

Fig. 5. For example, a single set of flowers of Atlixco which normally has a cycle of about 36 hours may have an extended cycle of 80 hours.

Under certain conditions some of the **B** varieties, as the Fuerte, will have the sets of flowers operating in a cycle of 48 hours, but with a daily periodicity and alternation that appears to be quite normal. This appeared to be the rule of the behavior for certain **B** varieties in California during February, March and April of 1923 in those orchards where the writer made continued observations. Again this same variety and even the same tree that is operating on a 48-hour cycle will shift to a short cycle of 24 hours. One of the most surprising types of behavior is that in which part of the flowers of a set have a cycle of 24 hours and the rest have a cycle of 48 hours. In this case nearly always the pistils of those flowers opening for the second opening in a cycle of 48 hours are at that time blackened and obviously unable to function to pollination and these flowers open as much as an hour in advance of the flowers of the shorter cycle. The presence of pollen-shedding flowers of both short and long cycles may make decided differences in the number of flowers counted on successive days. In the present discussion it is considered that the 48-hour cycle for **B** varieties may be classed as abnormal but it should be noted that the flowers of a variety may continue in this cycle for some time.

The normal and the abnormal behavior of numerous varieties have been studied repeatedly in the same grove on different days. Typical records for such studies are presented in Figs. 4, 6, 7 and 8 and it may be stated that the observations recorded in these charts were all taken in the same grove (that of the late Wm. J. Krome at Homestead, Florida) and for the same tree when any one variety is noted in different charts.

The record of Fig. 6 is for a day following rather low night temperatures. There was decided delay in the opening of both first-period and second-period flowers and for several of the **B** varieties which normally have first-period flowers opening late in the afternoon there was omission of this set and continued opening (indicated by arrow heads) from the previous afternoon. But for most varieties there was the daily alternation of two sets complete, there was no overlap of sets when pollen was being shed and the reciprocation between many **A** and many **B** varieties was good. On this day there were no first-period flowers open