

SUMMER WIND STUDIES IN ROCKY MOUNTAIN NATIONAL PARK:
DAILY TEMPERATURE AND HUMIDITY
REGIMES FOR SUMMER, 1980 AT THE
ALPINE VISITORS' CENTER (TR 10),
ROCKY MOUNTAIN NATIONAL PARK
D. E. GLIDDEN



KIM MAHER CASEY AND JAN VANSYCKLE

INTRODUCTION

DURING 1980-81 EXTENSIVE WIND RESEARCH WAS CONDUCTED IN ROCKY MOUNTAIN NATIONAL PARK, COLORADO, AND PARTICULARLY CENTERED NEAR THE ALPINE VISITORS' CENTER (3602 METERS.) SUPPLEMENTAL METEOROLOGICAL DATA WAS ALSO COLLECTED, INCLUDING AVC DAILY TEMPERATURE, HUMIDITY, AND PRESSURE REGIMES.

DIGITAL COPIES OF THE ORIGINAL TEMPERATURE AND HUMIDITY GRAPHS FOR AVC DURING SUMMER, 1980 ARE APPENDED BELOW. THEY PROVIDE A UNIQUE SOURCE OF CLIMATOLOGICAL DATA FOR THE ALPINE IN RMNP, AND MAY BE USEFUL FOR COMPARISON WITH FUTURE STUDIES AND ECOLOGICAL RESEARCH.

SUMMER 1980 WAS DOMINATED BY UNUSUAL WARMTH AND HIGH PRESSURE ALONG THE FRONT RANGE OF THE COLORADO ROCKIES, AND SO THESE DATA MAY NOT REFLECT A "NORMAL" SUMMER PATTERN, AND THE POTENTIAL EFFECTS OF INTER-ANNUAL VARIABILITY SHOULD BE CONSIDERED. NEVERTHELESS, THEY PROVIDE A SITE-SPECIFIC SOURCE FOR ONE SEASON, AND INCLUDE DIURNAL TEMPERATURE RANGES.



REFERENCE THE FOLLOWING STUDIES:

Glidden, D. E., 1974, *Analysis of Alpine and Subalpine Wind Conditions in Winter, RMNP*, National Park Service, 91 p.

Glidden, D. E., 1981, *Summer Wind Studies Near the Alpine Visitors' Center, Rocky Mountain National Park*, Rocky Mountain Nature Association, Estes Park CO, 53 p.

Glidden, D. E., 1982, *Winter Wind Studies in Rocky Mountain National Park*, Rocky Mountain Nature Association, Estes Park CO, 29 p.

Glidden, D. E., 2011, *Significant Disturbance Patterns of 12-13 November 2011 Wind Storm in Rocky Mountain National Park*, irma.nps.gov, 12 p.

1981 AND 1982 STUDIES SUPPORTED BY THE ROCKY MOUNTAIN NATURE ASSOCIATION. ALL RIGHTS RESERVED

**AVC (TR 10) WIND RESEARCH
TOWER, 1980**

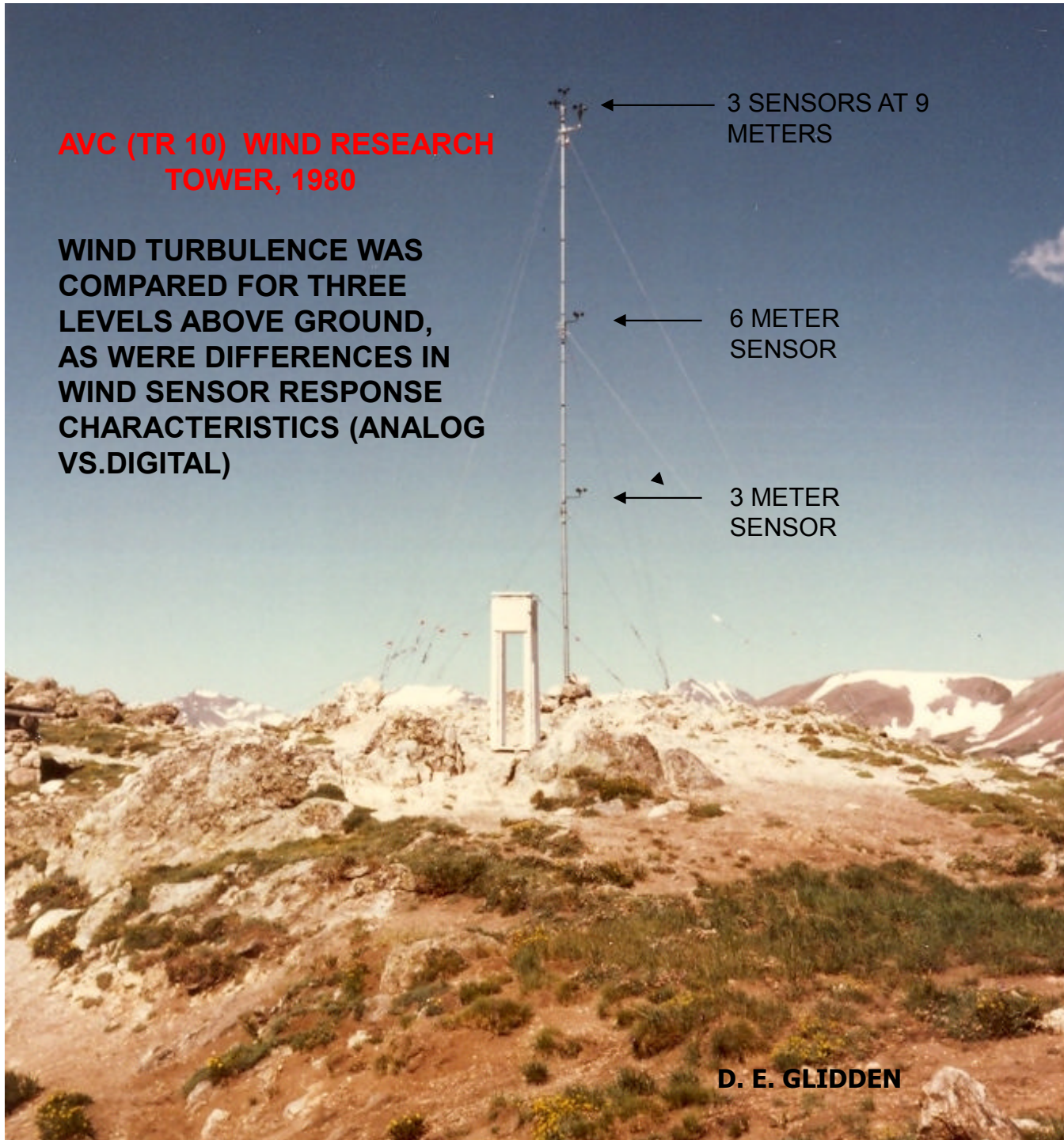
**WIND TURBULENCE WAS
COMPARED FOR THREE
LEVELS ABOVE GROUND,
AS WERE DIFFERENCES IN
WIND SENSOR RESPONSE
CHARACTERISTICS (ANALOG
VS.DIGITAL)**

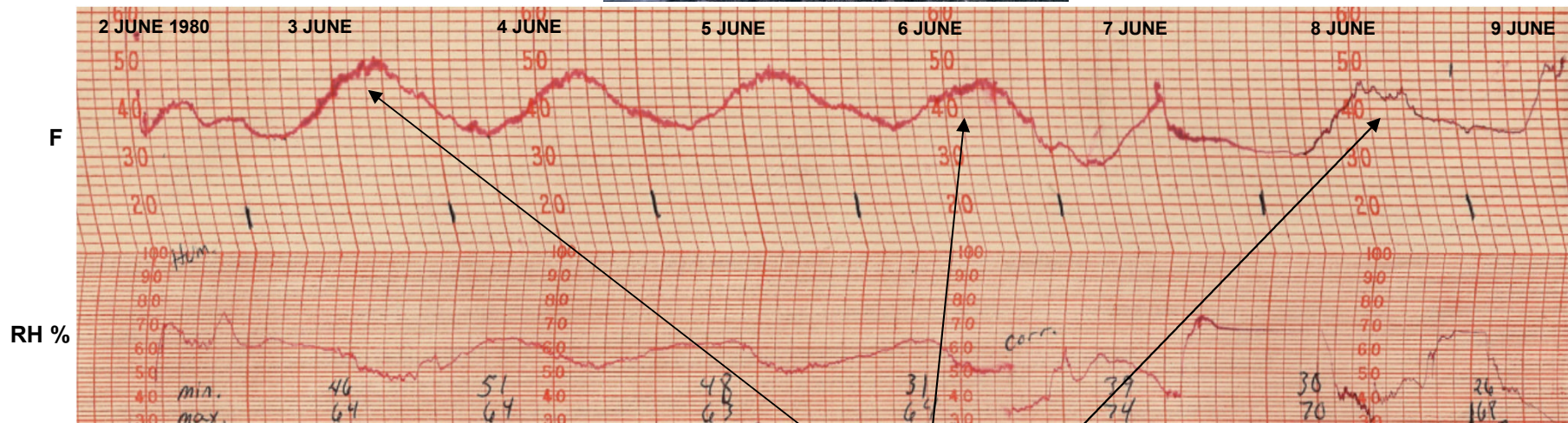
← 3 SENSORS AT 9
METERS

← 6 METER
SENSOR

← 3 METER
SENSOR

D. E. GLIDDEN





TR 10 (AVC) TEMPERATURE AND HUMIDITY PROFILE FOR JUNE 2-9, 1980

NOTE THAT THICKNESS OF TRACE INDICATES MODERATE WIND TURBULENCE (CA. 12:00-6:00 PM ON JUNE 3,4,5,6)
WHILE VERY THIN TRACE INDICATES LITTLE OR NO TURBULENCE (ON JUNE 8-9TH)

AFTER D. E. GLIDDEN

APPENDIX C

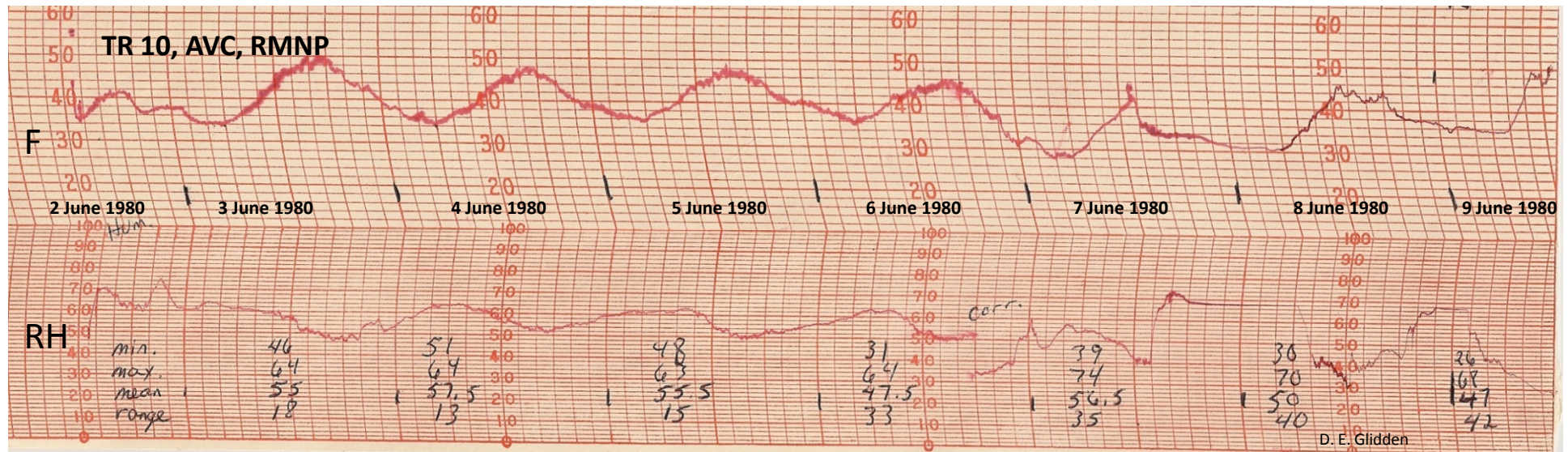
SUPPLEMENTARY METEOROLOGICAL DATA1980

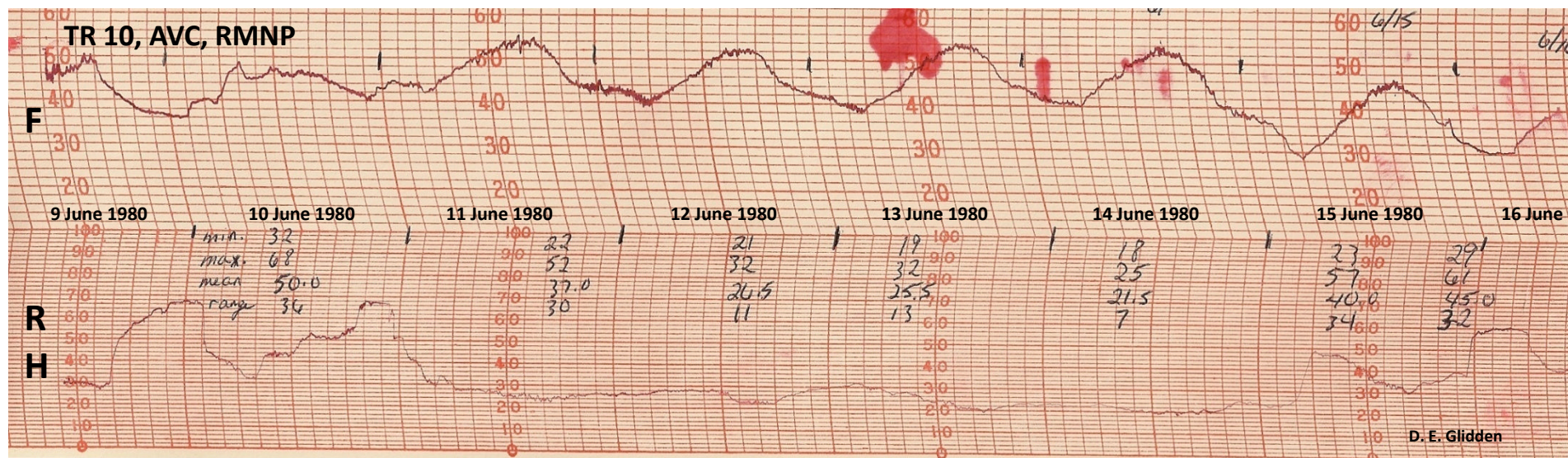
	<u>J</u>	<u>J</u>	<u>A</u>	<u>SUMMER</u>
TR 10 (AVC) ¹				
<u>Temperature (F)</u>				
Extreme Maxima	65	68	69	69
Average Maxima	50.3	60.1	57.6	56.0
Average	45.8	50.9	49.6	48.8
Average Minima	37.7	42.2	41.2	40.4
Extreme Minima	28	38	28	28
Average Range	16.1	18.0	16.6	16.9
<u>Relative Humidity (%)</u>				
Extreme Maxima	74	91	86	91
Average Maxima	50.3	76.4	73.0	66.6
Average	39.5	57.8	56.8	51.4
Average Minima	28.7	40.2	40.4	36.4
Extreme Minima	18	30	26	18
Average Range	21.6	35.2	29.9	28.9
TR 6 (Hidden Valley)				
<u>Atmospheric Pressure</u> ²				
(Millibars)				
Extreme Maxima	1028.8	1028.4	1025.1	1028.8
Average Maxima	1023.0	1025.1	1021.7	1023.2
Average	1021.2	1024.0	1020.3	1022.0
Average Minima	1020.0	1022.7	1019.0	1020.7
Extreme Minima	1015.6	1019.3	1011.2	1011.2
Average Range	2.94	2.03	2.37	2.45
TR 12 (Milner Pass)				
<u>Atmospheric Pressure</u> ²				
(Millibars)				
Extreme Maxima	1024.4	1026.1	1024.0	1026.1
Average Maxima	1021.7	1023.7	1020.3	1021.9
Average	1021.0	1022.7	1019.3	1021.0
Average Minima	1020.0	1021.7	1018.3	1020.0
Extreme Minima	1016.9	1019.3	1012.9	1012.9
Average Range	1.83	1.69	2.03	1.85

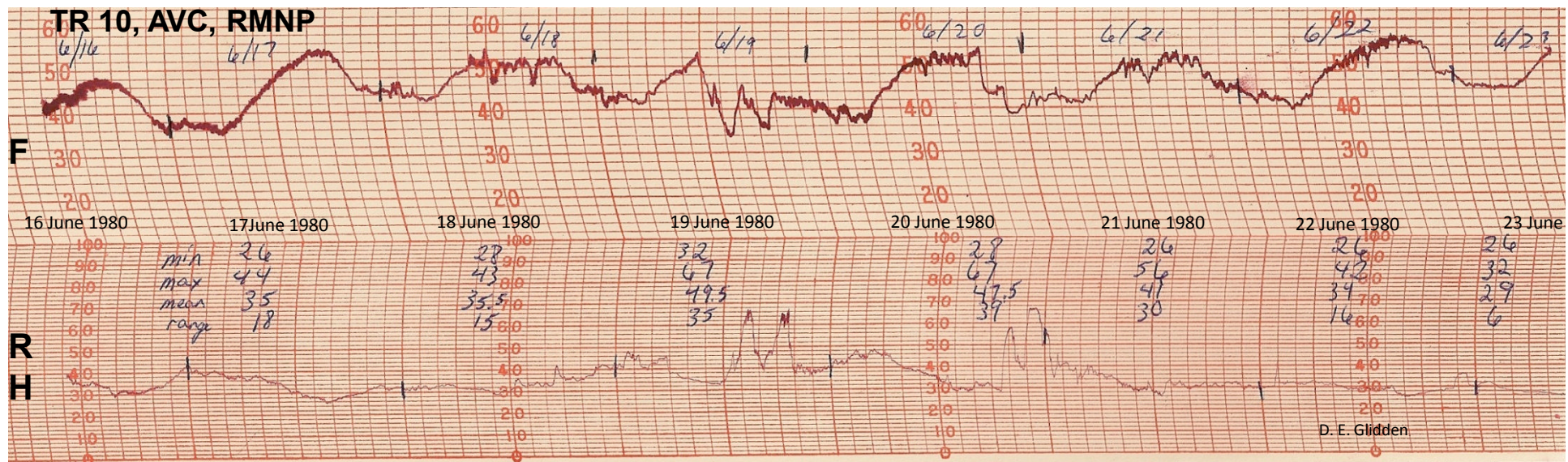
D. E. GLIDDEN

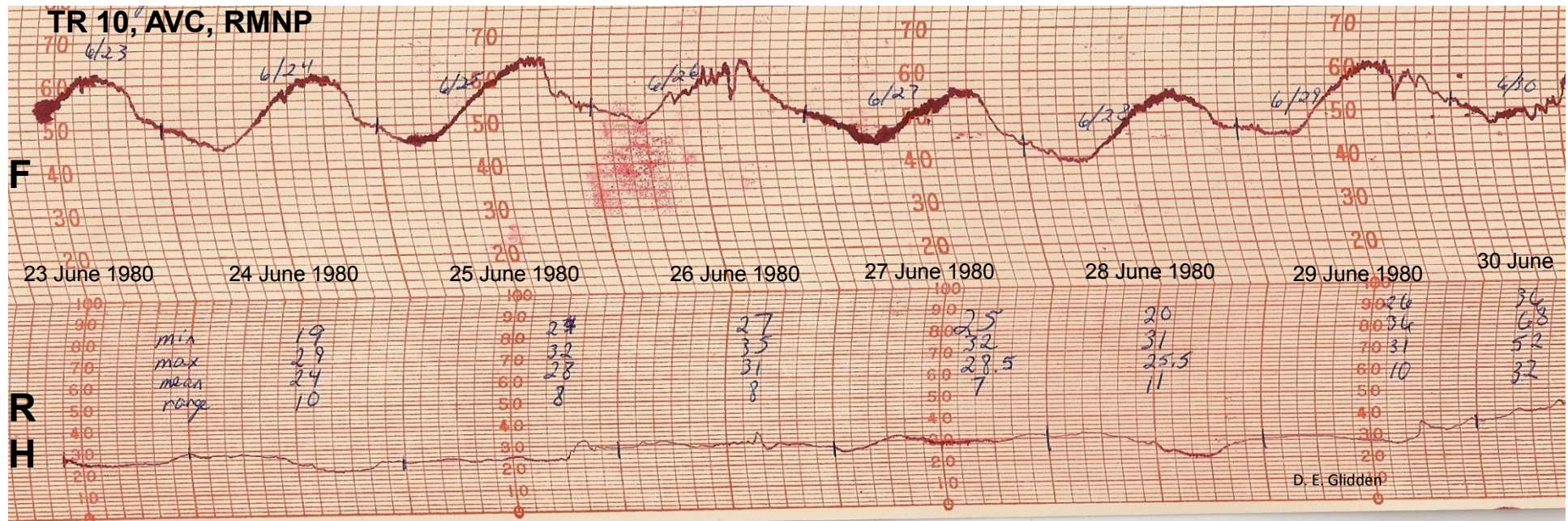
1. Temperature and Relative Humidity readings were recorded in a screen 1.52 meters above ground, and absolute values were probably greater than those indicated.
2. Reduced pressure readings are correct for comparing relative changes between sites; absolute values should not be used for comparison elsewhere.

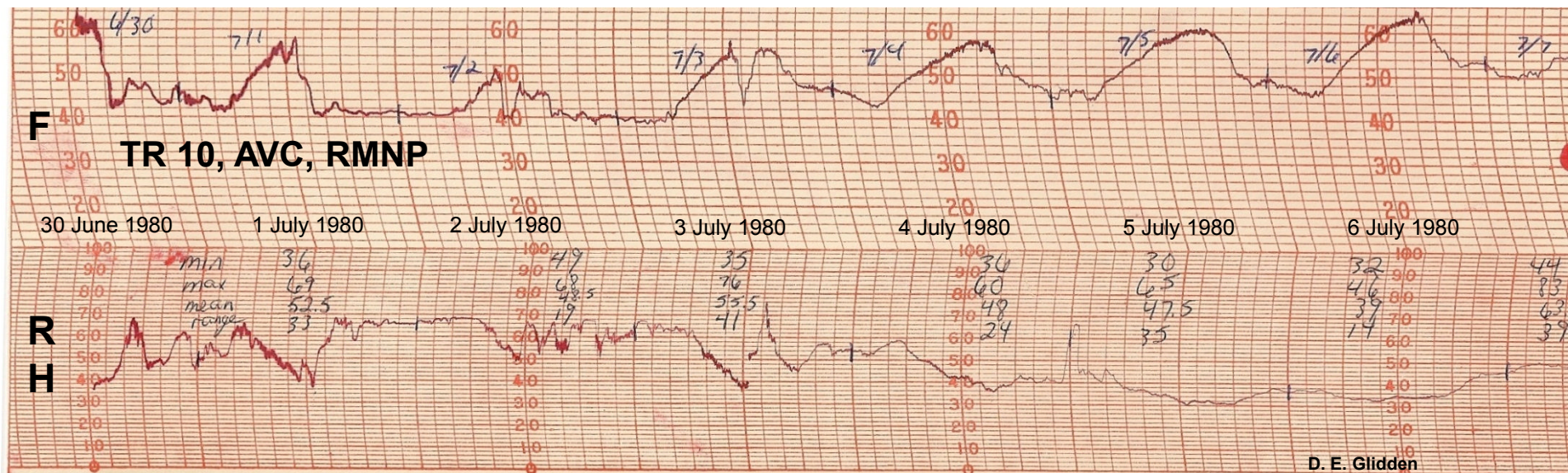
ORIGINAL AVC HYGROTHERMOGRAPH TRACES FOR TEMPERATURE AND RELATIVE HUMIDITY JUNE 2-SEPTEMBER 19, 1980 (PAGE DOWN FOR WEEKLY GRAPHS)

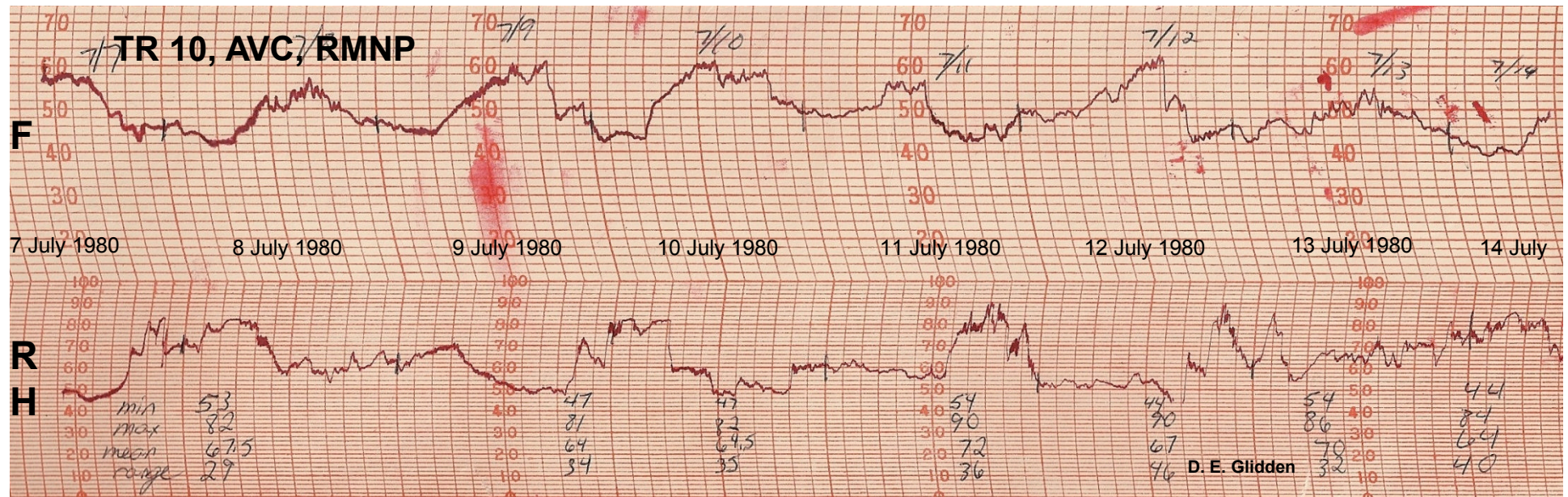




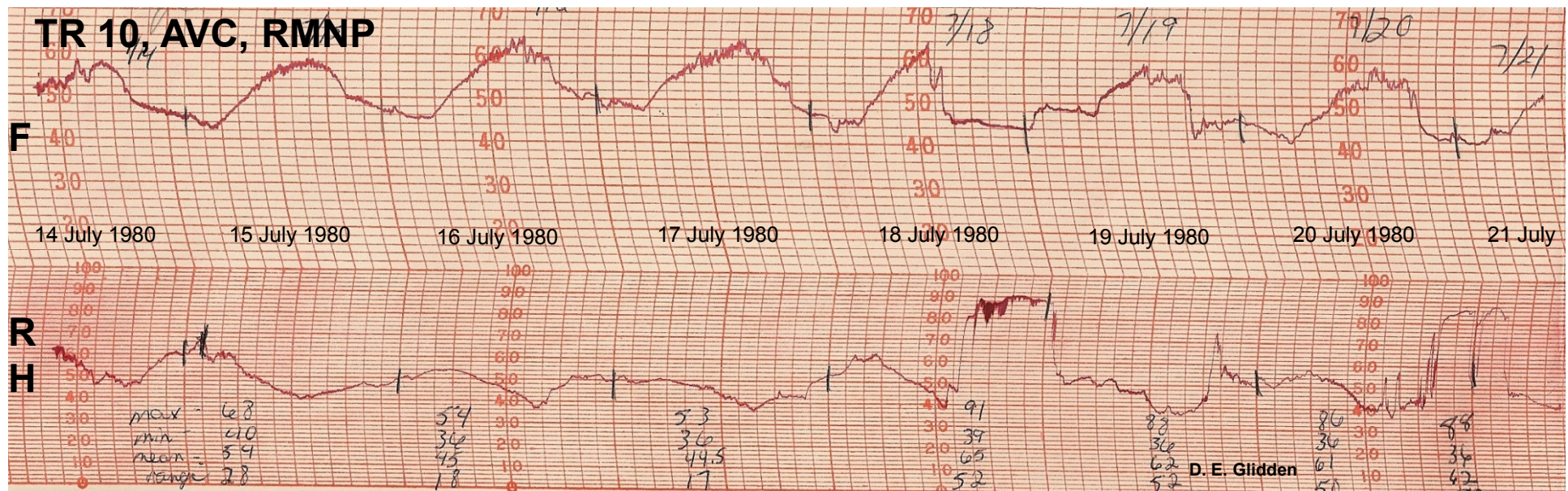


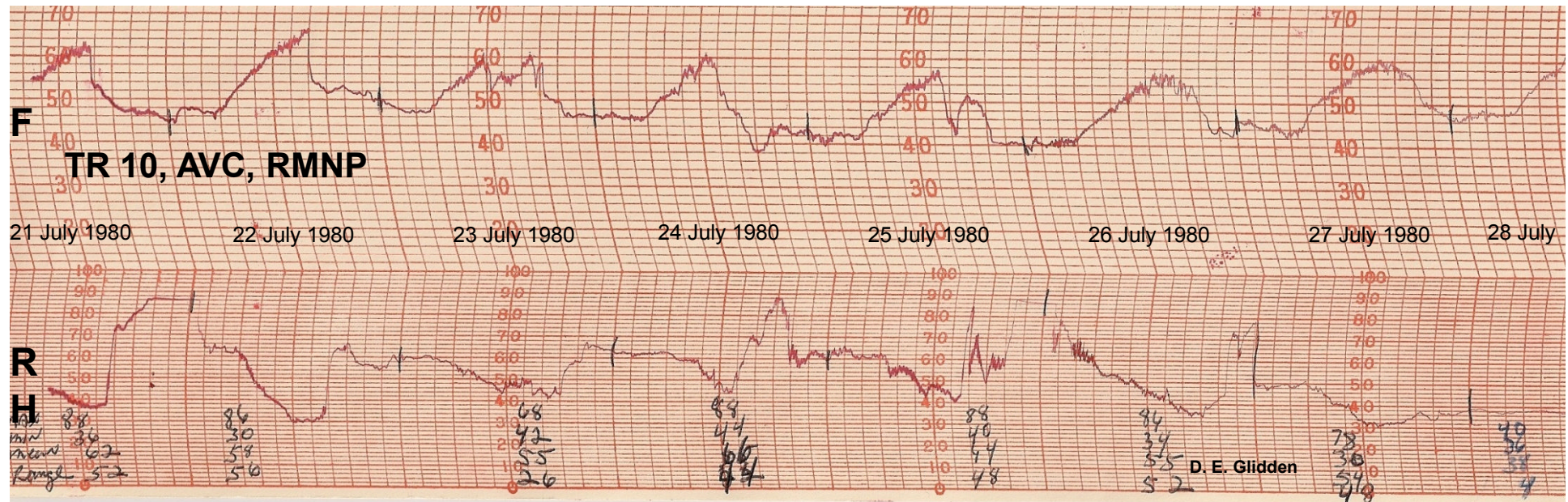


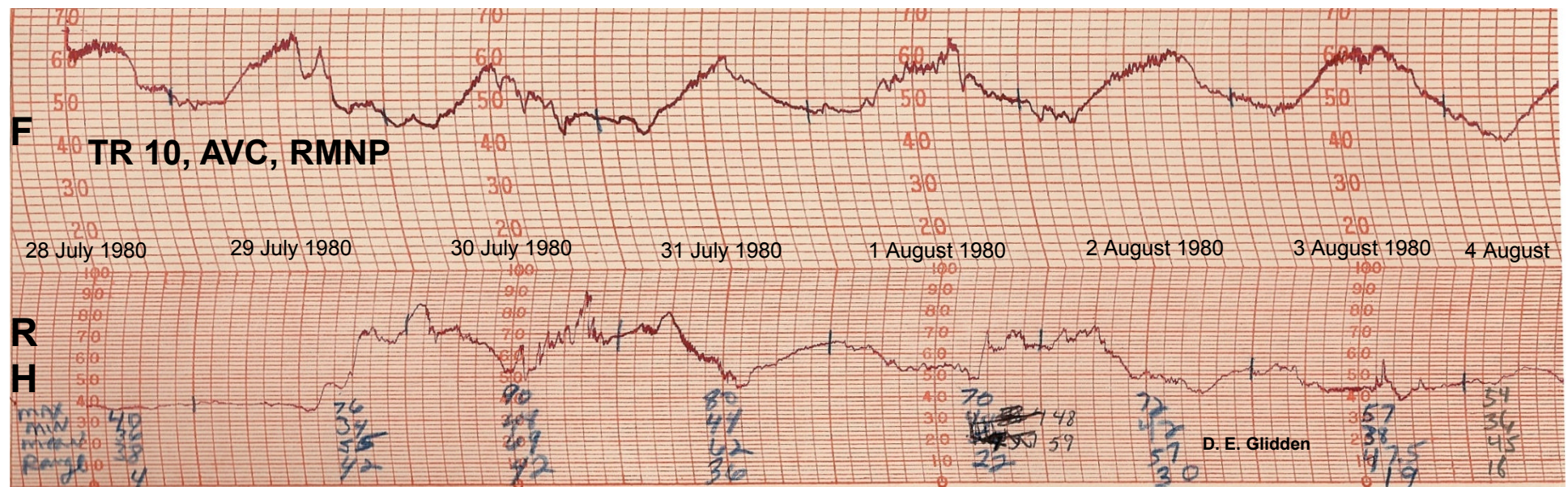


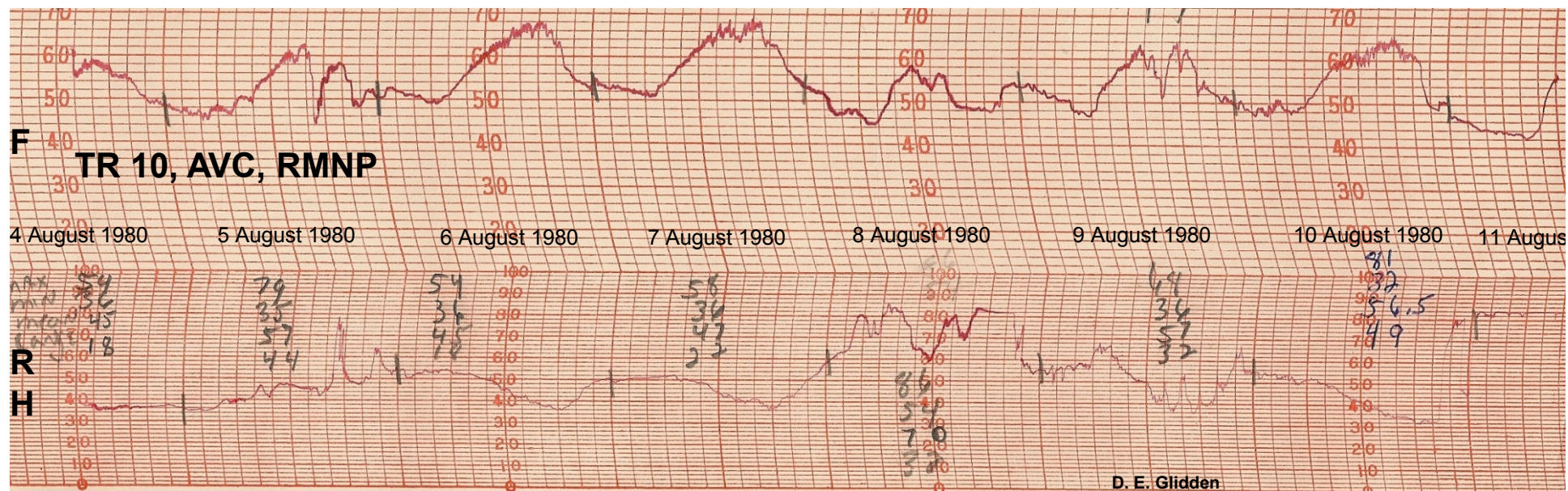


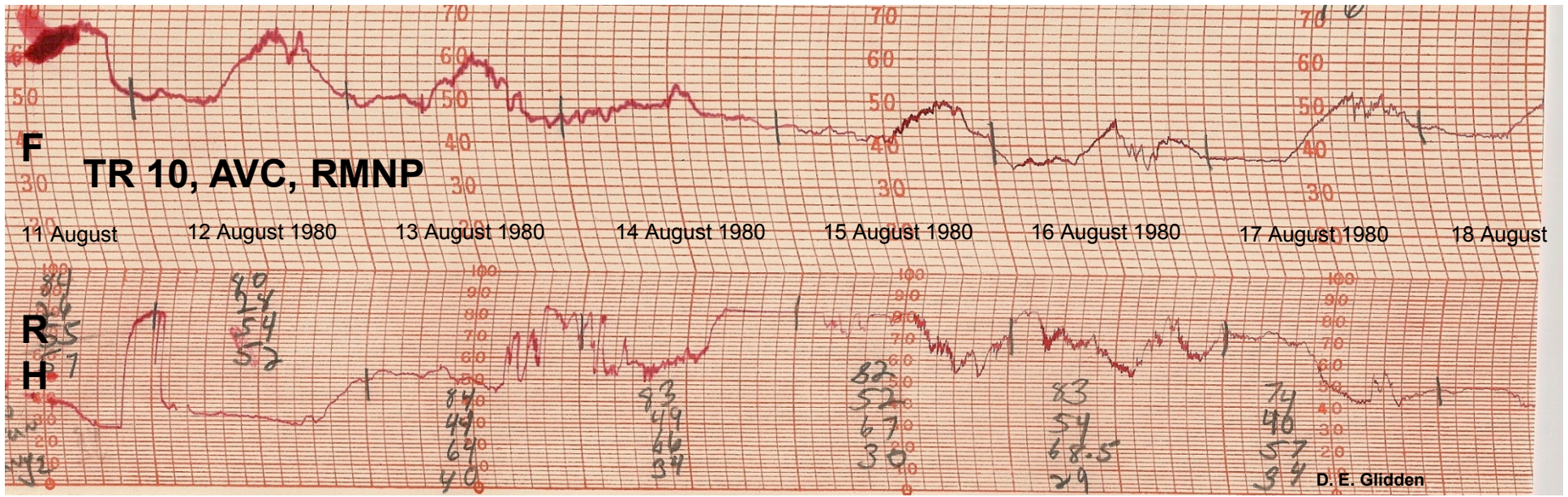
TR 10, AVC, RMNP



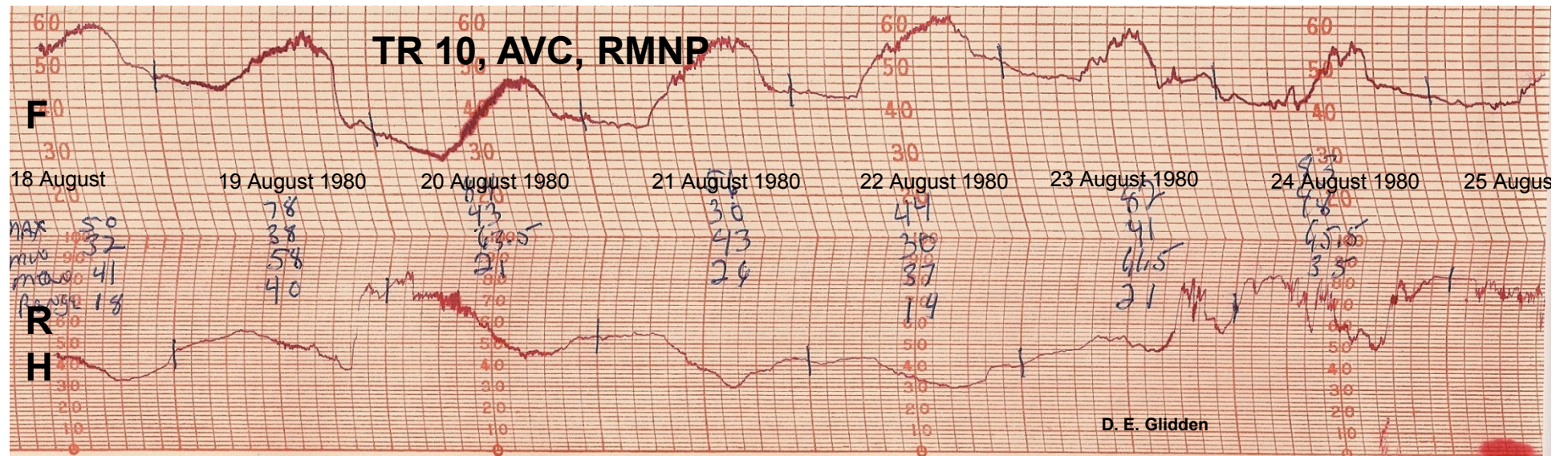


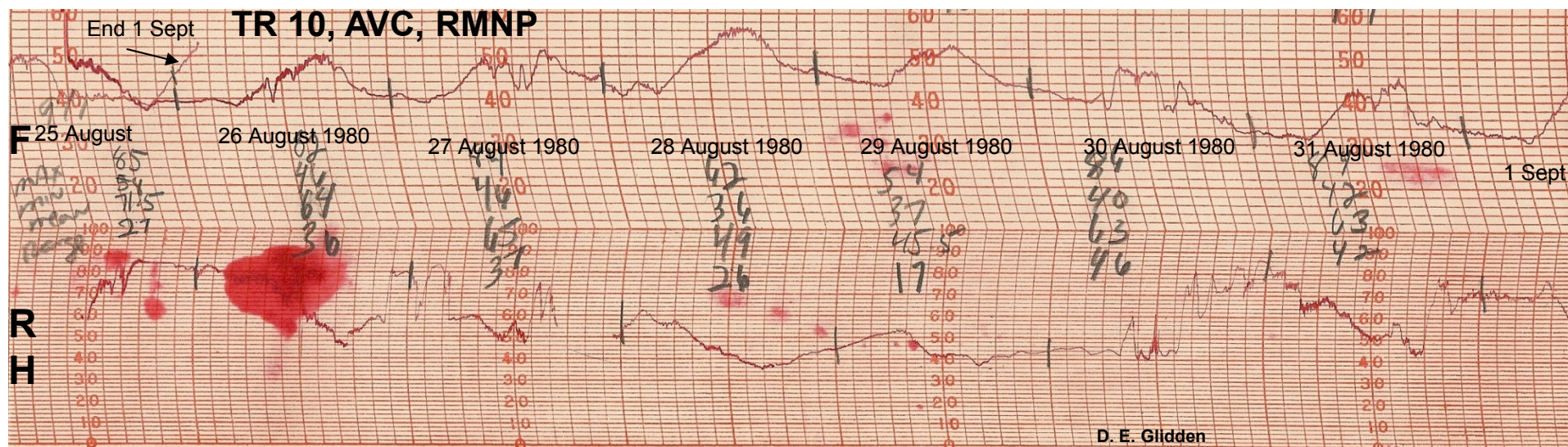


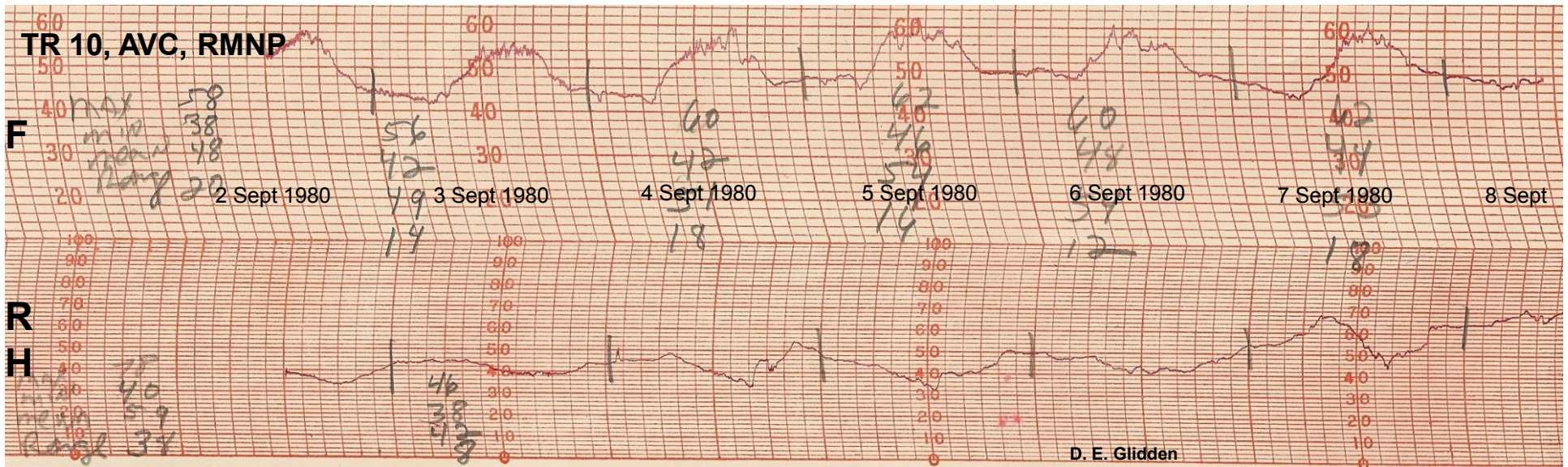


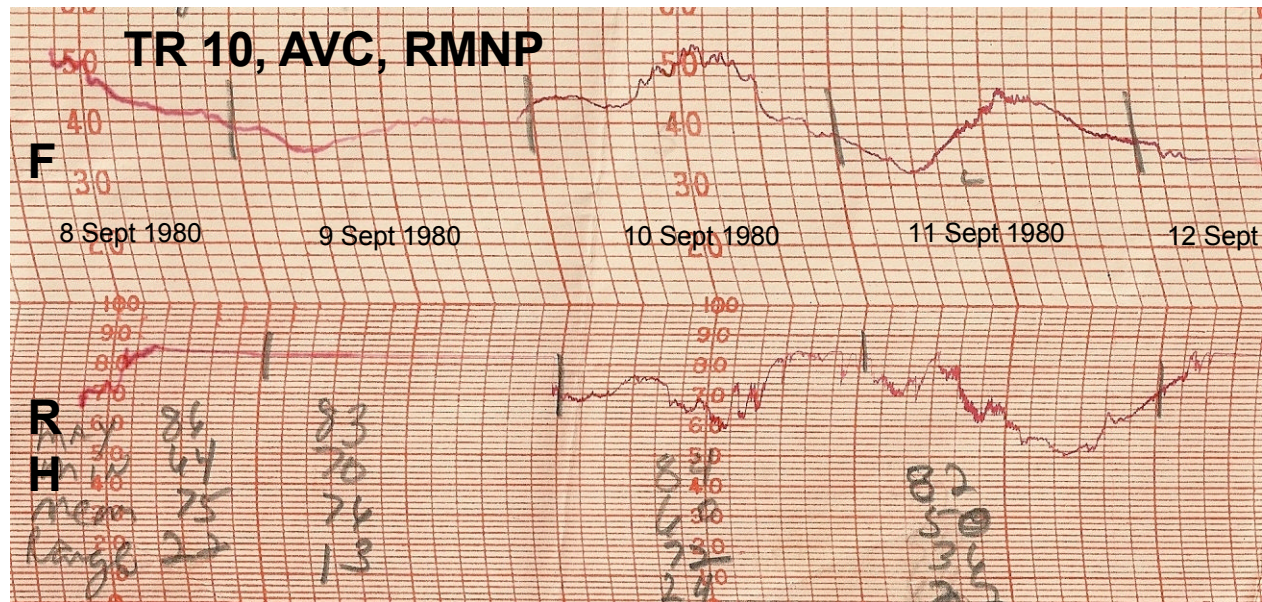


TR 10, AVC, RMNP









TR 10, AVC, RMNP

F

R
H

12 Sept

13 Sept 1980

14 Sept 1980

15 Sept 1980

16 Sept 1980

17 Sept 1980

18 Sept 1980

19 Sept

D. E. Glidden

TR 15



AVC , TR 10



**KIM AND JAN HAULING INSTRUMENT
TOWER SECTIONS UP TO TR 11 SITE,
ROCKY MOUNTAIN NATIONAL PARK, 1980**

