

Social ~~in~~ (Life) in Insects - Bee [with reference to Apis mellifera]

9.00 Honey bees are social creatures and live
within colonies with a queen, thousands of
10.00 workers and a few male drones.

11.00 Honey bees are very adaptable. While
honey bees forage for food in groups, a
12.00 colony can survive without foraging for
several years by living on food reserves
1.00 and huddling in large compacted masses
during winter seasons.
2.00

Features of Social behaviour:-

3.00 Social insects 'always live in a large population'
4.00

5.00 Members of colony cooperate with each
other for food, shelter and protection.

6.00 It shows polymorphism

19 - Sunday Castes of honey bees:-

a. Queen

b. Drones

NOTES c. Workers.

The Queen:- (2.5 times longer and 2.8 times heavier than worker bee).

9.00 • The queen is the only reproductive female.

10.00 • The egg which feeds on royal jelly develops to Queen.

- 11.00
- Mates only once and lays 1000-2000 eggs every day depending upon the seasonal variation.
 - Egg laying is the only function of Queen.
 - Secretes Queen factors & pheromones.

12.00
1.00
2.00
Drones:-

3.00 • Haploid males develop from unfertilised eggs are called drones.

- 4.00
- It fertilises the Queen.
 - Die shortly after mating with Queen.
 - They depend on the workers for food (honey).
- 5.00
6.00

Worker:-

9.00 • Imperfectly developed females from fertilised egg.

10.00 • Smaller in size than Queen and Drones.

11.00 • They play a vital role in maintaining the welfare of the colony.

Labour activities of worker:-

2.00 # During first half of her life a worker
3.00 attains indoor activities like

- 4.00
- Secretion of Royal jelly, bees wax.
 - 5.00 • Feeding of brood, queen
 - 6.00 • Building of combs, cleaning, ventilating, cooling, guarding, evaporating the nectar and storing the honey.

During 2nd half of her life she performs outdoor activities like -

NOTES Collecting of the nectar, pollen, propolis and water.

Outdoor worker bees may be of 2 types -

- Searchers & • Gatherers.

Searchers bees searches the food where as

gatherer bees gather the food.

The Hive or Comb :-

The worker bees construct hive with the help of wax secreted from the wax secreting glands of the abdomen.

Each bee hive contains thousands of hexagonal cells arranged in two vertical rows.

There are of 5 types -

a. Queen cells :- There are very few in no. and larger than the other cells.

They are situated at the margin of the comb.

b. Drone cells :- There are about 200 drone cells in each hive and are smaller than Queen cells.

c. Worker cells: Majority number of cells is worker cells and each cell is about 5mm across. Here worker bees are reared.

d. Breed cells: The larvae of the honey bee are reared in these cells.

e. Storage cells: These cells are meant for the storage of honey and pollen.

Role of Hormone for Social Organisation:-

The mandibular glands of Queen are situated in the head and open at the base of mandible. The queen secretes a kind of chemical substance that

							1
2	3	4	5	6	7	8	
9	10	11	12	13	14	15	
16	17	18	19	20	21	22	
23	24	25	26	27	28	29	

inhibits the development of ovaries of

9.00 worker bees.

10.00 Queen also secretes a chemical

11.00 substance called as Pheromone to

12.00 attract the Drones.

V.V Language of Honey bee :-

2.00 Bees are known to have some method of
communication amongst themselves.

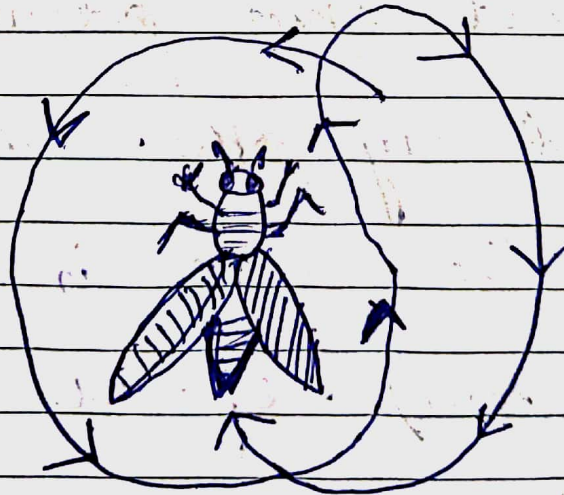
3.00 They perform certain ~~steps~~ rhythmic
4.00 movements and emit odours that are
5.00 easily received by other bees. ~~to~~

6.00 When the source is nearer to hive
(within 100 metres), reporter bee or forager
or worker bee performs a Round dance

Round dance :- Round dance is performed

9.00 the distance of source of ~~is~~ food which
10.00 is less than 100 meters but cannot give
11.00 the indication of direction.

12.00 This dance is performed by the bee
1.00 by turning in a circle, once to
2.00 left then to right and repeating
3.00 the same movement for 1 1/2 minutes in
4.00 one place.



26 - Sunday

Fig :- Bee showing round dance.

If the source is further away the
reporter bee performs a tail wagging
dance.

Tail wagging dance :- It is this type of
dance the bee runs towards the direction
straight ahead for short distance,
wagging the abdomen makes a 360° turn
towards left, runs ahead once again
and turns right. This is repeated
several times. These dances are closely
watched by other bees in the hive and
then immediately they come out in search
of the source. The wagging dance
informs their sisters of the hive both
direction and distance of the source

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

28

5th Week • 028-338

JANUARY

Tuesday

of food (nectar or pollen) discovered by the worker bee and is considered as language of bee. The direction of straight run indicates the direction of source of food and tempo of the dance also indicates the distance.

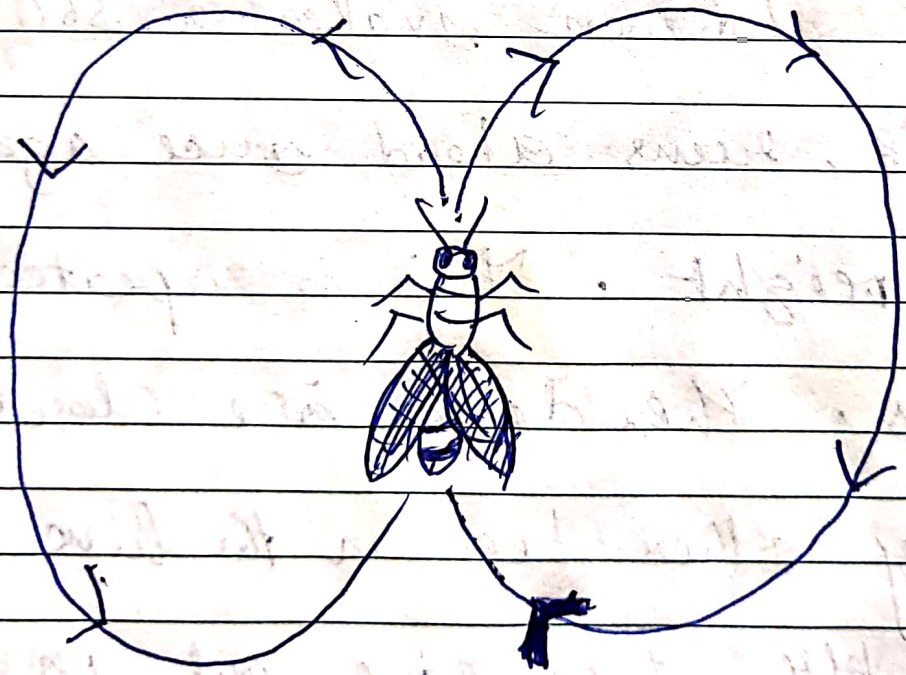
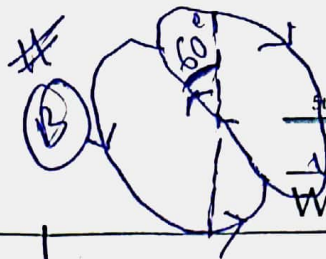


fig :- Bee showing wagging dance.

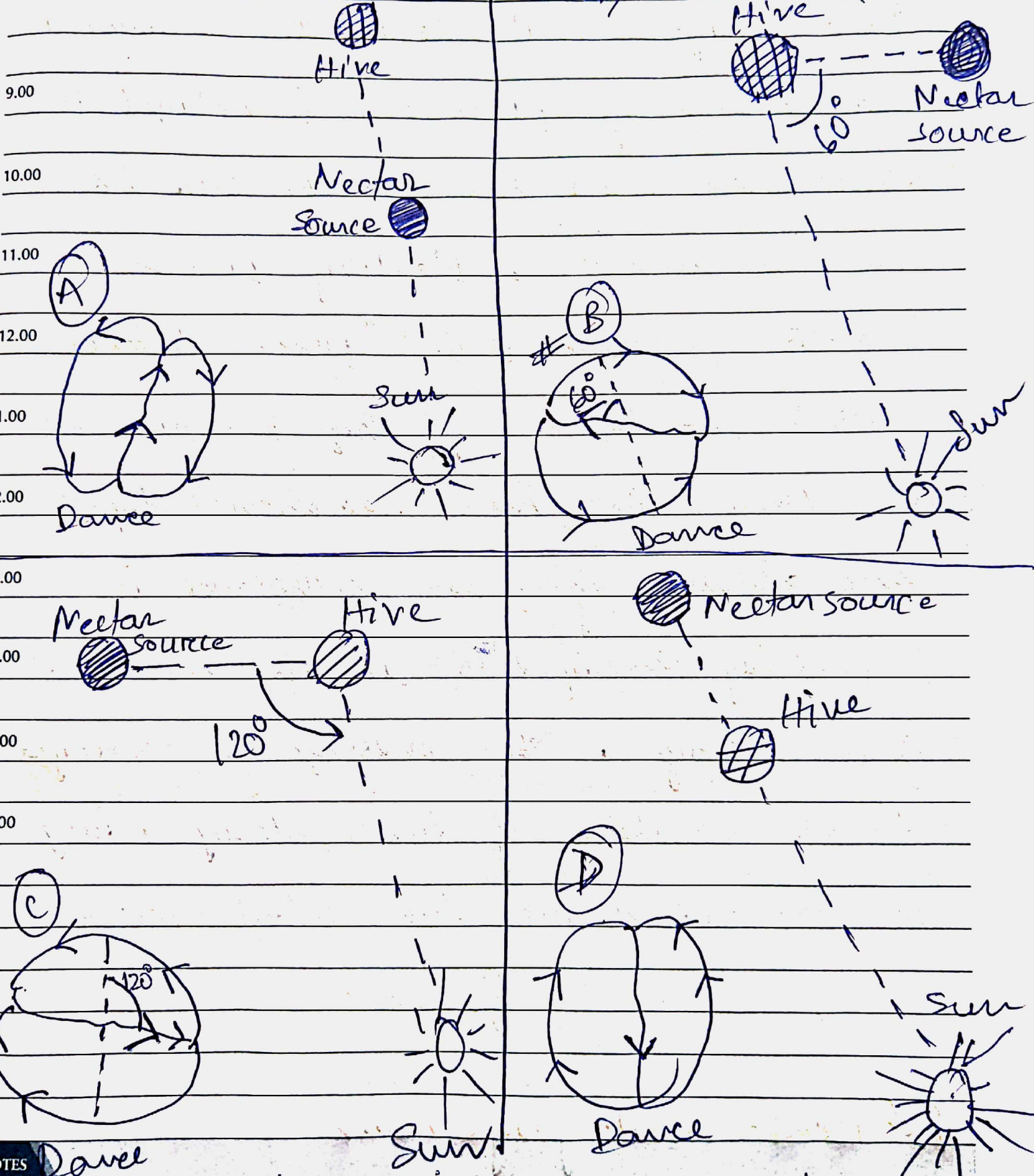
February							2020	
S	M	T	W	T	F	S		
							1	
2	3	4	5	6	7	8		
9	10	11	12	13	14	15		
16	17	18	19	20	21	22		
23	24	25	26	27	28	29		



5th Week • 029-337

JANUARY
Wednesday

29



NOTES Dance

Fig:- Diagrammatic illustration of a worker honey bee tail wagging dance in relation to food source tree

January							20
S	M	T	W	T	F	S	
			1	2	3		
5	6	7	8	9	10	11	
12	13	14	15	16	17	18	
19	20	21	22	23	24	25	
26	27	28	29	30	31		

30

5th Week • 030-336
 JANUARY
 Thursday

Olfaction plays a vital role in their communication

9.00 Sudden death of queen bee is relayed to

10.00 50,000 or more bees of the hive in

11.00 less than an hour. Healthy queen

12.00 secretes substance called "queen substance"

1.00 which is ~~like~~ liked off by her nurse bees.

2.00 When the queen secretion stops

3.00 and absence of queen substance is

4.00 immediately relayed to all the members

5.00 of the colony. The message is conveyed

6.00 to all members of the colony, they

at once set about the vital task of

swarming a new queen.

Reference - www.google.com

Kotpal invertebrate book.

NOTES