

CASPAR CREEK ECOLOGY PROJECT
Annual Report, 1968-69

by

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On March 12, 1969, Dr. Roger A. Barnhart, Leader, California Cooperative Fishery Unit, agreed to take over Humboldt State College's responsibility for the Caspar Creek Project since Dr. John DeWitt, Project Supervisor, accepted a temporary Peace Corps assignment in Egypt. Dr. DeWitt agreed to write the major portion of the '68-'69 progress report. Unfortunately, Dr. DeWitt's material has been lost, perhaps only temporarily in his move to Egypt. However, the original data is still on file at Humboldt State College. Dr. DeWitt's material consisted of summarized data on solar radiation (pyheliometer and photometer data), air and water temperatures, and stream-side vegetation before and after logging (generally 1966 and 1968).

Graduate fisheries student Lloyd Hess has utilized a portion of the Caspar Creek insect samples for his, master's research project. The tentative title of his thesis is "The Effects of logging-Road Construction on the Drop of Insects into a Small Coastal Stream". The summer drop-box collections for 1966 and 1968, South Fork, was analyzed. The analysis consisted of keying the insect collections to family and counting and weighing each family to determine numerical and biomass importance. This portion has been completed and information compiled on IBM cards for computer analysis.

Three thousand data cards containing the numerical and weight

measurements have been programmed to determine:

1. The contribution of each family by numbers and weights to the 1966 and 1968 drop-box samples.
2. Comparisons of drop-box insect numbers and weights in areas unaffected by road construction (stations 4-9) and in areas greatly changed by the road (stations 38-50).
3. Whether drop-insects derived from an aquatic habitat have increased significantly since road construction, while insects of terrestrial origin show little change or even a decrease as has been hypothesized.

Many of the insect families will show considerable change in numbers and/or biomass. These changes will be discussed and related to the habitat changes along the stream. For example, arachnids (spiders) were prevalent along all of the stream during 1966, whereas they were markedly reduced in 1968 as revealed by the drop-box data. This reduction appears to result from less tree cover and a change from fern and associated redwood forest shrubbery to an annual grass habitat. Preliminary examination of the data also reveals great increases in Diptera (midges) in areas where the stream has been opened up. Mr. Hess expects to have his summarization finished and his thesis in rough-draft form by the fall of 1969.

Undergraduate fisheries student, Richard Dorn, undertook a special project under Dr. Barnhart's supervision during Spring Quater, 1969, to evaluate some of the air and water temperature data collected on Caspar Creek from 1965 to 1968. Several times each summer both stream forks were walked out and air and water temperatures collected at each 100-foot station marker. A visual comparison of graphs for air and water temperatures

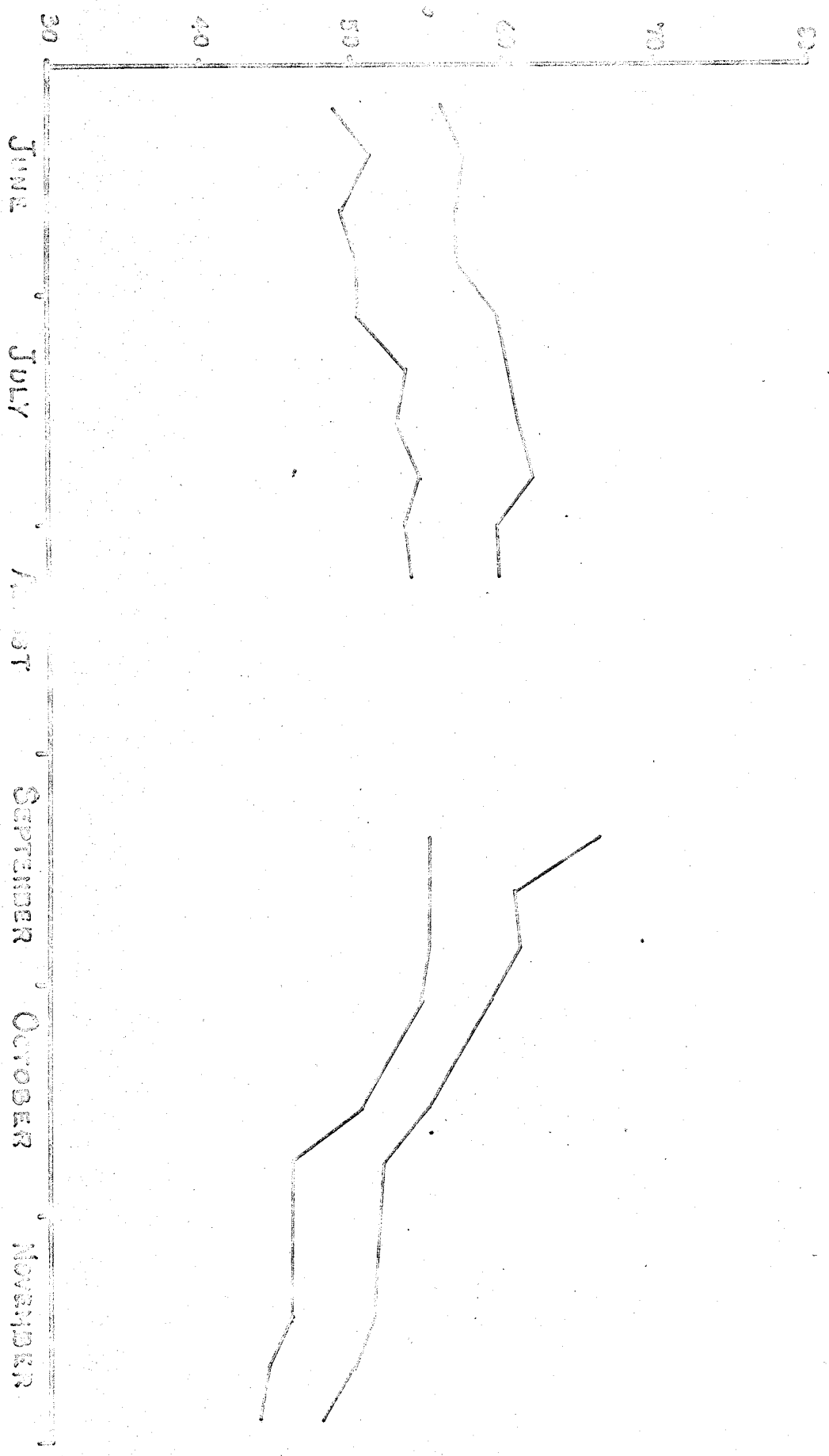
on the North Fork, Caspar Creek, for 1967 and 1968 reveals little change and the graph for the South Fork, 1967, prior to road construction has much the same appearance as the North Fork graphs. Conversely, graphs plotting air and water temperatures for June, July, and August 1968, South Fork, Caspar Creek, show drastic fluctuations in both air and water temperatures as one moves along the stream. Comparisons of these temperature changes with canopy ratings for each station marker (closed, partially open, open) reveal many correlations. Extreme changes of 15 degrees in water temperature in a few hundred Feet occurred in several places. The data suggest that stream temperature can be rather rapidly increased and then decreased by changes in canopy. The data were difficult to compare in many cases because the entire length of stream was sometimes sampled in one day, and in three days at other times. Temperatures were measured from Station Marker 1 to 100 in some cases and the order reversed occasionally. Additional more comparable measurements should elucidate these temperature fluctuation on South Fork Caspar Creek.

An assistant was hired by Dr. Barnhart to work up the thermograph charts for both forks of Caspar Creek, 1967 and 1968, and to prepare graphs plotting weekly minimum and maximum water temperatures from June through November for North Fork 1963, 1964, and 1967, and the South Fork 1963, 1964, 1967, and 1968. After reviewing Mr. Dorn's Report it was felt that a comparison of thermograph data might reveal considerable change on the South Fork since road construction. The Graphs are included in this report. These appears to be an increase in the average maximum and minimum temperatures during 1967 and 1968. There also appears to be a greater difference between average minimum

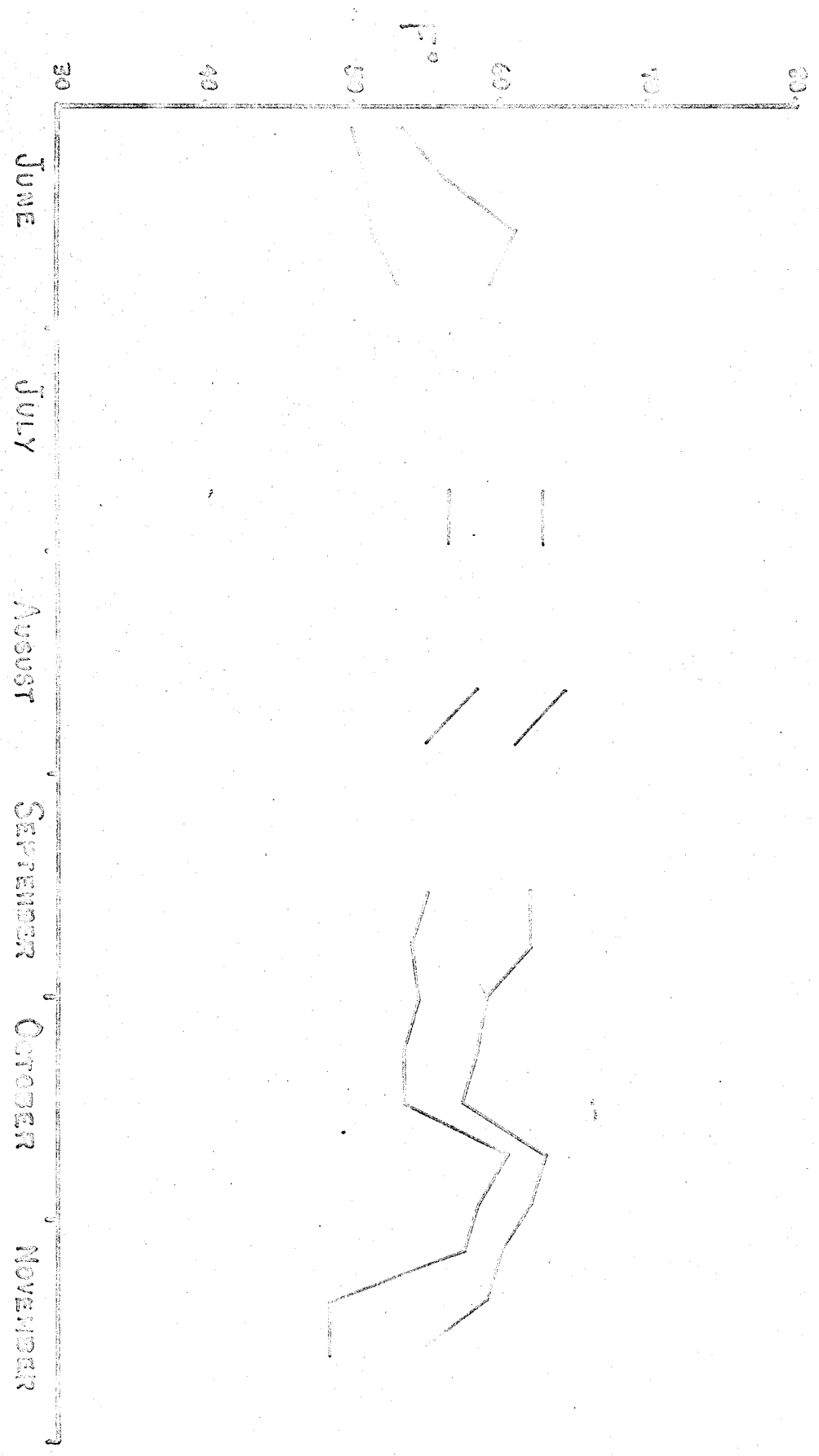
and maximum temperatures during the summer months, but expected extremes are not apparent. The pooling of water behind the weir tends to mask changes occurring upstream. Considerable thermograph data has been collected in a random pattern at various station markers upstream. No attempt has been made to analyze these data but they may provide further insight to temperature changes along the stream.

Although it would have been desirable to start a graduate student on Caspar Creek during the 1969 summer, no qualified students were available. Mr. Edward Fredricks, senior zoology student at Humboldt State College, has been hired for July, August, and September, 1969. He will concentrate on filling some of the gaps in previous years' data on insect collections and temperature data. Routine illumination and radiation measurements will also be made. A full-time graduate student will be started on Caspar Creek during the fall, 1969.

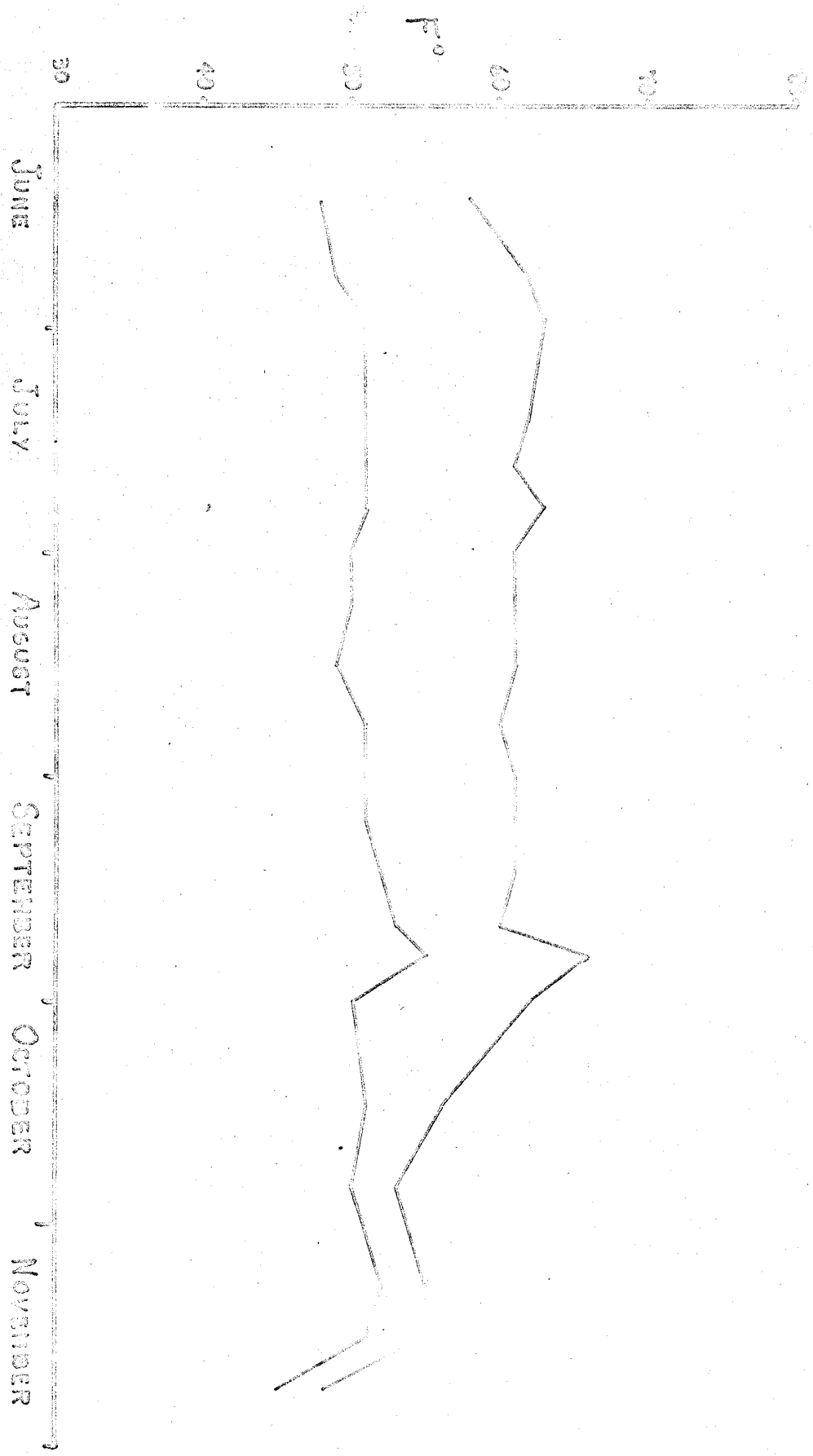
WEEKLY MINIMUM AND MAXIMUM WATER TEMPERATURES
NORTH FORK CROWAN CREEK, 1963



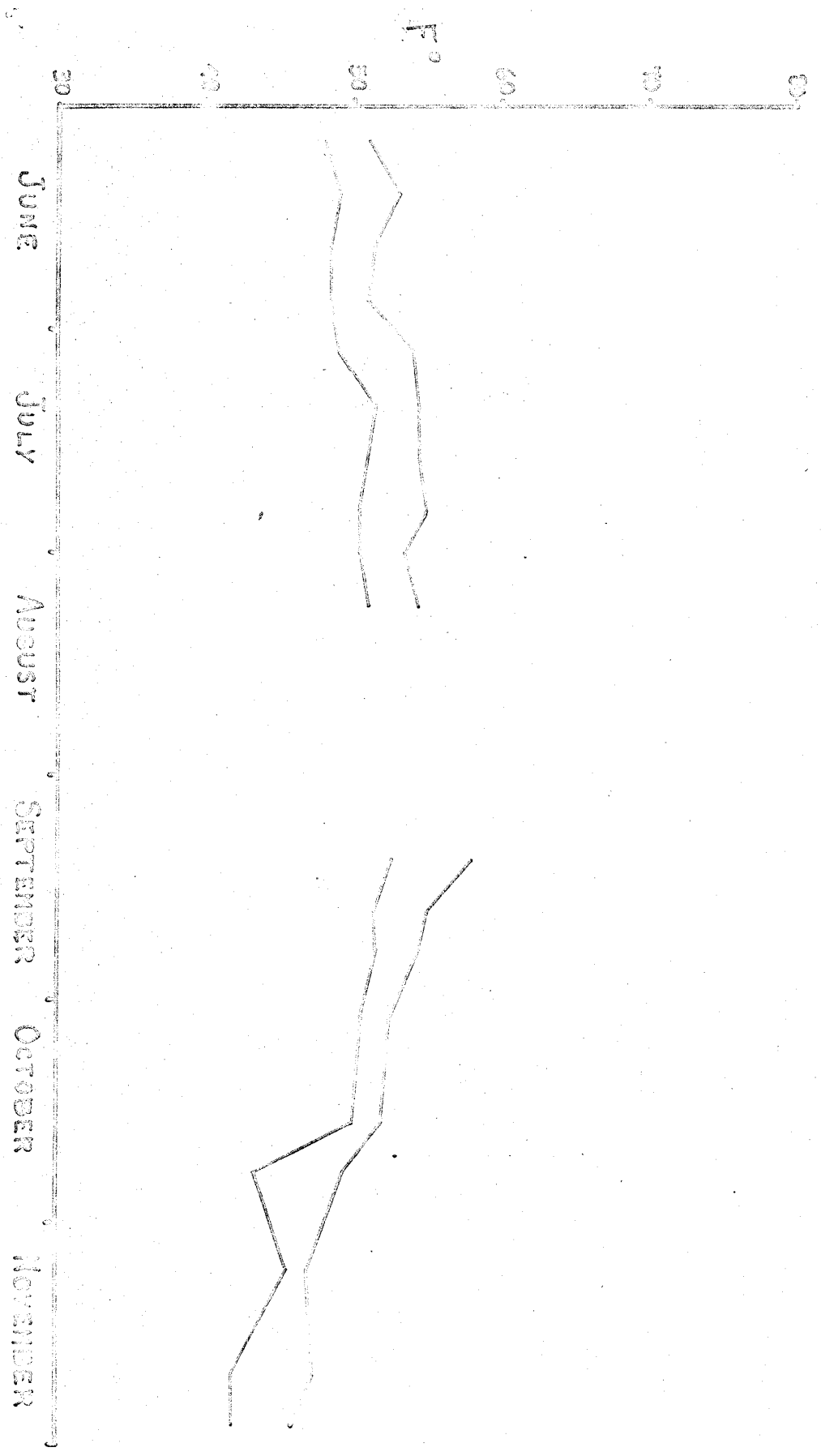
WEEKLY MINIMUM AND MAXIMUM WATER TEMPERATURES
NORTH Fork CAHOON Creek, 1964



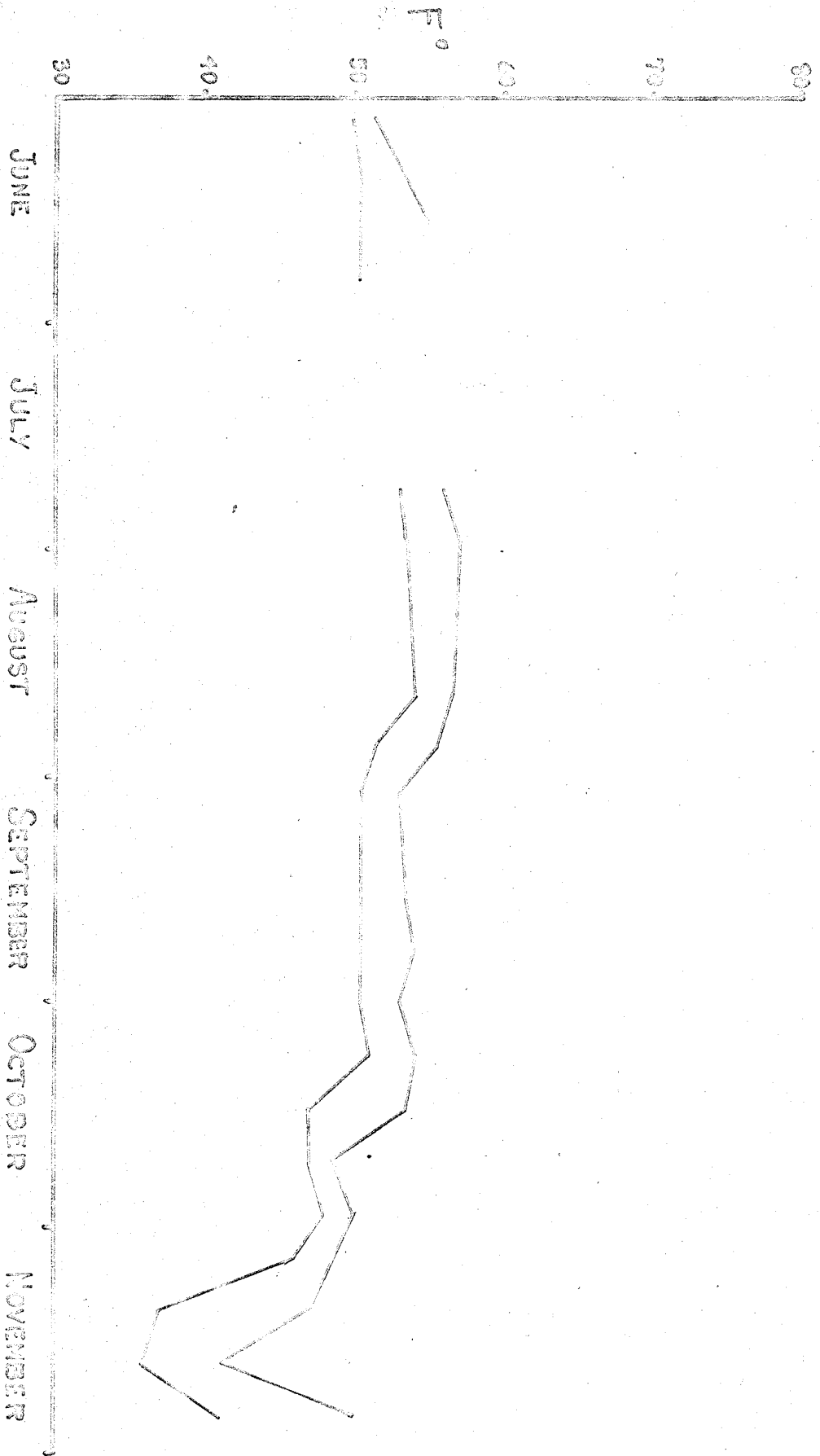
WEEKLY MINIMUM AND MAXIMUM WATER TEMPERATURES
NORTH FORK CASPAR CREEK, 1967



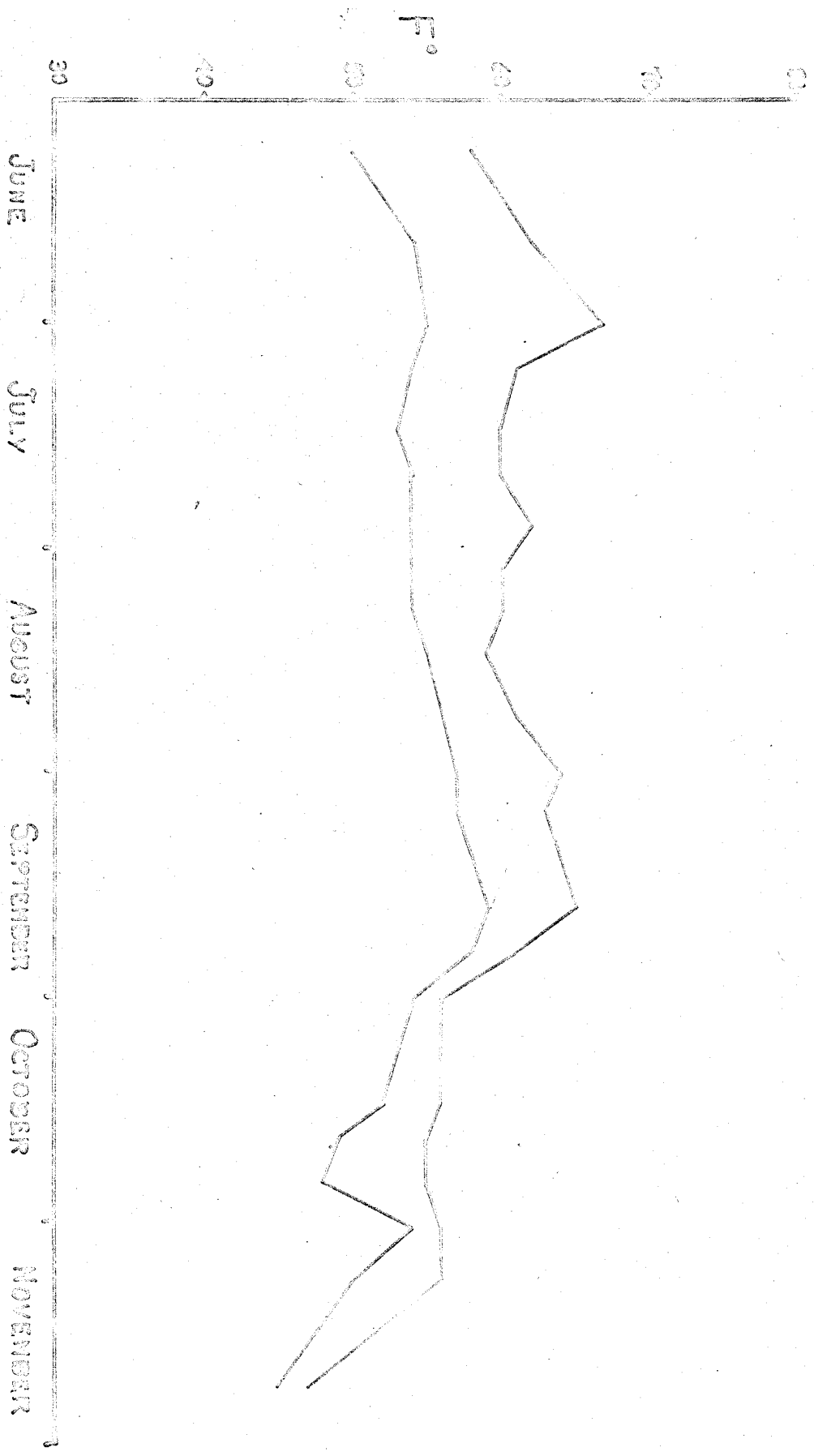
WEEKLY MINIMUM AND MAXIMUM WATER TEMPERATURES
SOUTH FORK CANNON CREEK, 1963



Weekly Minimum and Maximum Water Temperatures
South Fork Caspar Creek, 1964



Weekly Minimum and Maximum Water Temperatures
South Fork Clear Creek, 1957



Weekly Minimum and Maximum Water Temperatures
South Fork Cascon Creek, 1968

