

seems to hang on loosely to the margin of the cell, and when in a vertical position frequently tilts backwards, apparently almost ready to fall off. Such dead rest periods are broken by a few seconds' breathing every several minutes, by movements of antennae and feet, and by disturbances from the other bees. I transcribe the following from my notes as a typical twenty-minutes' observation on a resting bee, on the margin of the comb: "Dead rest for 20 seconds, when touched by another worker, and she moves antennae about for five seconds. Dead rest for 30 seconds, when she suddenly starts, moves legs about for 15 seconds, and antennae for 30 seconds. Dead rest for two minutes, except slight tremor of right antennae, and breathing for a few seconds. Dead rest for 40 seconds, when touched by a worker and she sways to the other side and moves antennae about 50 seconds, when she is pushed out of the way by a running worker. Moves antennae about for two minutes. Dead rest for 30 seconds. Breathes for two seconds. Dead rest for 30 seconds, excepting a few jerky movements of antennae. Run into by a worker and she moves about for 15 seconds. Dead rest for 40 seconds, when touched by a worker. Moves antennae about for 10 seconds. Dead rest for one minute, when touched by a worker, and she starts and moves antennae for 5 seconds. Dead rest for one minute, except a few movements of antennae, and breathing once. Dead rest for one minute when she suddenly starts, moves antennae about for 30 seconds. Dead rest for one minute when she suddenly starts and tips forward. Dead rest for 15 seconds, when she moves antennae about for 30 seconds.

When not in the busy season of pollen and nectar gathering, or when

from other causes she does not go out, she spends most of her time in the hive in what seems to be aimless moving about over the cells, looking in one now and then, and occasionally stopping to feed another bee or be fed by it. A very large proportion of the time is spent in barbering herself, for which purpose she may stop as often every minute. The various duties of the hive, such as ventilating, building and capping cells, and feeding the larvae, queen and drones, seems to require such a small proportion of an individual's time that I have observed it but a few times with the eight marked bees of which I have individual records. Between these other activities she changes off from one to the other at frequent and very irregular intervals, and, like the queen, does not persist long at a time in any one. I give the following again as a typical twenty minutes' observation on a marked worker: Time, 1-2 p.m. "1. Moves about for four and a half minutes, looking into two cells. Barbers herself for 30 seconds. 2. Moves about for four and a half minutes, looking into six cells. Barbers herself for 20 seconds. 3. Is fed by a worker for 20 seconds. Moves about for a minute and a half. Rests three minutes. Rests a minute and a half. Moves about a minute. Rests two and a half minutes." When busy gathering pollen and nectar she has a quite different procedure to go through, to which I have not observed many exceptions. While moving slowly about in the hive in her usual way she may suddenly start to barber herself very vigorously and then start in a wild run all over the hive, lasting sometimes for several minutes. This running is an invariable performance before she leaves the hive. She may be gone a few minutes to probably mostly to go for food and enters the hive, making a lateral movement. This seems to be preventing the other bees of her colony from going through the same movement. Several workers are around her, making an attempt at contact as often as possible. After this, or after she has been roughly barbering, she proceeds to find a new position in the distribution of the twenty-four bees. The results of the observations stated before. 1. The workers were watched for twenty-four hours, and at intervals every hour, and at intervals of a few hours, and at intervals of a few days. The results were apt to lead to the conclusion that the bees were watching all the time, which gives the figure in the record. The periods of the day on a minute basis:

A. M.			
1-2	3-6	6-9	9-12
rest 2	23	1.97	1.44

With the exception of the above, this gives a fairly low figure of 1.14