

UNION PACIFIC RAILROAD COMPANY
SOUTH-CENTRAL DISTRICT



CALIFORNIA DIVISION

TIME-TABLE
No. 41

Effective Sunday,

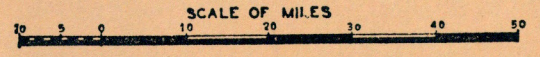
April 26, 1970

at 12:01 A. M. Pacific Time

Safety Gains
Where Courtesy Reigns

FOR EMPLOYEES ONLY

SOUTH CENTRAL DISTRICT
 CALIFORNIA DIVISION
 CORRECTED TO APRIL 26, 1970



G. A. CUNNINGHAM
General Manager

J. BOWEN
General Superintendent
Transportation

R. W. HOLLAND
General Superintendent

- R. D. SMITH, Superintendent**..... Los Angeles, Cal.
L. B. MASKILL,
Assistant Superintendent Los Angeles, Cal.
A. W. KIRKEBY,
Terminal Superintendent Los Angeles, Cal.
J. C. CLEARY,
Terminal Superintendent Las Vegas, Nev.
W. J. ROCHE,
Assistant Terminal Superintendent... Los Angeles, Cal.
J. I. STROSNIDER, Trainmaster San Bernardino, Cal.
M. D. DECKER, Trainmaster Las Vegas, Nev.
H. B. CROWE,
Terminal Trainmaster Los Angeles, Cal.
E. C. BERNEY,
Terminal Trainmaster Los Angeles, Cal.
M. G. MARLER,
Master Mechanic Salt Lake City, Utah
W. E. RAYMOND,
Road Foreman of Engines Los Angeles, Cal.
W. T. SANDLIN,
Road Foreman of Engines..... Los Angeles, Cal.
F. G. PFISTER,
Road Foreman of Engines..... Las Vegas, Nev.
F. D. WENGERT, Division Engineer.... Los Angeles, Cal.
M. McGUIRE,
General Roadmaster Los Angeles, Cal.
W. F. GRIFFIN, Superintendent of
Safety and Courtesy Los Angeles, Cal.

First Subdivision and Branches

- R. A. FORBES,**
Chief Train Dispatcher..... Salt Lake City, Utah
R. L. MAUGHAN,
Asst. Chief Train Dispatcher.... Salt Lake City, Utah
G. J. WILDE,
Asst. Chief Train Dispatcher.... Salt Lake City, Utah
J. T. HOLYOAK,
Asst. Chief Train Dispatcher.... Salt Lake City, Utah

Second Subdivision and Branches

- R. C. ALLYN,**
Chief Train Dispatcher..... Los Angeles, Cal.
J. E. MUNCEY,
Asst. Chief Train Dispatcher..... Los Angeles, Cal.
J. L. HULIHAN,
Asst. Chief Train Dispatcher..... Los Angeles, Cal.
A. C. FLOWERS,
Asst. Chief Train Dispatcher..... Los Angeles, Cal.

**UNION PACIFIC RAILROAD EMPLOYES HOSPITAL
ASSOCIATION PHYSICIANS AND SURGEONS:**

NAME	TITLE	PLACE
J. M. Farris	District Surgeon ...	Los Angeles
G. K. Smith	Asst. Dist. Surgeon ..	Los Angeles
H. L. Finsten	Surgeon	Alhambra
D. P. Nebeker	Surgeon	Arcadia
C. J. Taylor	Surgeon	Barstow
C. S. Muller	Surgeon	Bell
A. L. Kobal	Surgeon	Covina
W. W. Meier	Surgeon	East Los Angeles ...
C. R. Brown	Surgeon	El Monte
J. G. Slayback	Physician	Eagle Rock
E. M. Pettis	Surgeon	Fullerton
E. D. Acker	Surgeon	Glendale
M. Beugelmans	Surgeon	Inglewood
C. V. Wall	Surgeon	La Habra
J. B. Demman	Surgeon	Las Vegas
N. A. Lorusso	Surgeon	Las Vegas
D. J. Romeo	Surgeon	Las Vegas
R. F. Miller	Surgeon	Las Vegas
S. B. Ginsburg	Surgeon	Long Beach
T. E. McCloy	Physician	Long Beach
S. Cryst	Surgeon	Los Angeles
H. M. Mason	Physician	Los Angeles
P. H. L. Sargent ...	Physician	Los Angeles
J. T. McDonald	Surgeon	Los Angeles
	Surgeon	Los Angeles-East Yard
	Surgeon	Los Angeles
E. M. F. Weaver ...	Oculist & Aurist ...	Los Angeles
	Surgeon	Los Angeles-Compton
J. J. Zane	Surgeon	Los Angeles-Central .
V. E. Hessel	Surgeon	Los Angeles-Palos Verdes
	Surgeon	Montebello
T. M. Hearn	Surgeon	North Hollywood ...
	Surgeon	Pasadena
	Surgeon	Pomona
J. T. Lanier	Surgeon	Riverside
C. M. Hadley	Oculist & Aurist ...	San Bernardino
S. B. Hughes	Surgeon	San Bernardino
H. D. Orr	Surgeon	Victorville
	Surgeon	Whittier
	Surgeon	Wilmington

Standard clocks are located as shown below:

Las Vegas.. Freight Enginemen's Locker Room	East Yard..... Enginemen's Locker Rooms
Las Vegas..... Passenger Enginemen's Locker Room	East Yard..... Register Room
Las Vegas..... Conductor's Register Room	East Yard..... Dispatcher's Office
Las Vegas..... Telegraph Office	East Los Angeles..... Telegraph Office
Las Vegas..... Yard Office	Los Angeles... Union Station Telegraph Office
Yermo..... Telegraph Office	Los Angeles
East Yard..... Switchmen's Locker Room	... Union Station Enginemen's Locker Room

CONDENSED TIME-TABLE

WESTWARD						EASTWARD													
FIRST CLASS						FIRST CLASS													
103 Passenger						Distance from Ogden	Time-Table No. 41 April 26, 1970						Mile Post	104 Passenger					
Daily							STATIONS												
9.15						0.0	MT	OGDEN		MT	0.0	A	6.55						
10.05						36.3	SALT LAKE CITY						36.3	5.55					
10.30													784.0	5.30					
1.45						243.5	MILFORD						576.8	2.05					
1.50														2.00					
4.00						360.8	CALIENTE						459.5	11.45					
6.35						486.1	MT	LAS VEGAS		MT	334.2	9.15							
5.50							PT			PT		8.00							
9.05						657.1	YERMO						163.2	4.40					
9.25						670.5	BARSTOW						150.1	4.20					
11.35						751.3	SAN BERNARDINO						67.3	2.15					
12.01						761.8	RIVERSIDE						57.5	1.47					
12.35						787.3	POMONA						32.0	1.12					
1.10						813.6	EAST LOS ANGELES						5.7	12.40					
A 1.30						821.0	PT	LOS ANGELES		PT	0.0	12.20							
							821.0							Daily					

(17.15) Thru Time. (17.35)
47.6 Average speed per hour. 46.7

Light figures indicate A.M.

Heavy figures indicate P.M.

TIME PER MILE	MILES PER HOUR	TIME PER MILE	MILES PER HOUR	TIME PER MILE	MILES PER HOUR	TIME PER MILE	MILES PER HOUR	TIME PER MILE	MILES PER HOUR	TIME PER MILE	MILES PER HOUR	TIME PER MILE	MILES PER HOUR
30"	120.	41"	87.8	52"	69.2	1' 3"	57.1	1' 20"	45.	2' 45"	21.8		
31"	116.1	42"	85.7	53"	67.9	1' 4"	56.2	1' 25"	42.3	3'	20.		
32"	112.5	43"	83.7	54"	66.6	1' 5"	55.3	1' 30"	40.	3' 30"	17.1		
33"	109.1	44"	81.8	55"	65.4	1' 6"	54.5	1' 35"	37.9	4'	15.		
34"	105.9	45"	80.	56"	64.2	1' 7"	53.7	1' 40"	36.	5'	12.		
35"	102.9	46"	78.3	57"	63.1	1' 8"	52.9	1' 45"	34.3	6'	10.		
36"	100.	47"	76.6	58"	62.	1' 9"	52.1	1' 50"	32.7	7'	8.6		
37"	97.3	48"	75.	59"	61.	1' 10"	51.4	1' 55"	31.3	8'	7.5		
38"	94.7	49"	73.5	1'	60.	1' 11"	50.7	2'	30.	10'	6.		
39"	92.3	50"	72.	1' 1"	59.	1' 12"	50.	2' 15"	26.6				
40"	90.	51"	70.6	1' 2"	58.	1' 15"	48.	2' 30"	24.				

CONDITIONAL STOPS TO DISCHARGE OR PICK UP REVENUE PASSENGERS

Train	At	Discharge Passengers From	Pick Up Passengers Destined To
103-104	Victorville	Any station	Stations where 103-104 stop

WESTWARD		FIRST SUBDIVISION					FIRST CLASS		Distance from Salt Lake City	Time-Table No. 41	
							103			April 26, 1970	
Car capacity of sidings, etc. See Rule 6(A), Page 8							Passenger		STATIONS		
DPYZ							Daily		DN-R LAS VEGAS YL VG		
102	P						5.50AM	449.8	4.9	BRACKEN	
59	PY							454.7	2.3	BOULDER JCT.	
93	P							457.0	4.5	ARDEN A	
90	P							461.5	7.5	SLOAN SX	
100	P							469.0	5.7	ERIE	
101	P							474.7	8.2	JEAN	
102	P							482.9	4.8	BORAX	
58	P							487.7	4.6	ROACH	
108	P							492.3	4.5	CALADA	
102	P							496.8	4.7	DESERT	
102	P							501.5	5.0	NIPTON	
101	P							506.5	5.4	MOORE	
101	P							511.9	4.6	IVANPAH	
102	P							516.5	4.6	BRANT	
92	P							521.1	4.9	JOSHUA	
96 } 89 }	PY							526.0	3.8	OIMA	
100	P							529.8	4.0	CHASE	
102	P							533.8	3.1	ELOA	
102	P							538.9	3.7	DAWES	
102	P							540.6	4.3	HAYDEN	
102	P							544.9	3.6	KELSO	
175	PY							548.5	4.9	FLYNN	
98	P							553.4	4.7	KERENS	
102	P							558.1	4.0	GLASGOW	
71	P							562.1	4.3	SANDS	
92	P							566.4	5.7	BALCH	
101	P							572.1	7.6	CRUCERO	
102	P							579.7	7.4	BASIN	
109	P							587.1	6.4	AFTON	
61	P							592.5	4.2	DUNN	
108	P							596.7	4.9	FIELD	
102	P							601.6	4.6	MANIX	
102	P							606.2	4.5	HARVARD	
102	P							610.7	5.0	TOOMEY	
100	P							615.7	5.1	YERMO YL BN	
DPY							A 9.05AM	620.8			

(3.15) Thru Time
52.6 Average speed per hour

For conditional stops to discharge or pick up revenue passengers.—See Page 3.
For stations not shown on schedule pages.—See Page 11.

		FIRST SUBDIVISION					FIRST CLASS		Distance from Salt Lake City	Time-Table No. 41	
							104			April 26, 1970	
Car capacity of sidings, etc. See Rule 6(A), Page 8							Passenger		STATIONS		
DPYZ							Daily		DN-R LAS VEGAS YL VG		
102	P						8.00PM	834.2	4.9	BRACKEN	
59	PY							829.3	2.3	BOULDER JCT.	
93	P							827.0	4.5	ARDEN A	
90	P							822.5	7.5	SLOAN SX	
100	P							815.0	5.7	ERIE	
101	P							809.3	8.2	JEAN	
102	P							801.1	4.8	BORAX	
58	P							296.3	4.6	ROACH	
108	P							291.7	4.5	CALADA	
102	P							287.2	4.7	DESERT	
102	P							282.5	5.0	NIPTON	
101	P							277.5	5.4	MOORE	
101	P							272.1	4.6	IVANPAH	
102	P							267.5	4.6	BRANT	
92	P							262.9	4.9	JOSHUA	
96 } 89 }	PY							258.0	3.8	OIMA	
100	P							254.2	4.0	CHASE	
102	P							250.2	3.1	ELOA	
102	P							247.1	3.7	DAWES	
102	P							243.4	4.3	HAYDEN	
102	P							239.1	3.6	KELSO	
175	PY							235.5	4.9	FLYNN	
98	P							230.6	4.7	KERENS	
102	P							225.9	4.0	GLASGOW	
71	P							221.9	4.3	SANDS	
92	P							217.6	5.7	BALCH	
101	P							211.9	7.6	CRUCERO	
102	P							204.3	7.4	BASIN	
109	P							198.9	6.4	AFTON	
61	P							191.5	4.2	DUNN	
108	P							187.3	4.9	FIELD	
102	P							182.4	4.6	MANIX	
102	P							177.8	4.5	HARVARD	
102	P							173.3	5.0	TOOMEY	
100	P							168.3	5.1	YERMO YL BN	
DPY								163.2			

Thru Time (3.20)
Average speed per hour 51.3

For conditional stops to discharge or pick up revenue passengers.—See Page 3.
For stations not shown on schedule pages.—See Page 11.

WESTWARD		SECOND SUBDIVISION				Time-Table No. 41		EASTWARD	
Car capacity of sidings, etc. See Rule 6 (A), Page 8	DPY	IP	First Class	103	Distance from Salt Lake City	April 26, 1970		Mile-Post	First Class
						Passenger	Daily		
STATIONS									
				9.05AM	620.8	DN-R	YERMO YL BN		
				9.12AM	625.4		DAGGETT		
				9.25	634.2		BARSTOW BA		
				11.35	715.0		SAN BERNARDINO B		
				11.44	718.5		COLTON		
				11.53AM	724.8		S. P. and A. T. & S. F. Crossings		
				12.01PM	725.5		RIVERSIDE JCT. YL		
					729.2	DN	RIVERSIDE YL VN		
108	P				730.0		STREETER		
96	P				734.7		ARLINGTON		
105	YP				737.4		PEDLEY		
105	P				744.9	D	MIRA LOMA V		
	PI				745.2		S. P. CROSSING		
	P				747.5	D	ONTARIO RA		
105	P				750.0		MONTCLAIR		
	P				751.0		S. P. CROSSING		
	P				754.1	D	POMONA PO		
102	P				758.6		SPADRA		
106	P				765.2		WALNUT		
					766.0		PUENTE JCT.		
105	P				771.7	D	CITY OF INDUSTRY BG		
	P				772.1		BARTOLO		
					772.7		WHITTIER JCT.		
103	P				774.5	D	PICO-RIVERA K		
54	P				777.3		MONTEBELLO		
					777.4	DN	EAST LOS ANGELES YL Z		
	DPYZ				780.2	R	EAST YARD YL		
	PX				781.3		DOWNEY ROAD YL		
	PX				783.0		NINTH ST. JCT. YL		
	PX				783.9		FIRST ST. YL		
	I				784.0		PASADENA JCT. YL		
	I				784.7		A. T. & S. F. Csg. (Mission Tower)		
	IP					D-R	LOS ANGELES UD		
163.9									

(4.25) Thru Time
37.1 Average speed per hour

Time shown at Barstow, San Bernardino and Colton is for information only.
Between Daggett and Riverside Jct. trains are governed by Operating Rules, timetable and Special Instructions of A. T. & S. F. Ry.
Between Los Angeles and L. A. U. P. T. Co. terminal limits 200 ft. west of A. T. & S. F. Csg. (Mission Tower) trains and engines are governed by Operating Rules and Special Instructions of L. A. U. P. T.
Between Pasadena Jct. and Los Angeles movement of trains and engines is governed by interlocking signals.
For conditional stops to discharge or pick up revenue passengers.—See Page 3.
For stations not shown on schedule pages.—See Page 11.

WESTWARD		SECOND SUBDIVISION				Time-Table No. 41		EASTWARD	
Car capacity of sidings, etc. See Rule 6 (A), Page 8	DPY	IP	First Class	104	Distance from Salt Lake City	April 26, 1970		Mile-Post	First Class
						Passenger	Daily		
STATIONS									
				4.40PM	163.2	DN-R	YERMO YL BN		
				4.30PM	158.6		DAGGETT		
				4.20	150.1		BARSTOW BA		
				2.15	67.3		SAN BERNARDINO B		
				1.59	64.5		COLTON		
				1.49PM	58.2		S. P. and A. T. & S. F. Crossings		
				1.47	57.5		RIVERSIDE JCT. YL		
					53.8	DN	RIVERSIDE YL VN		
108	P				53.0		STREETER		
96	P				48.3		ARLINGTON		
105	YP				45.6		PEDLEY		
105	P				38.1	D	MIRA LOMA V		
	PI				37.8		S. P. CROSSING		
	P				35.5	D	ONTARIO RA		
105	P				33.0		MONTCLAIR		
	P				32.0		S. P. CROSSING		
	P				28.9	D	POMONA PO		
102	P				24.4		SPADRA		
106	P				17.8		WALNUT		
					17.0		PUENTE JCT.		
105	P				11.3	D	CITY OF INDUSTRY BG		
	P				10.9		BARTOLO		
					10.3		WHITTIER JCT.		
103	P				8.5	D	PICO-RIVERA K		
54	P				5.7		MONTEBELLO		
					5.6	DN	EAST LOS ANGELES YL Z		
	DPYZ				2.8	R	EAST YARD YL		
	PX				1.7		DOWNEY ROAD YL		
	PX				0.0		NINTH ST. JCT. YL		
	PX						FIRST ST. YL		
	I						PASADENA JCT. YL		
	I						A. T. & S. F. Csg. (Mission Tower)		
	IP					D-R	LOS ANGELES UD		
165.2									

Thru Time (4.20)
Average speed per hour 38.1

Time shown at Colton, San Bernardino and Barstow is for information only.
Between Daggett and Riverside Jct. trains are governed by Operating Rules, timetable and Special Instructions of A. T. & S. F. Ry.
Between Los Angeles and L. A. U. P. T. Co. terminal limits 200 ft. west of A. T. & S. F. Csg. (Mission Tower) trains and engines are governed by Operating Rules and Special Instructions of L. A. U. P. T.
Between Pasadena Jct. and Los Angeles movement of trains and engines is governed by interlocking signals.
For conditional stops to discharge or pick up revenue passengers.—See Page 3.
For stations not shown on schedule pages.—See Page 11.

WESTWARD—ANAHEIM BRANCH—EASTWARD

Car capacity of sidings, etc. See Rule 6(A), Page 8	Distance from Whittier Jct.	Time-Table No. 41 April 26, 1970		Mile-Post
		STATIONS		
	0.0			
	0.1			
18	2.3			
	5.1			
	9.7			
	10.5			
	15.5			
I	17.3			
10	20.0			
39				

Between Colima Jct. and Fullerton Jct. trains and engines are governed by Operating Rules, Time Table and Special Instructions of Southern Pacific Co.

WESTWARD — BOULDER CITY BRANCH — EASTWARD

Car capacity of sidings, etc. See Rule 6(A), Page 8	Distance from Boulder Jct.	Time-Table No. 41 April 26, 1970		Mile-Post
		STATIONS		
	0.0			
	9.8			
59	22.4			

Eastward trains are superior to trains of the same class in the opposite direction.—See Rule 72.
For stations not shown on schedule pages.—See Page 11.

SYMBOLS AND ABBREVIATIONS (Rules 6 and 6(A))

Rule 6

The following letters placed before figures of a schedule indicate:

- s —regular stop;
- f —flag stop to receive or discharge traffic;
- A—arrive.

Rule 6(A)

The following letters placed in column with station name in time-table indicate:

- D —day operator;
- N —night operator;
- DN—day and night operator;
- R —train register;
- YL—yard limits.

The following letters placed in columns provided in time-table indicate:

- C —coaling station;
- D —diesel oil station;
- F —turbine fuel station;
- I —interlocking;
- O —fuel oil station;
- P —telephone;
- T —turntable;
- W—water station;
- X —cross over;
- Y —wye;
- Z —track scales;
- AI —automatic interlocking;
- CS —center siding;
- ES —eastward siding;
- WS—westward siding.

WESTWARD — SAN PEDRO BRANCH — EASTWARD

Car capacity of sidings, etc. See Rule 6(A), Page 8	Distance from First Street Los Angeles	Time-Table No. 41 April 26, 1970		Mile-Post
		STATIONS		
	3.1			
	3.6			
	5.1			
60	5.3			
	7.4			
	9.4			
	11.2			
123	12.5			
73	14.3			
75	14.6			
	17.4			
	19.1			
	21.7			
P	22.3			
I	23.2			
PT	24.2			
P	25.9			

SPEEDS SHOWN BELOW ARE MAXIMUM SPEEDS PERMITTED AND MUST NOT BE EXCEEDED:

Designation "Psgr."—Train with Diesel locomotive and all passenger train equipment.

Designation "Frt."—Train with freight cars; train with caboose only; locomotive without cars; locomotive with cars, other than train movement.

Referring to Rule 10(J): Where two or three speeds are shown on "Reduce Speed" signs, higher speed applies to passenger trains as defined above, lower speed applies to freight trains. Where only one speed is shown, it applies to all trains.

GENERAL

Location	Miles Per Hour		Location	Miles Per Hour	
	Psgr.	Frt.		Psgr.	Frt.
Maximum speed.	79	60	Trains handling wrecking derricks: (Cont'd)		
Passenger trains handling 6 cars or less.	70		For first 5 miles after leaving initial terminal with derricks not equipped with roller bearings. (All slower speeds applying to freight trains on curves and other restricted locations must be complied with.)		20
All work trains.		50	Trains handling scale test cars, wedge plows or company roadway machines on their own wheels (except wrecking derricks):		
All regularly assigned locals.		50	On Main lines—tangent track;		35
When using No. 20 turn-outs, unless a different speed is specified.	40	40	On Main lines—curves;		25
When using No. 14 turn-outs.	25	20	On Branch lines.		25
When using other turn-outs.	15	15	Self-propelled cranes, pile drivers, weed burners and similar equipment moving under own power. (Slower speed must be observed where conditions require.)		35
Facing point movement over spring switches not protected by signals unless advised by train order that switch has been spiked.	20	20	Jordan spreaders and other machines of spreader type, when in operation with wings extended.		15
Within yard limits protected by continuous block signal system.	60	35	Trains handling continuous welded rail or continuous lengths of jointed rail:		
Within yard limits not protected by continuous block signal system, unless a different speed is specified.	20	20	On unrestricted track;		40
(For Branches see page 10)			On restricted track or curves, 20 MPH less than published speed, except when published speed is 30 MPH or less, must not exceed 10 MPH.		
Road freight locomotives G.P. 7 Units Nos. 100-129 inclusive.	65	65	Through cross-overs or turn-outs.		10
Other road freight locomotives.	75		Trains handling ore cars U.P. 26000-26499 inclusive, loaded or empty.		50
Yard-switching locomotives in road service:			Trains handling M.C.P.X. and M.O.N.X. 23000 series tank cars loaded with phosphorus.		50
1000-1100 class;	35	35	Trains handling specially equipped cars for company wheels and axles, U.P. 99000-99014 inclusive and U.P. 99500-99962.		50
1800 class.	50	50	Trains handling company scrap.		50
1870 class locomotives:			Trains handling diesel units dead in train:		
On First and Second Subdivisions.		50	Yard-switch units of any type;		35
On branch lines.		20	Foreign line, government, export or commercial units other than yard-switch type;		45
Diesel locomotive running light, dynamic brake not in operation, on descending grades in excess of 1 percent.		35	Union Pacific road-switch units of Alco or Baldwin type.		45
Gas turbine or car body type unit backing up light or backing up as leading unit at front of train.	30	30	Wye tracks except those portions used as main track or siding.	6	6
When multiple unit engine is controlled from other than leading unit.	30	30			
Freight trains handling tonnage in excess of 75 tons per operative brake.		40			
Trains handling wrecking derricks:					
Derricks with 6-wheel trucks.		40			
Derricks with 4-wheel trucks.		35			

(Continued Next Column)

FIRST SUBDIVISION

Between Yermo and Las Vegas

Location	Miles Per Hour		Location	Miles Per Hour	
	Psgr.	Frt.		Psgr.	Frt.
Maximum speed.	79	60	Flynn		
Yermo			Between M.P. 230.9 and 231.2. See Note.	70	55
Between Wye Switches M.P. 162.8 and 163.1.	20	20	Cima to Kelso	30	20
Field			Westward freight trains, without dynamic brake in operation, will consume 5 mins. running the first mile and 4 mins. the second mile, after leaving Cima, to avoid too rapid heating of wheels.		
Between M.P. 186.2 and 186.4.	70	55	Cima to Kelso		
Dunn			Passenger trains handled by Diesel locomotive with dynamic brake in operation; Diesel locomotive running light with dynamic brake in operation.	45	45
Between M.P. 186.8 and 187.0. See Note.	70	55			
Between M.P. 188.4 and 190.9. See Note.	55	40			
Afton					
Between M.P. 191.8 and 193.7. See Note.	45	30			
Between M.P. 193.8 and 196.2.	60	45			

