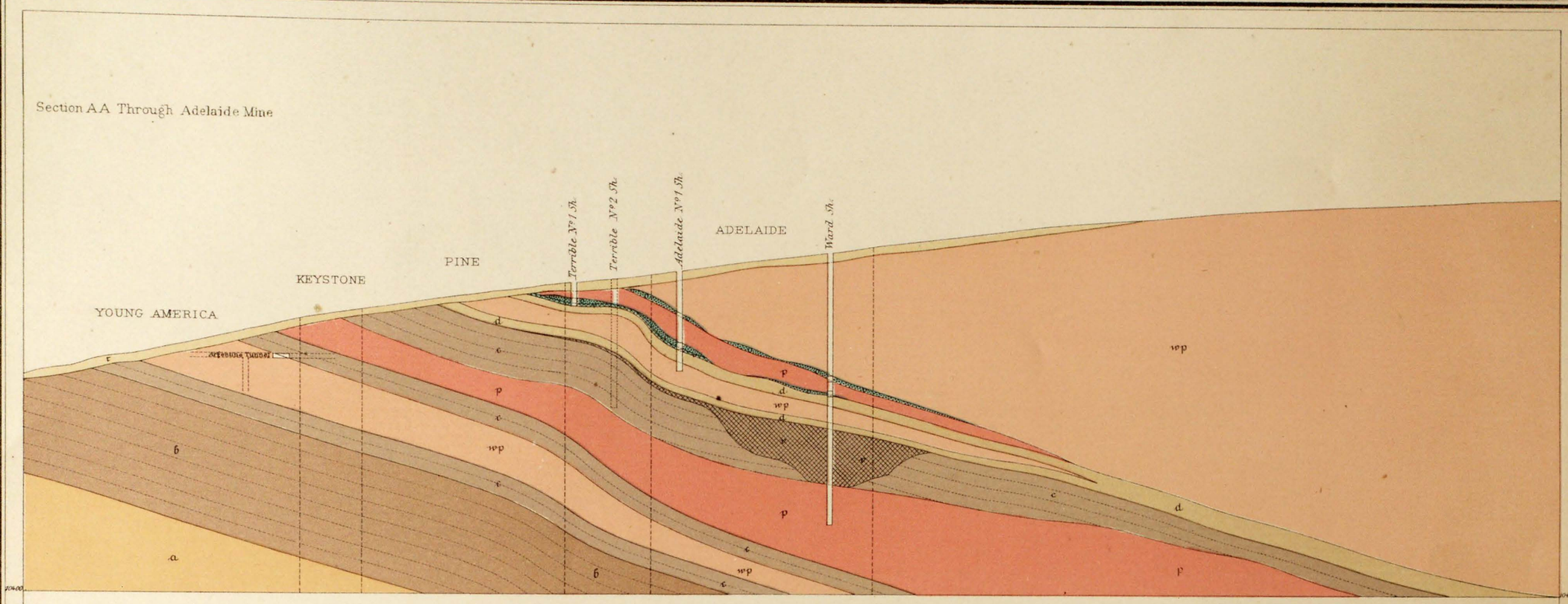
Figures within drifts denote their elevation above the 10,000 feet curve. Figures at shafts, where there are no drifts denote depth below surface. Contour-lines denote actual surface of ground. Geological colors denote respective outcrops of rock in place, as they would appear if all loose material were removed. Underground workings and outlines of ore-bodies are projected on a horizontal plane, as if seen through a transparent medium.

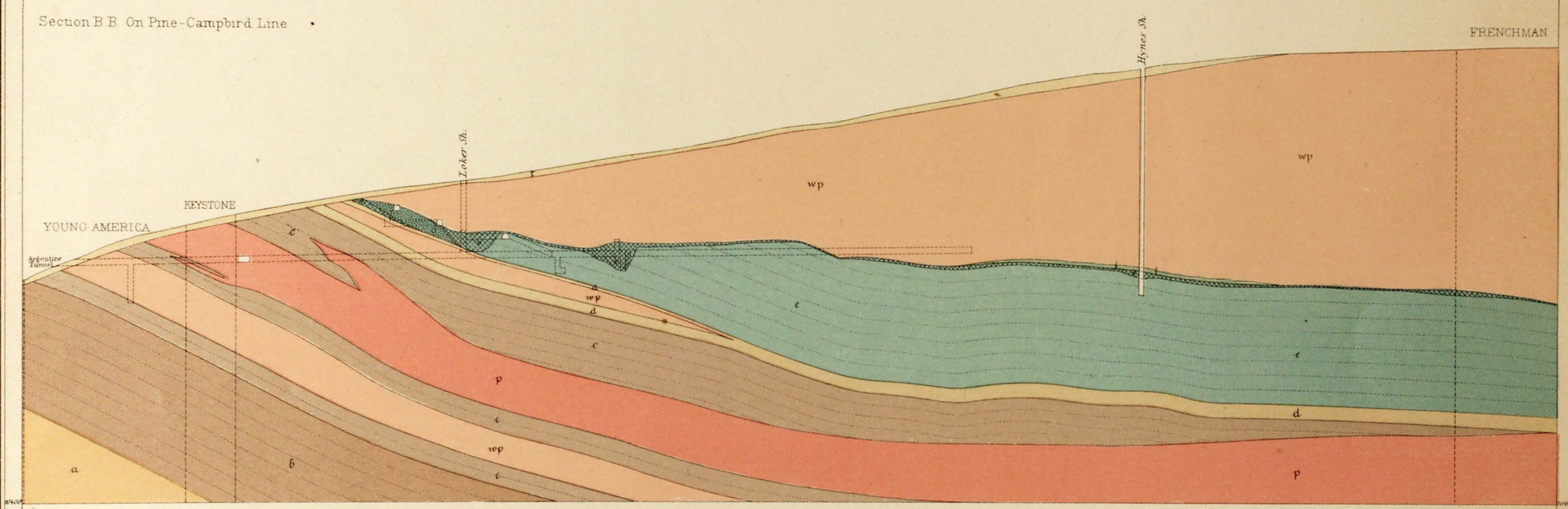
Blue Limestone	Parting Quartzite	White Limestone	Lower Quartzite	Vein Material	Ore	White Porphyry	Gray Porphyry (Main Sheet)	Other Porphyries
e	d	c	b	x	o	wp	gp	p

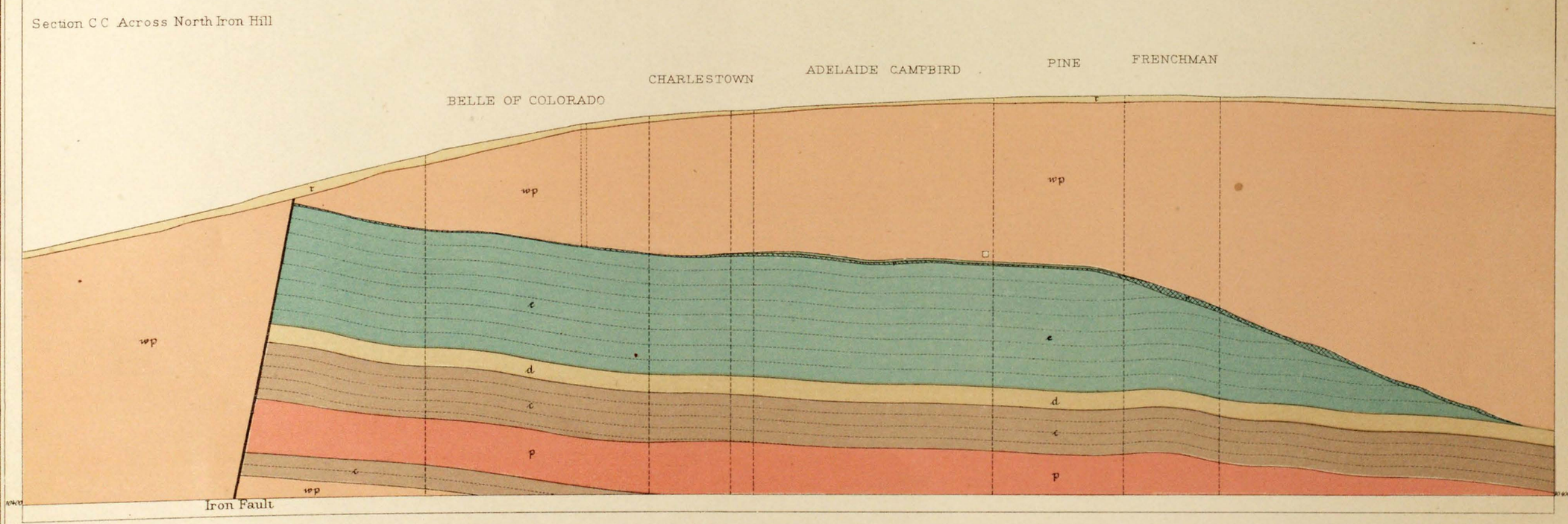
Boundaries of claims indicated by broken lines
Drifts on or near level — Inclines
Shafts — Winzes — Upraises — Ore-chutes
Contours 10 ft. vertical interval. — Fault Lines

NORTH IRON HILL

UNITED STATES GEOLOGICAL SURVEY. SECTIONS GEOLOGY OF LEADVILLE. ATLAS SHEET XXVII







Julius Bien & Co. lith.

S. F. Emmons, Geologist-in-Charge.

Horizontal & Vertical Scales: 1 inch to 160 feet or $\frac{1}{1920}$

FEET 50 0 100 200 300 400 500 600 700 800 900 1000

METERS 50 0 100 200

Recent	Weber Shales	Blue Limestone	Parting Quartzite	White Limestone	Lower Quartzite	Granite and Crystalline Schists	Vein Material	Ore	White Porphyry	Other Porphyries
r	f	e	d	c	b	a	v	o	wp	p

U. S. GEOLOGICAL SURVEY LIBRARY

CARBONATE HILL

A. D. Wilson, Chief Topographer

Julius Bien & Co. lith.

FEET. 50 0 100 200 300 400 500

Scale 1 inch to 160 feet or 1:1920.

METERS 50 0 100

S. F. Emmons, Geologist-in-Charge.

Figures within drifts denote their elevation above the 10000 feet curve. Figures at shafts, where there are no drifts denote depth below surface. Contour-lines denote actual surface of ground. Geological colors denote respective outcrops of rock-in-place, as they would appear, if all loose material were removed. Underground workings and outlines of ore bodies are projected on a horizontal plane, as if seen through a transparent medium.

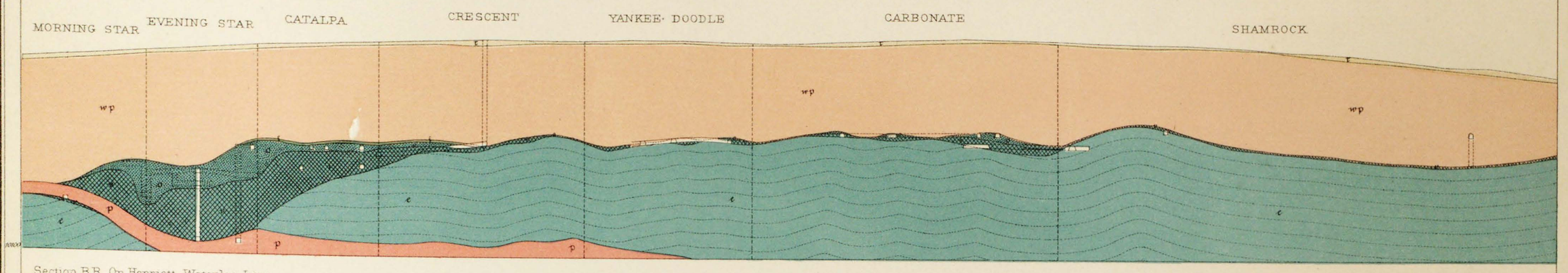
Blue Limestone	Parting Quartzite	White Limestone	Vein Material	Ore	White Porphyry
e	d	c	x		wp

Boundaries of claims indicated by broken lines — Drifts on or near level
Inclines — Shafts — Winzes — Upraises — Ore-chutes
Fault Lines
Contours 10 ft. vertical interval

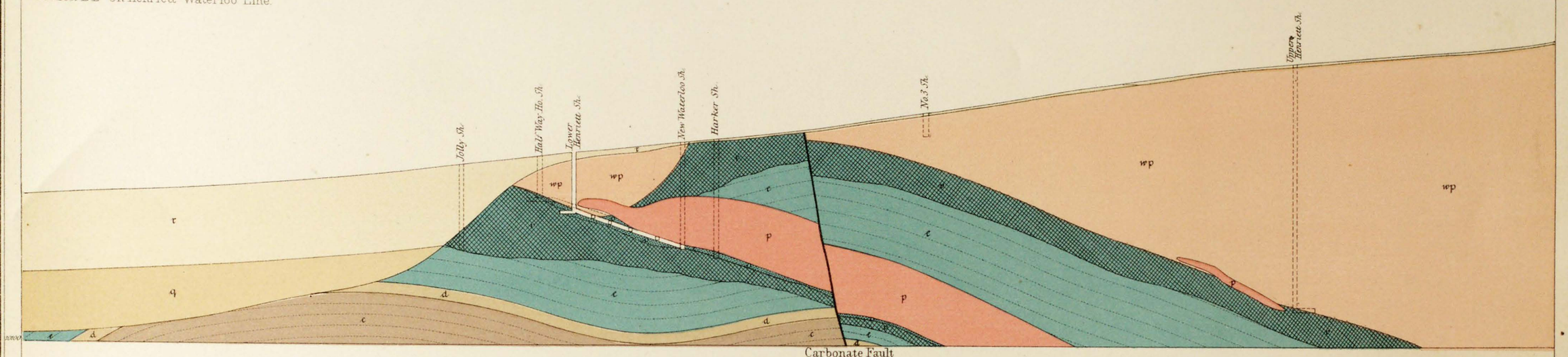
CARBONATE HILL

SECTIONS I

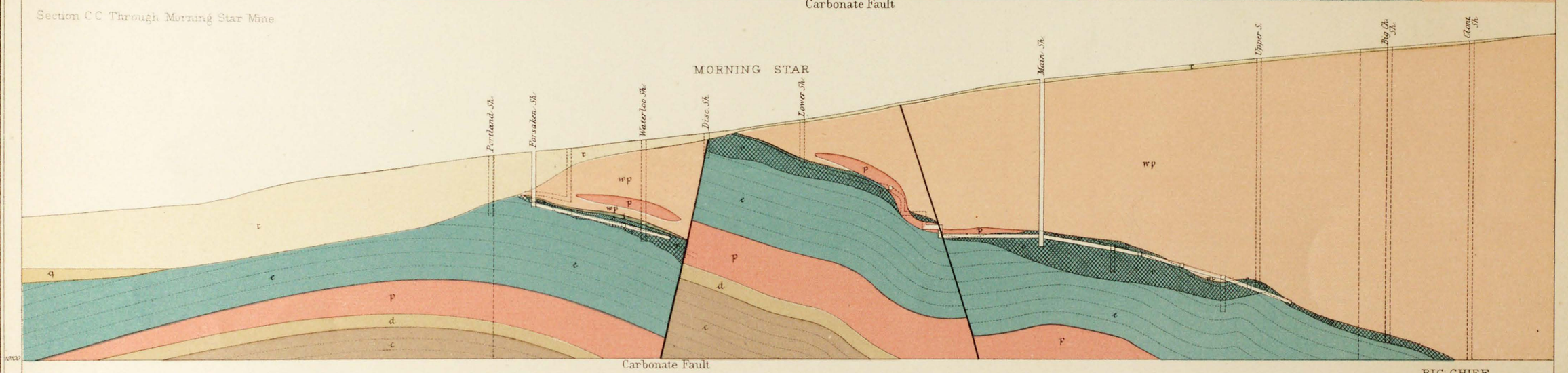
Longitudinal Section AA Across West Face of Carbonate Hill



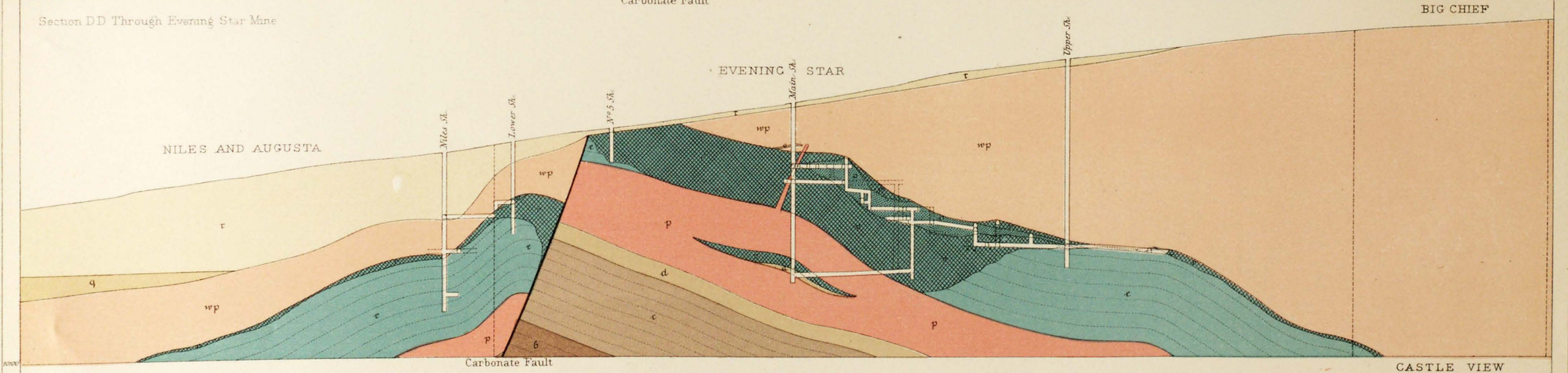
Section BB On Henriett-Waterloo Line.



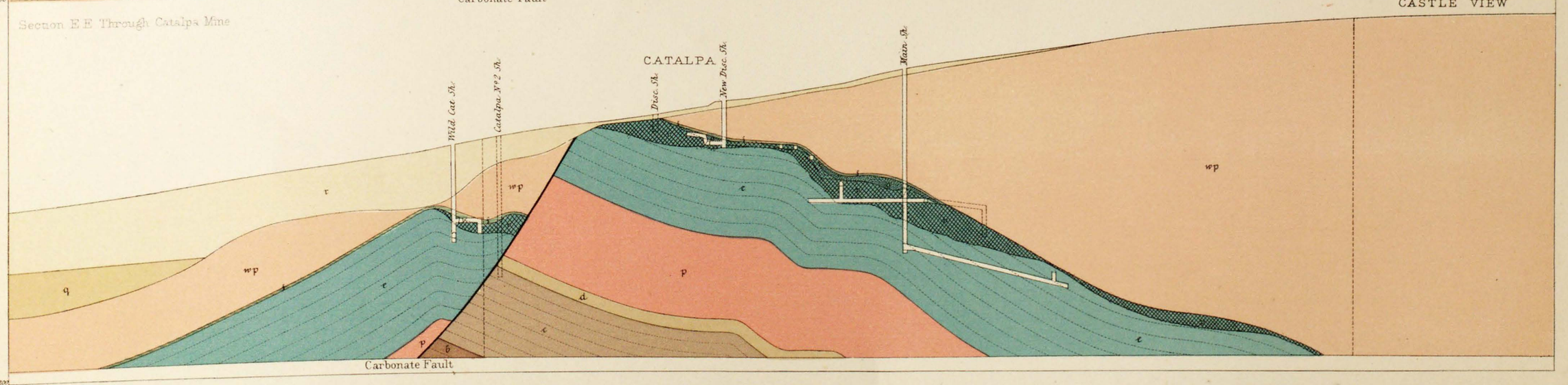
Section CC Through Morning Star Mine



Section DD Through Evening Star Mine



Section EE Through Catalpa Mine



Julius Bien & Co. lith.

S.F. Emmons, Geologist-in-Charge.

Horizontal & Vertical Scales: 1 inch to 160 feet or 1:1920.

FEET 50 0 100 200 300 400 500 600 700 800 900 1000

METERS 50 0 100 200

Recent	Lake Beds	Weber Shales	Blue Limestone	Parting Quartzite	White Limestone	Lower Quartzite	Vein Material	Ore	White Porphyry	Other Porphyries
r	q	f	e	d	c	b	v	o	wp	p

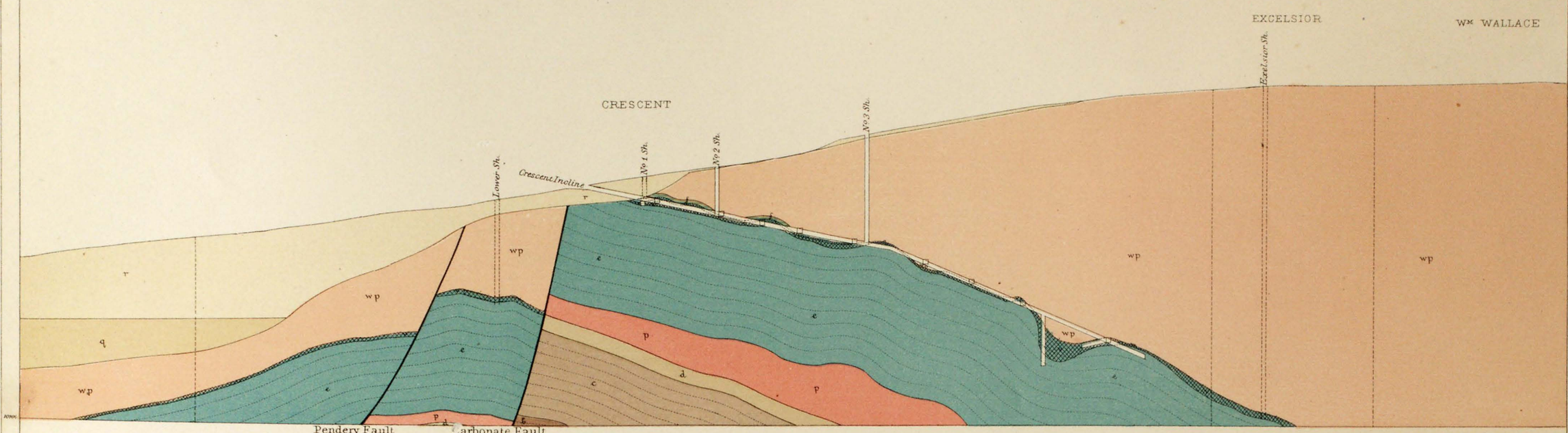
CARBONATE HILL

SECTIONS II

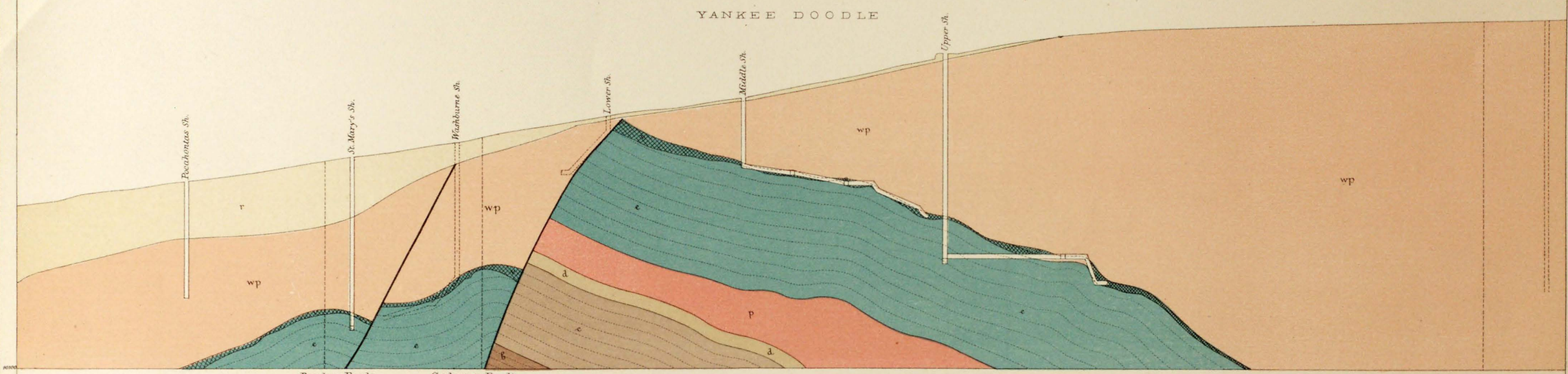
UNITED STATES GEOLOGICAL SURVEY.

GEOLOGY OF LEADVILLE. ATLAS SHEET XXX

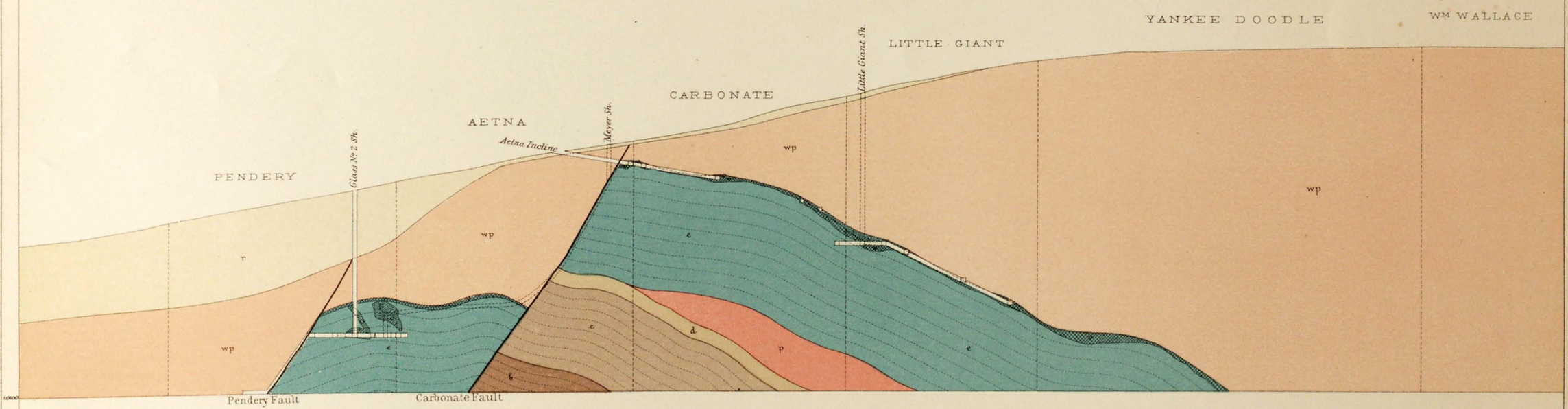
SECTION F.F. Through Crescent Mine



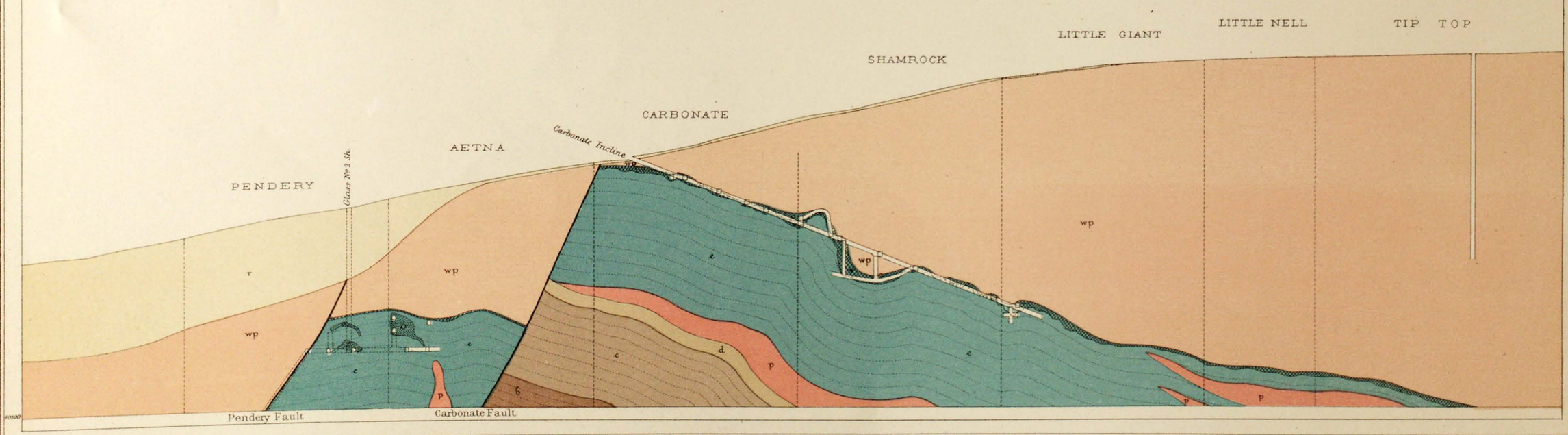
SECTION G.G. Through Yankee Doodle Mine



SECTION H.H. Through Pendery, Aetna, Carbonate & Little Giant



SECTION I.I. Through Carbonate Incline



Julius Bien & Co lith.

Horizontal & Vertical Scales: 1 inch to 160 feet or 1:1920.

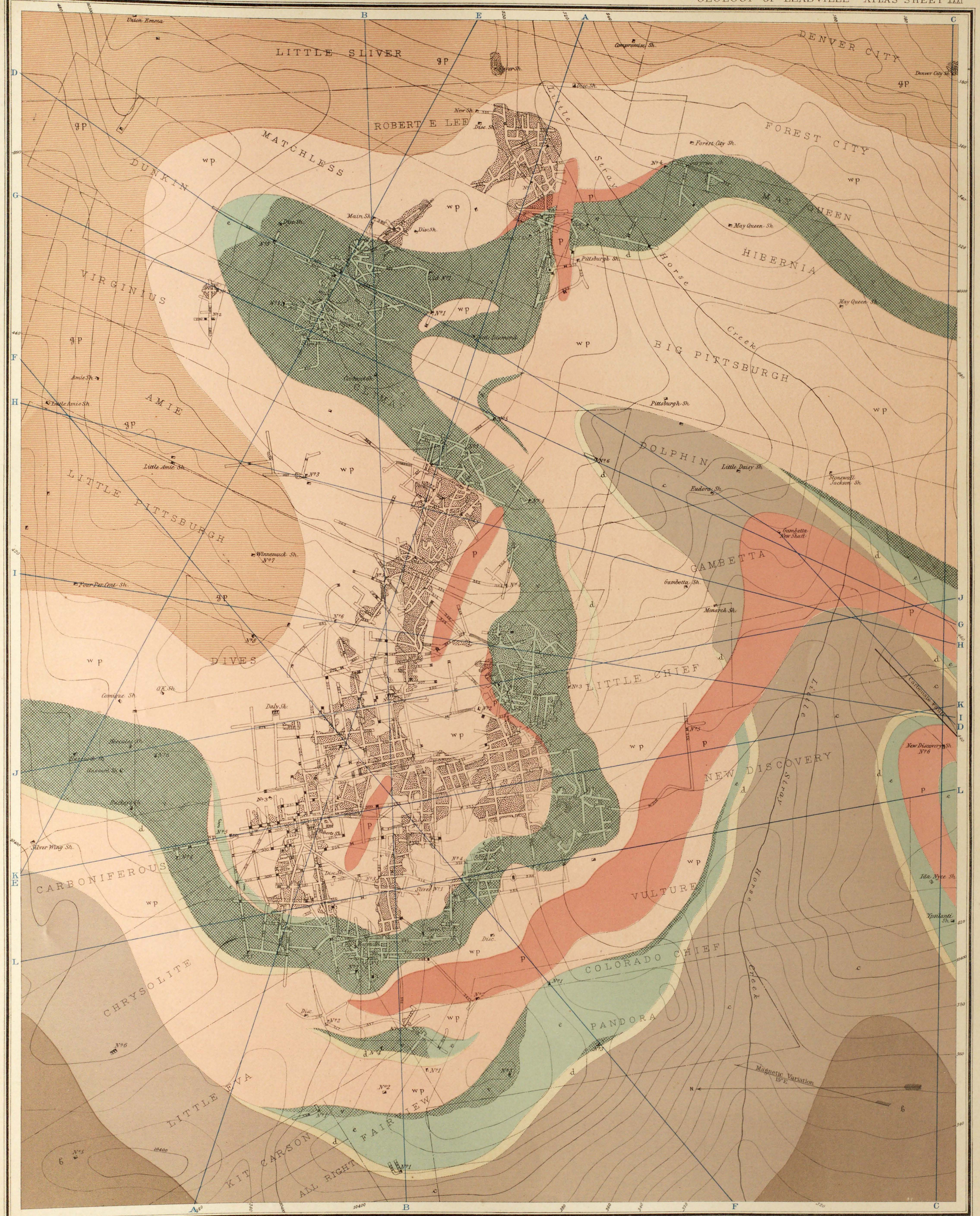
S.F. Emmons, Geologist-in-Charge.

FEET 50 0 100 200 300 400 500 600 700 800 900 1000

METERS 50 0 100 200

Recent	Lake Beds	Weber Shales	Blue Limestone	Parting Quartzite	White Limestone	Lower Quartzite	Vein Material	Ore	White Porphyry	Other Porphyries
r	q	f	e	d	c	b	x	o	wp	p

FRYER HILL



A. D. Wilson, Chief Topographer

Julius Bien & Co. lith.

S. F. Emmons, Geologist-in-Charge.

Scale 1 inch to 160 feet or 1:1920.

FEET: 50 0 100 200 300 400 500

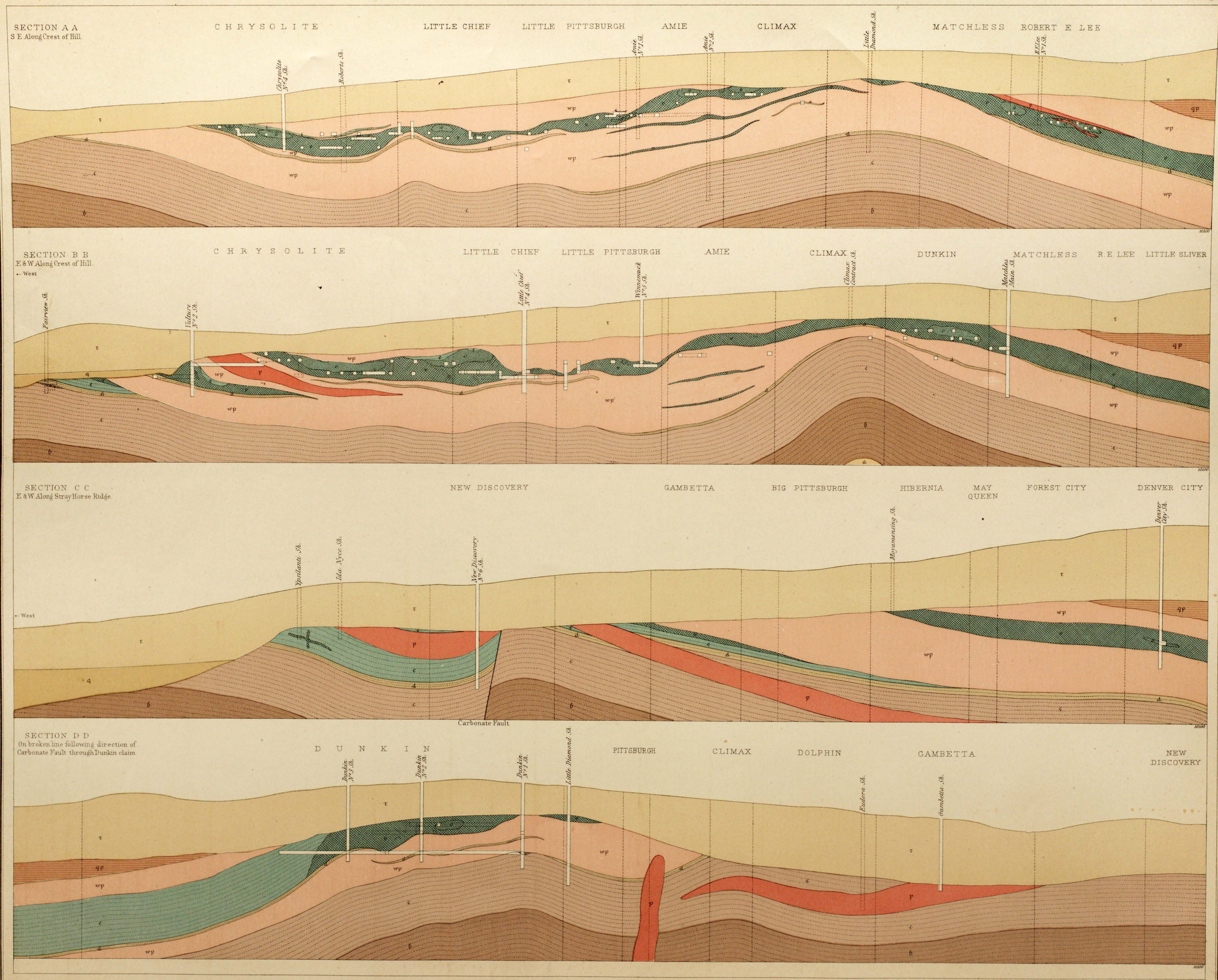
METERS: 50 0 50 100

Weber Shales	Blue Limestone	Parting Quartzite	White Limestone	Lower Quartzite	Vein Material	Ore	White Porphyry	Gray Porphyry (Main Sheet)	Other Porphyries
f	e	d	c	b	x	o	wp	gp	p

Figures within drifts denote their elevation above the 10,000 feet curve. Figures at shafts, where there are no drifts denote depth below surface. Contour lines denote actual surface of ground. Geological colors denote respective outcrops of rock in place, as they would appear, if all loose material were removed. Underground workings and outlines of ore-bodies are projected on a horizontal plane as if seen through a transparent medium.

Boundaries of claims indicated by broken lines
Drifts on or near level — Inclines
Shafts — Winzes — Upraises — Ore-chutes
Contours 10 ft. vertical interval. — Fault Lines

FRYER HILL
SECTIONS I



Julius Bien & Co. lith.

Horizontal & Vertical Scales: 1 inch to 160 feet or 1:1920.

FEET 50 0 100 200 300 400 500 600 700 800 900 1000

METERS 50 0 100 200

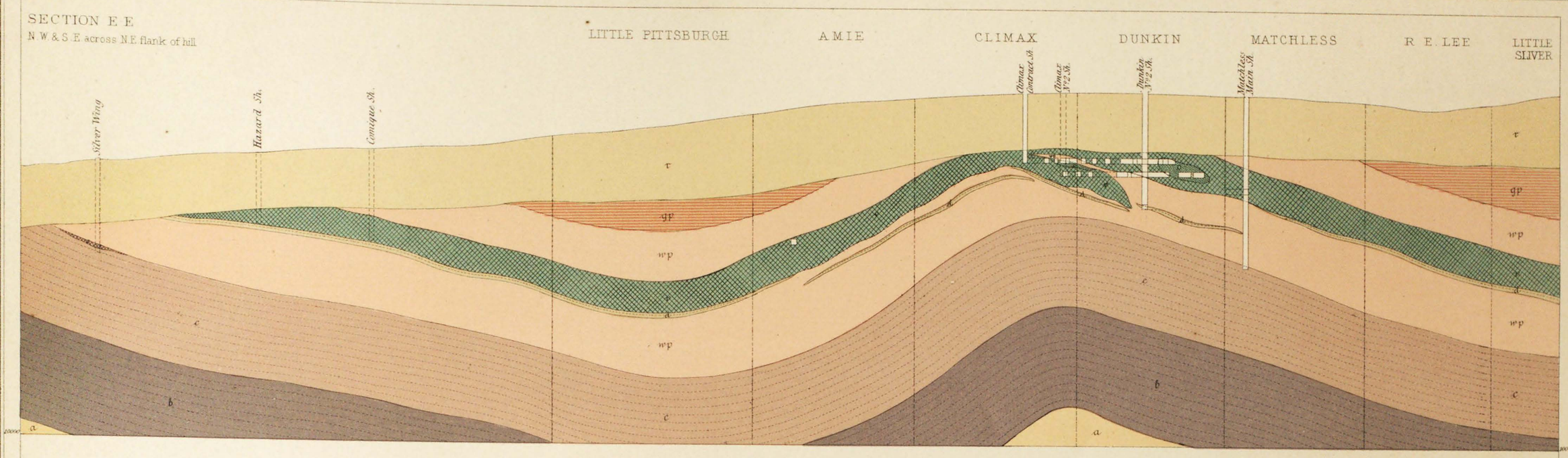
Recent	Lake Beds	Weber Shales	Blue Limestone	Parting Quartzite	White Limestone	Lower Quartzite	Granite and Crystalline Schists	Vein Material	Ore	White Porphyry	Gray Porphyry (Main Sheet)	Other Porphyries
r	q	f	e	d	c	b	a	v	o	wp	gp	p

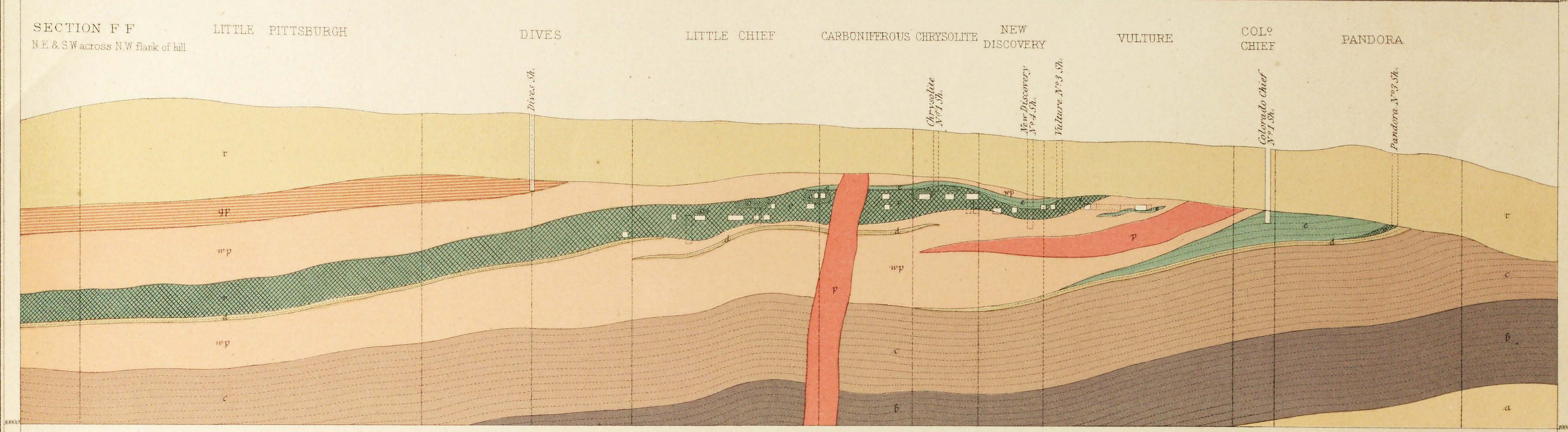
S. F. Emmons, Geologist-in-Charge.

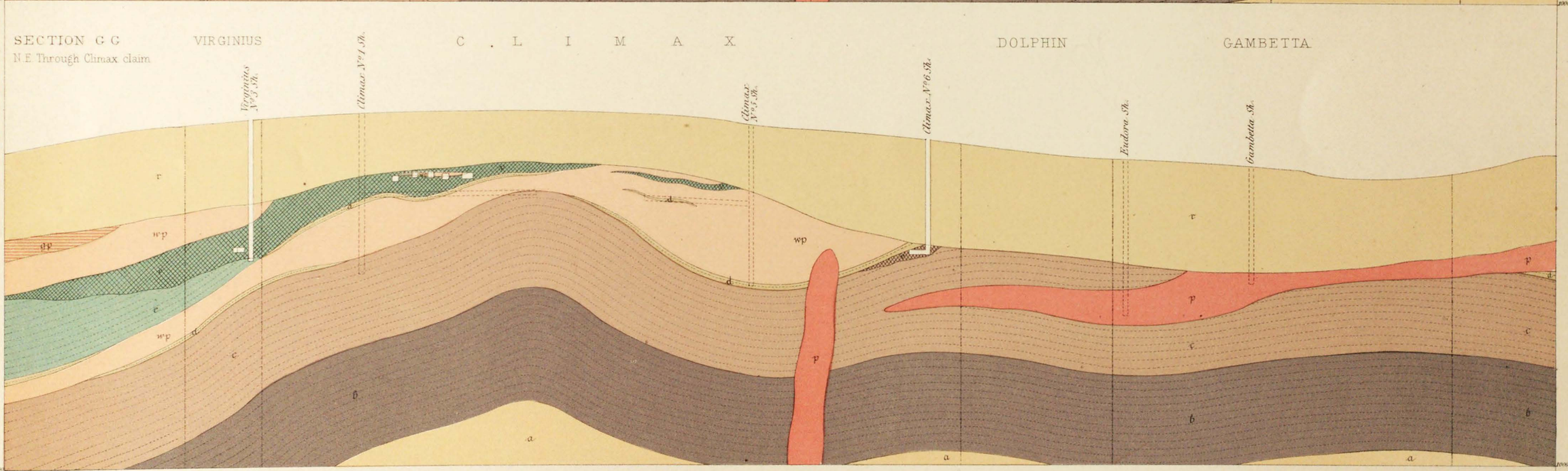
UNITED STATES GEOLOGICAL SURVEY

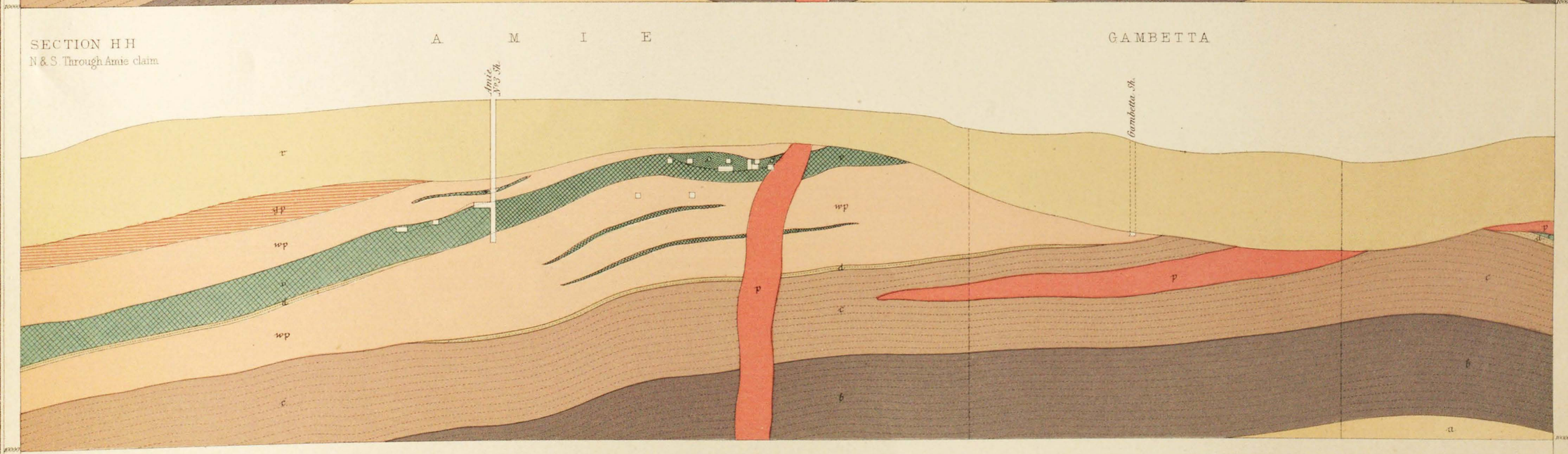
GEOLOGY OF LEADVILLE. ATLAS SHEET XXXII.

FRYER HILL
SECTIONS II









Julius Bien & Co. lith.

Horizontal & Vertical Scales: 1 inch to 160 feet or 1:1920.

S. F. Emmons, Geologist-in-Charge.

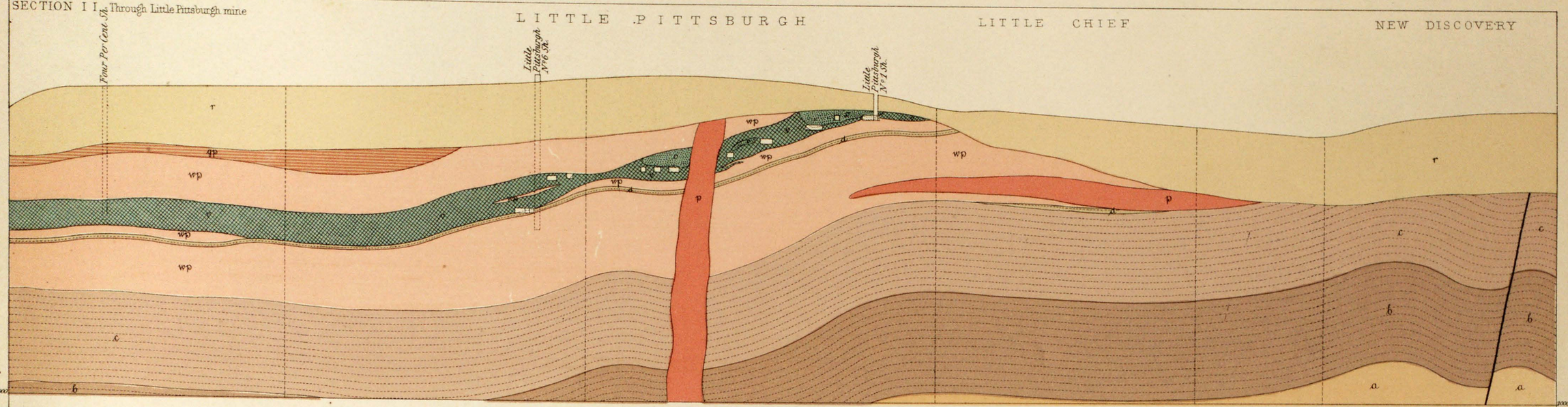
FEET: 50, 0, 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000

METERS: 50, 0, 100, 200

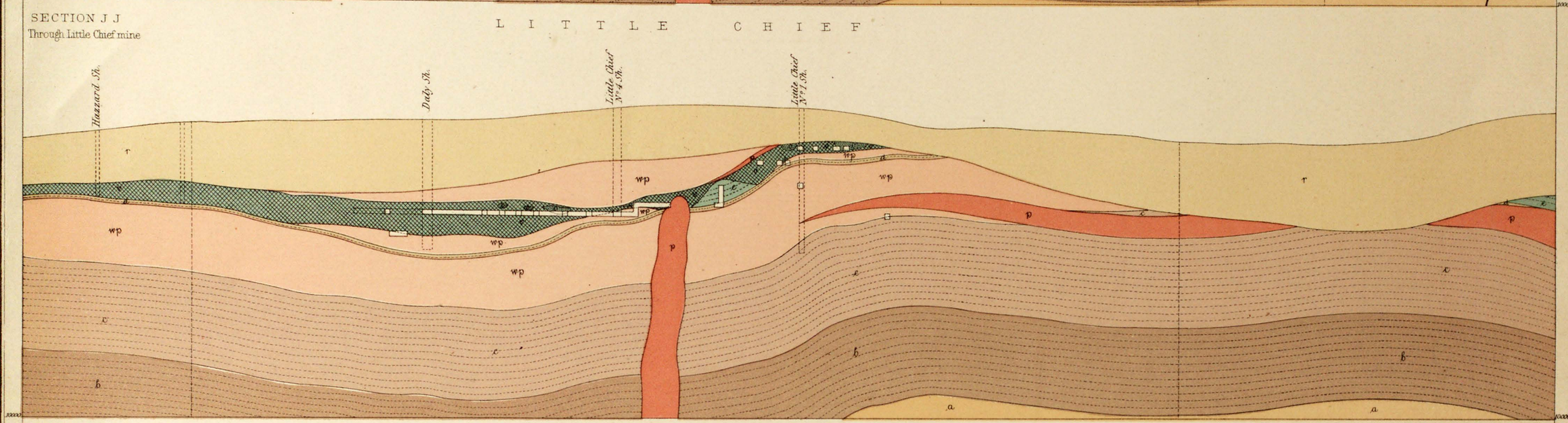
Recent	Blue Limestone	Parting Quartzite	White Limestone	Lower Quartzite	Granite and Crystalline Schists	Vein Material	Ore	White Porphyry	Gray Porphyry (Main sheet)	Other Porphyries
r	e	d	c	b	a		o	wp	gp	p

FRYER HILL
SECTIONS III

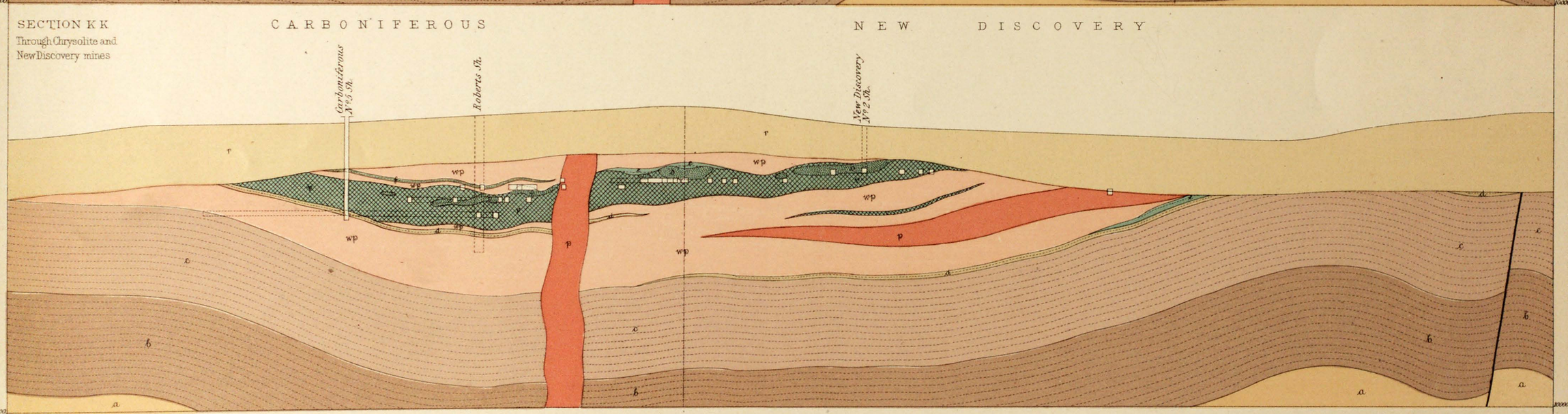
SECTION I I Through Little Pittsburgh mine



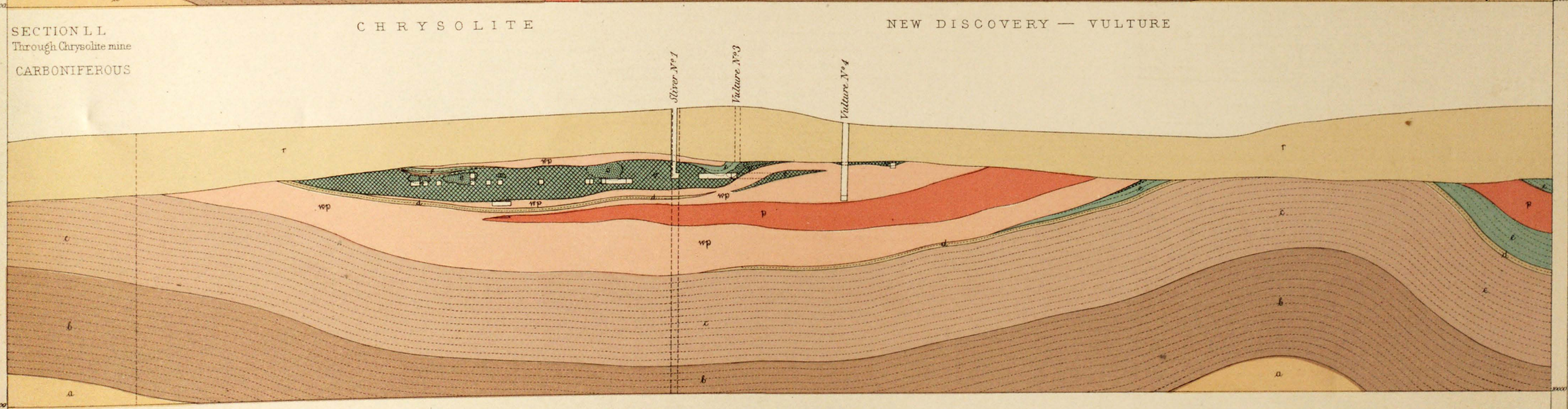
SECTION J J
Through Little Chief mine



SECTION K K
Through Chrysolite and New Discovery mines



SECTION L L
Through Chrysolite mine



Julius Bien & Co. lith.

S. F. Emmons Geologist-in-Charge

Horizontal & Vertical Scales. 1 inch to 160 feet or 1:1920

FEET 50 0 100 200 300 400 500 600 700 800 900 1000

METERS 50 0 50 100 200

Recent	Weber Shales	Blue Limestone	Partung Quartzite	White Limestone	Lower Quartzite	Granite and Crystalline Schists	Vein Material	Ore	White Porphyry	Gray Porphyry (Main Sheet)	Other Porphyries
r	f	e	d	c	b	a	v	o	wp	gp	p

INDEX TO SHAFTS, &c.

MAP OF LEADVILLE AND VICINITY.

N. B.—Squares are bounded by the meridians and parallels of the map, and marked by large skeleton letters. Where a small portion of an unlettered square adjoins the edge of the map, its shafts, &c., are numbered consecutively with those of the adjoining square. The order followed in assigning letters to the squares, and numbers to shafts within each square, is that pursued in the Land Office, namely: alternately from left to right, and right to left, commencing at the top. Where no name is given to a shaft, it is because it could not be learned at time of location.

Sh. indicates Shaft; **T.**, Tunnel; **In.**, Incline; **B. H.**, Bore or Drill Hole.

SQUARE B.

No.		
1.	South Fork	Sh.
2.	Ellesmere	"

SQUARE C.

1.		Sh.
2.		"
3.		"
4.		"
5.		"
6.		"
7.		"
8.	Little Providence	"
9.	Lily	"
10.	Emma	T.
11.	Monte Cristo	Sh.
12.	Dauntless. (No. 1)	"
13.	Dauntless. (No. 2)	"
14.	Kohinoor	"
15.	Marion Virginius	"

SQUARE D.

1.	Pine Forest	T.
2.	Little Frank	Sh.
3.	Alleghany	T.
4.		Sh.

SQUARE E.

1.	Faro Bank	Sh.
2.		"
3.	Ready Cash	T.
4.	Mount Carbon	"
5.	Black Cloud	Sh.
6.	Little Hercules	T.
7.	Ella Beeler	"
8.	Little Annie	"
9.	Bloomington	"
10.	Leavenworth	Sh.
11.	Colorado Princess	"
12.	Green Mountain	"
13.	Ontario	T.
14.	Herculaneum	"
15.	Pride of the West	Sh.
16.	Park	T.
17.	Equator	"
18.		Sh.
19.	Hoosier	"
20.		"
20a.		"
21.		T.
22.	Tiger	Sh.
23.	North Star	"
24.	Alta	T.
25.	Campbell	Sh.
26.	Campbell	"
27.	Gildersleeve	"
28.		"
29.		"
30.	Little Schuylkill	"
31.	First National	"
32.	Long and Derry	T.
33.		"
34.	Aerial Queen	Sh.
35.	Himalaya	T.
36.	Homestake	Sh.
37.	Porphyry	"
38.	Seek No Further	"
39.	Mammoth	"
40.		T.
41.		Sh.
42.	Belle Vernon	"
43.	Tinker	"

SQUARE F.

1.	Kitanning	Sh.
2.		"
3.		"
4.		"
5.	Reed	"
6.		"
7.		"
8.	Little Annie	"
9.	Ocean	"
10.	St. Jo	"
11.	John Mitchell	"
12.	End Squeeze	"
13.	Revenue	"
14.	Nevada	T.
15.	Seneca	Sh.
16.		"
17.	Fat Purse	"
18.	Mabel	"
19.		"
20.	Antelope	"
21.	Ocean Wave	"
22.	Deer	"
23.	Donovan	"
24.	Quandary	"
25.		"
26.	Rough and Ready	"
27.	Elk	"
28.	Rattling Jack	"
29.	Little Johnnie	"
30.	Burlington	"
31.		"
32.	Uncle Sam	"
33.	Uncle Sam	"
34.	Two to One	"
35.	Hunter's Last Chance	"
36.	Irene	"
37.	Garbutt	"
38.		T.
39.	Ella	"
40.	Highland Chief No. 2	Sh.
41.	Highland Chief No. 2	"
42.	Maud Hicks	"
43.		"
44.		"
45.	Estella	"
46.	San Jose	"
47.	Dick Mackey	"
48.	Dick Mackey	"
49.	Mary Alsberg	"
50.	Ontario	"
51.		"
52.	Glengarry	B. H.
53.		Sh.
54.		"
55.	"A, B"	"
56.	Highland Queen	"
57.	Capitol	"
58.	Nonie	"
59.	Highland Chief No. 2	"
60.	Oranmore	"
61.	Lalla Rookh	"
62.		"
63.	Honeycomb	"
64.		"
65.		"
66.	Yates	"
67.		

SQUARE G.

1.	Wall Street	Sh.
2.	Gnome	"
3.	Izzard	"
4.	Lulu	"
5.	Little Ellen	"
6.	Little Rische	"
7.		

SQUARE G.—*Continued.*

8.	New Dollar	Sh.
9.		"
10.		"
11.		"
12.		"
13.	Oriental	"
14.	Trade Dollar	"
15.		"
16.	Grand View	"
17.		"
18.	Chief Warrior	"
19.		"
20.		"
21.		"
22.		"
23.		"
24.	Virginius	T.
25.		Sh.
26.	Tenderfoot	"
27.	Cleveland	"
28.	Australian	"
29.		"
30.	Last Chance	"
31.	Last Chance	"
32.		"
33.	Erie	"
34.	George Washington	"
35.	Carrie	"
36.	Hickory Jackson	"
37.	Leadville	"
38.	U. S. Mint	"
39.	Fanny Rawlings	T.
40.	Hercules	Sh.
41.	Little Hattie	"
42.	Miner Boy	T.
43.	Colorado Prince	"
44.	Hoosier Girl	Sh.
45.	Silver Tooth	Sh. & B. H.
46.	Slim Jim	Sh.
47.	Colorado Prince	"
48.	Miner Boy. (No. 3)	"
49.	Black Prince. (No. 3)	"
50.	Miner Boy. (No. 1)	"
51.	Miner Boy. (No. 2)	"
52.	Black Prince. (No. 2)	"
53.	Lowland Chief	"
54.	Highland Chief	T.
55.	Highland Mary	Sh.
56.	Curran	"
57.		"
58.	Eliza. (No. 1)	"
59.	Caledonia	"

SQUARE H.

1.	On the Range	Sh.

SQUARE I.

1.	Esmeralda	Sh.
2.	Spotted Tail	"
3.	Little Maud	T.
4.	Brick Top	Sh.
5.	Peru	"
6.	Thin Space	"
7.	Texas Ranger	"
8.	Ada	"
9.	Lone Star	"
10.	Island City	"
11.	Co. K	"
12.	Bosco	"
13.	Waye	"
14.	Apprentice	"
15.	Texas Boy's Chance	"
16.	Elizabeth	"
17.	Freyer	"

SQUARE K.

1.	Golden Eagle	T.
2.	Little Alice	Sh.
3.	Eliza. (No. 2)	"
4.	McAllister?	"
5.	Chemung	T.
6.		Sh.
7.	Cumberland	"
8.	Boulder	In.
9.	Little Louise	T.
10.	Humboldt	"
11.	Stillwell	"
12.	La Harpe	"
13.	Durham (Monday)	Sh.
14.		"
15.	White Cloud	"
16.		"
17.		"
18.	Little Beschert	"
19.	Pennsylvania	"
20.		"
21.	Grand Prize	"
22.	Fenian Queen	"
23.	Nora	"
24.		"
25.		"
28.	Bosco	"
29.	Chicora	"
30.	Great Hope	"
31.	Across the Ocean	"
32.	Little Prince	"
33.	Little Galesburg	"
34.		"
35.	Mary Able	"
36.	White Prince	"
37.		"
38.	Nettie Morgan	"
39.	Breece Iron Mine	"
40.	Big Six	"
41.		"
42.	Independent	"
43.	Caroline and Mary	"
44.	C. Judson	"
45.	Valunder	"
46.	Tootie Gaylord	"
47.	Tiger	B. H.
48.	White Check	Sh.
49.	Argo	"
50.	H. M. L	"
51.	Moose	"
52.	Valunder	"
53.	Uranus	"
54.	Eureka	"
55.	Caledonia	"
56.	Onota	"
57.	Theresa	"
58.	Keystone	"
59.	Silver Cloud	"
60.	Mountain Boy (or California Gulch)	"
61.	Superior	"
62.	Julia	"

SQUARE L.

1.	Highland Chief	Sh.
2.	Highland Mary	"
3.	Robert Burns	"
4.	Silver King	"
5.	Forest Queen	"
6.		"
7.	Tribune	"
8.	Jay Bird	"
9.	Czar	"
10.	Jay Bird	"
11.	Tribune	"

SQUARE L.—*Continued.*

12.	Dexter	Sh.
13.	Little Mac	"
14.	Watertown	"
15.	Porcupine	"
16.	Badger Girl	"
17.	Comstock	"
18.	Glengarry	"
19.	Legal Tender	"
20.	Nailrod	"
21.	Emma	"
22.	Pay Rock	"
23.	Clinton	"
24.		"
25.	Magic	"
26.	Frank	"
27.	Lady Adele	"
28.	Charly P	T.
29.	P. I. R	"
30.	Luella	Sh.
31.	War Eagle	"
31a.	Little May	"
32.	Cumberland	"
32a.	Glasgow	"
33.	Comstock	T.
33a.	Lady Jane	Sh.
34.		"
34a.		"
34b.		"
35.		"
35a.		T.
36.	Breece Iron	Sh.
37.	Comstock	"
38.	Printer Girl	"
39.	Printer Girl	T.
40.	5-20	Sh.
41.	Williamsburg	"
42.	Ishpeming	"
43.	Kent	"
44.		"
45.		"

SQUARE M.

1.	Kitty	Sh.
2.	Faint Hope	T.
3.	Dana	Sh.
4.	Faint Hope	T.
5.	Beecher	"
6.		Sh.
7.	Eclipse	T.
8.	Eclipse No. 2	Sh.
9.	Eclipse	T.
10.	Diamond State	Sh.
11.	Minor	T.
12.	Wynan	Sh.
13.	Burt	"
14.	J. D. Ward	"
15.	Minnehaha	"
16.	Minnehaha	"
17.	Florence	T.
18.	Florence	"
19.	Stars and Stripes	"
20.	Soda Card	Sh.
21.		"
22.		T.
23.	Kid	"
24.	Sangamon	T.
25.	Kenosha	"
26.	Fisher	Sh.
27.	Aurora	"
28.	Nestor	"
29.	Lovejoy	"
30.	Ben Franklin	T.
31.	Ben Franklin	Sh.
32.		T.
33.	Nightingale (or California Gulch)	"
34.	Pilot	"
35.	Pilot	"
36.	Abe Lincoln	"
37.	Brian Boru	Sh.
38.	Wilson	T.
39.	Comstock	"
40.	Blacktail	"
41.		Sh.
42.		"
43.	G. M. Favorite	T.
44.	G. M. Favorite	"
45.	Upper Printer Boy	Sh.
46.	Upper Printer Boy	"
47.	Lower Printer Boy	"
48.		"
49.	Now or Never	"
50.	Continental	"
51.	Pine Tree	"
52.	Josephine	"
53.	Grey Eagle	T.
54.	Fitz-James	Sh.

SQUARE N.

1.		Sh.
2.		T.
3.	Echo	Sh.
4.	Hoodoo	"
5.		T.
6.	Emily	"
7.	Nisi Prius	"
8.	Nisi Prius	Sh.
9.	Oro La Plata	T.
10.	Nisi Prius	"
11.	Nisi Prius	"
12.	Lecompton	"
13.	Mabel C	Sh.
14.	Rock	In.
15.	Mabel C	Sh.
16.	Mabel C	"
17.	Dome	In.
18.	Little Birdie	T.
19.		Sh.
20.	Rosie	"
21.	Ben Burb	"
22.	Coon Valley	"
23.	Black Cat	"
24.	Zulu King	"

SQUARE O.

1.	Park	Sh.
2.	Mike	"
3.		"
4.	Park	"
5.	Lily	"
6.		"
7.	Keno	"
8.	Colonel Sellers	Sh. & B. H.
9.	Horse Shoe	Sh.
10.		"
11.	Keno	"
12.		"
13.	Louisville	"
14.	Day	Sh. & B. H.
15.	Laura Lynn	Sh.
16.	Idaho	"
17.	Adelaide. (Ward)	"
18.	Adelaide. (No. 1)	"
19.	Adelaide. (No. 2)	"
20.	Tucson	"
21.	Star of Hope	"
22.	Lime. (South)	In.
23.	Lime. (North)	"
24.	Silver Cord	Sh.
25.	Murphy. (Iron)	"
26.	Porphyry. (Iron)	Sh.

SQUARE O.—*Continued.*

27.	Camp Bird	T.
28.	Argentine	"
29.	Devlin	Sh.
30.	Bull's Eye	In.
31.	Carlton	Sh.
32.	Bull's Eye	In.
32a.	Silver Wave. (No. 2)	T.
33.	Bull's Eye. (No. 2)	In.
34.	Iron	"
35.	Iron	"
36.	Iron Hat	T.
37.	Codfish Balls	Sh.
38.	Tucson. (Iron)	In.
39.	McDonald. (Iron)	Sh.
40.	Lingula. (Iron)	"
41.	L. M	"
42.	L. M. (Main)	"
43.	Barbecue	T.
44.	P. Sullivan	Sh.
45.	Robert Emmet	T.
46.	Globe	Sh.
47.	Garden City	"
48.	Garden City	"
49.	Columbia	T.
50.	Crescentia	Sh.
51.	Blind Tom	"
52.	City of Paris	"
53.	Greenback	"

SQUARE P.

1.	Andy Johnson	Sh.
2.	Bevis	"
3.	Bobby Mallon	"
4.	Leavenworth	"
5.	Bevis (Main)	"
6.	Bevis (Disc)	"
7.	Hidden Treasure	T.
8.	Boulder Nest	Sh.
9.	Rothschild	"
10.	Clara Dell	"
11.	Little Champion	"
12.	William and Mary	T.
13.	Sappho	Sh.
14.	Greenwood	"
15.	Woodruff	"
16.	Shenango	"
17.	White Rabbit	"
18.	Abe Lincoln	"
19.	Little Hoosier	"
20.	Bismark	"
21.	Little Stella	"
22.	Red Headed Mary	"
23.	Logan. (No. 2)	"
24.	Holden	"
25.		"
26.	Demmick	"
27.	Logan. (No. 1)	"
28.	J. B. Grant	"
29.		"
30.	Dan a	"
31.	Hard Cash	"
32.	Moonstone	"
33.	Silver Basin	"
34.	Fairplay	"
35.	Hard Cash	"
36.	Hawkeye	"
37.	First Chance (formerly Congo)	"
38.		"
39.		"
40.	Bobtail	"
41.	Cordelia Edmondson	"
42.	Birdie Tribble	"
43.	Chieftain	T.
44.	Scooper	Sh.
45.	Del Monte	"
46.	Hard Cash	"
47.	Double Decker	"
48.	Double Decker	"
50.	Snow Storm	"
51.		"
52.	Highland Mary	"
53.	Indiana	"
54.	Aztec	"
55.	Kennebec	"
56.		"
57.	Cullen	"
58.	Little Miami	"
59.	Young Caribou	"
61.	Rarus	"
63.	Raven	"
64.	Indiana	"
65.	El Paso	"
66.	Fitz-hugh	"
67.	Chicago Boy	"
68.	Lickscumdidriks	Sh. & B. H.
69.	Right Angle	Sh.
70.	Olive Branch	"
71.	Prince of Orleans	"
72.	Hunkidori	"
73.	Shamus O'Brien	"
74.	Wright (Denver City)	"
75.	Tip Top	"
76.	Forepaugh	"
77.	Bangkok	"
78.	Cora Bell	"
79.	Union Emma	"
80.	Buffalo	"
81.	Little Sliver	"
82.	Denver City	"

SQUARE Q.

1.	General Shields	Sh.
2.	Hecla	"
3.	Geneva Lake	"
4.	Mary Ella	"
5.		"
6.	Rome	"
7.	Powhattan (Main)	"
8.	Uncle Sam	"
9.	Powhattan	"
10.	Eaton No. 2	"
11.	Katie Sullivan	"
12.	Liberator	"
13.	Buncomb	"
14.	Park	"
15.		"
16.		"
17.	Little Joe	"
18.		"
19.		T.
20.	Boettcher	"
21.	Mountain Lion	Sh.
22.	Humboldt	"
23.		"
24.	Walsenburg	"
25.	Columbia	"
26.	Pocahontas	"
27.		"
28.		"
29.		"
30.	Little Cash	"
31.	Hancock	"
32.	Providence	"
33.	Garland	"
34.	Jessie	"
35.	Pacific	"
36.	Carbonate King	"
37.	Carbonate No. 2	"
38.		"
39.	Cardinal	"

SQUARE Q.—*Continued.*

40.		Sh.
41.	Catawba	T.
42.	Swing	"
43.	Copenhagen	Sh.
44.	Little Blonde	"
45.		"
46.		"
47.	Little St. Louis	"
48.	German Bank	"
49.	Little Willie	"
50.	Great Prince	"
51.	Mary Ann	"
52.	Princeton	T.
53.	Little Blonde	"
54.	Lucknow	Sh.
55.	Norcom	"
56.	Mary Ann	"
57.	Comstock	"
58.		"
59.		"
60.	Resumption	"
61.		"
62.		"
63.	Little Clara	"
64.	Lac La Belle	"
65.		"
65a.		"

SQUARE R.

1.	Minneapolis	Sh.
2.		"
3.	Maryland	"
4.		T.
4a.	Douglas	Sh.
5.	Argo	"
6.	Great Kohinoor	"
8.	Silver Pilot	"
9.	Mystic	"

SQUARE S.

1.	Robert E. Lee (Main)	Sh.
2.	Surprise	"
3.	Robert Emmet	"
4.	May Queen	"
5.	Hibernia	"
6.	Big Pittsburg. (McCormick)	"
7.	Matchless. (Main)	"
8.	Dunkin. (No. 2)	"
9.	Virginius. (No. 2)	"
10.		"
11.	Climax. (Contract)	"
12.	Moyamensing	"
13.	Robert Emmet	T.
14.	Gambetta. (Pearson)	Sh.
15.	Stonewall Jackson	"
16.	Climax. (No. 6)	"
17.	Amie. (No. 2)	"
18.	Amie. (No. 3)	"
21.	Four Per Cent	"
22.	Little Pittsburg. (No. 6)	"
23.	Little Pittsburg. (No. 2)	"
24.	Gambetta	"
25.	Vanderbilt	"
26.	Stray Horse. (Joe Bates)	"
27.	Little Chief. (No. 1)	"
28.	Little Chief. (No. 4)	"
29.	Little Chief. (Daly)	"
30.	O. K	"
31.	Hazzard	"
33.	Silver Wing	"
34.	Chrysolite. (Roberts)	"
35.	New Discovery. (No. 1)	"
36.	New Discovery. (No. 5)	"
37.	New Discovery. (No. 6)	"
38.	Maid of Erin	"
39.	Seneca	"
40.	Stray Horse	"
41.	Ida Nyce	"
42.	New Discovery. (No. 4)	"
44.	Third Term	Sh. & B. H.
45.	Vulture. (No. 1)	Sh.
46.	Ypsilanti	"
47.	Henriett	"
48.	Waterloo. (Main)	"
49.	Half Way House	"
50.	Vulture. (No. 2)	"
51.	Chrysolite. (No. 6)	"
52.	Lida	"
53.	Little Eva. (No. 5)	"
54.	Fairview. (No. 1)	"
55.	Little Jolly	"
55a.	Forsaken	"
56.	Bob Ingersoll	Sh. & B. H.
57.	Oolite	Sh.
58.	Sequa	Sh. & B. H.

SQUARE T.

1.	Cyclops	Sh.
2.	Mahala	"
3.	Agassiz	"
4.	Goneabroad	"
5.	Wolftone	"
6.	Brookland	"
7.	Henriett	"
8.	Big Chief	"
9.	Morning Star	"
10.	Morning Star. (Main)	"
11.	Evening Star	"
12.	Excelsior	"
13.	Modoc	"
14.	Jordan	T.
15.	Swamp Angel	"
16.	Deadbroke	"
17.	J. Harland	Sh.
18.	Rosebud	T.
19.		Sh.
20.	Yankee Doodle	"
21.	Evening Star (Main)	"
22.	Morning Star	"
24.	Catalpa	"
25.	Yankee Doodle	"
26.	Crescent	In.
27.	Catalpa No. 2	Sh.
28.	Wild Cat	"
29.	Washburne	"
30.	Ætna (Meyer)	"
31.	Carbonate	In.
32.	Carbonate (Combination)	"
33.	Prospect	"
34.	Broadway	Sh.
35.	Irish Giant	"
36.	Ætna (Main)	"
37.	Glass	"
38.	Pendery	"
39.	St. Mary's	"
40.	Pocahontas	"
41.	Weldon	"
42.		"
43.	Little Diamond	"
44.	O'Donovan Rossa	"
45.		"
46.		"
47.	Blind Tom	"
48.	California	T.

SQUARE U.

1.	Commercial Drummer	Sh.
2.		"