

# Karl von Frisch

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Group: 5502  
(«Bioengineering and  
Biotechnology»)  
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Karl von Frisch was born on  
20 November 1886 in Vienna  
(Austria-Hungary).





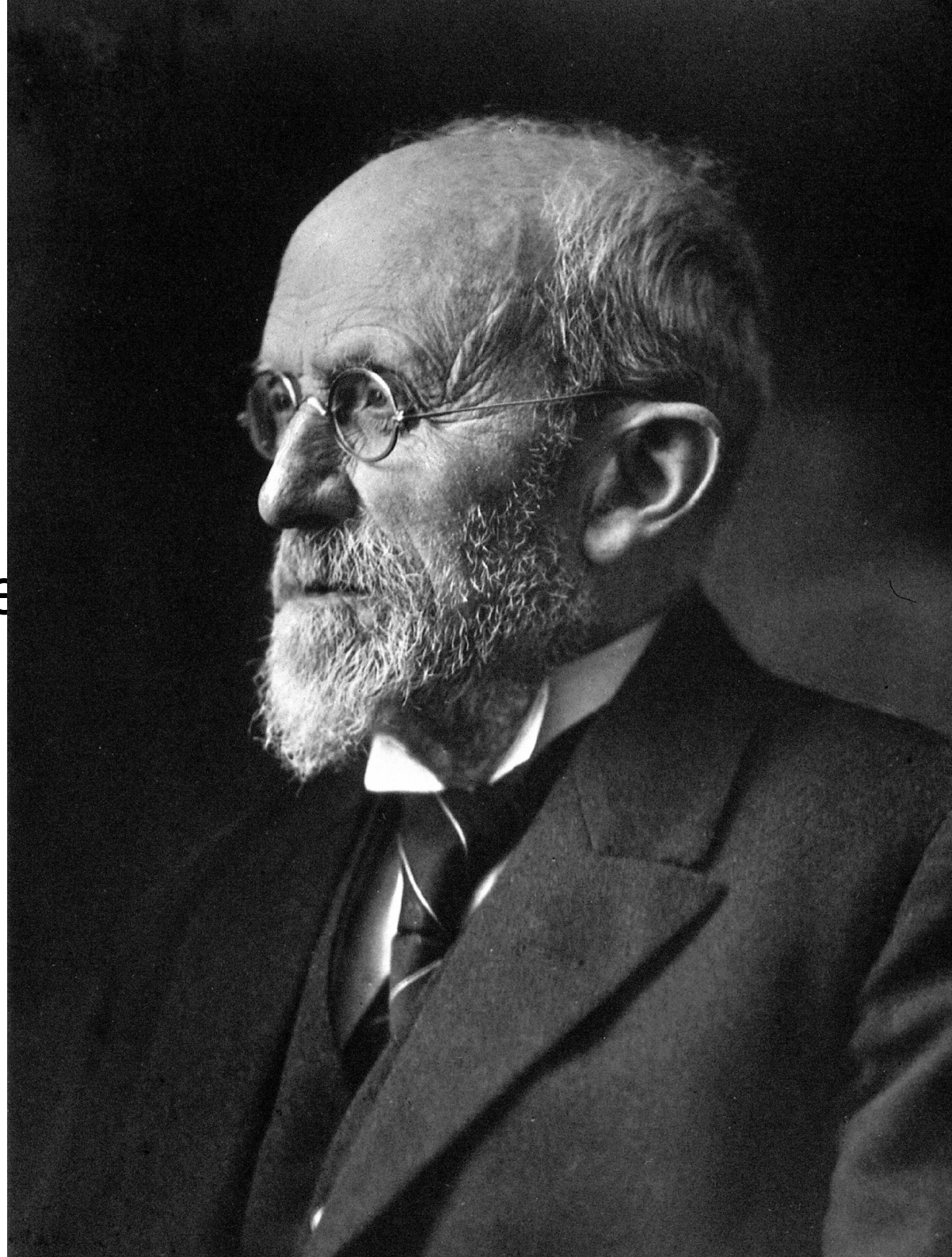
He was the son of university professor Anton Ritter von Frisch and his wife Marie, née Exner.



After the first exams, he switched to the Faculty of Philosophy and studied Zoology in Munich and Vienna.  
Faculty of Medicine.

In the same year  
he became  
assistant to

Richard Hertwig  
at the Zoological  
Institute at the  
University of  
Munich.





In 1921 he went to the University of Rostock as Professor and Director at the Zoology Faculty.

Karl von Frisch is best known for two major discoveries about honey bees.



First, he showed that honey bees use a dance language to communicate food locations to other bees

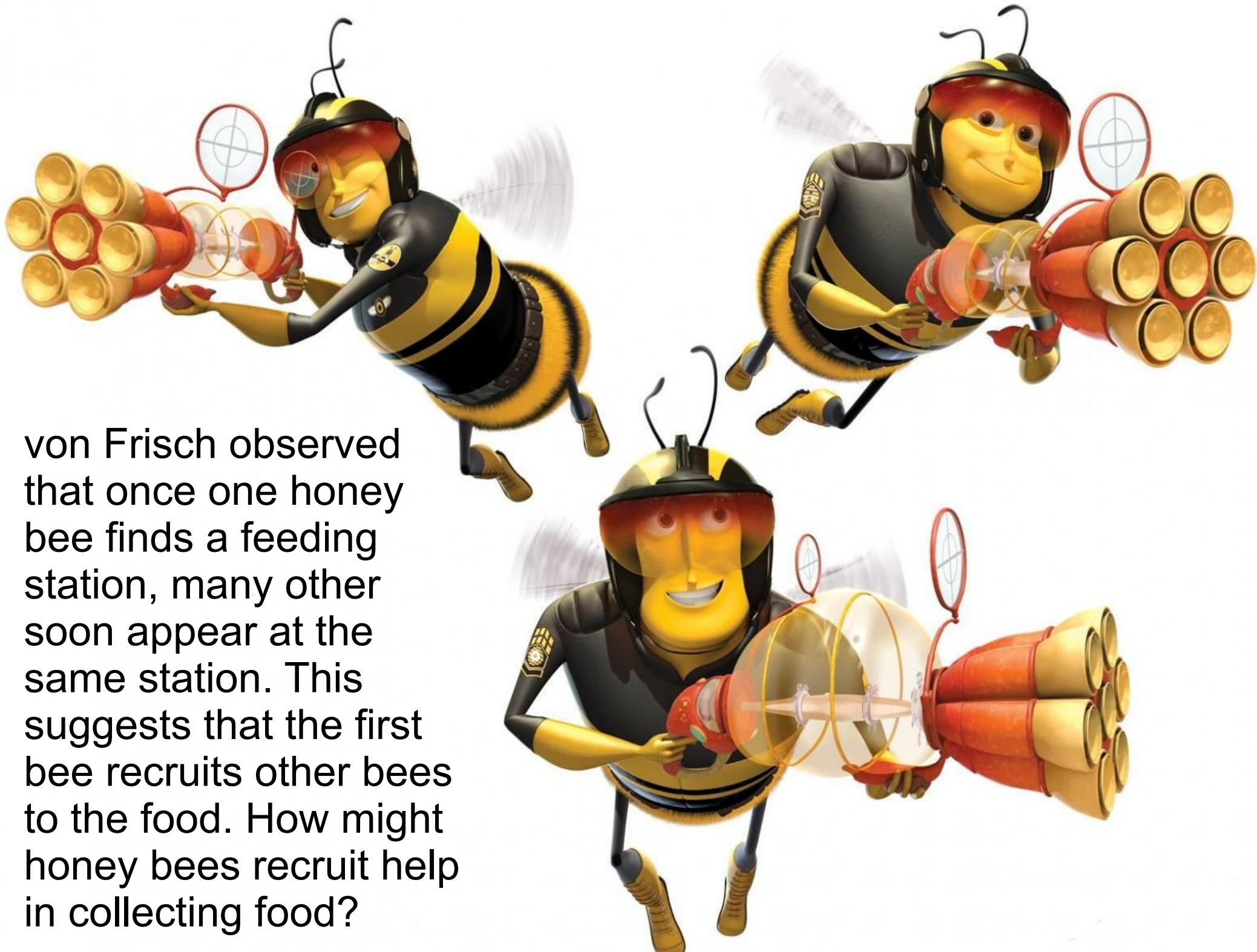
KARL VON FRISCH

The Dance  
Language and  
Orientation of Bees

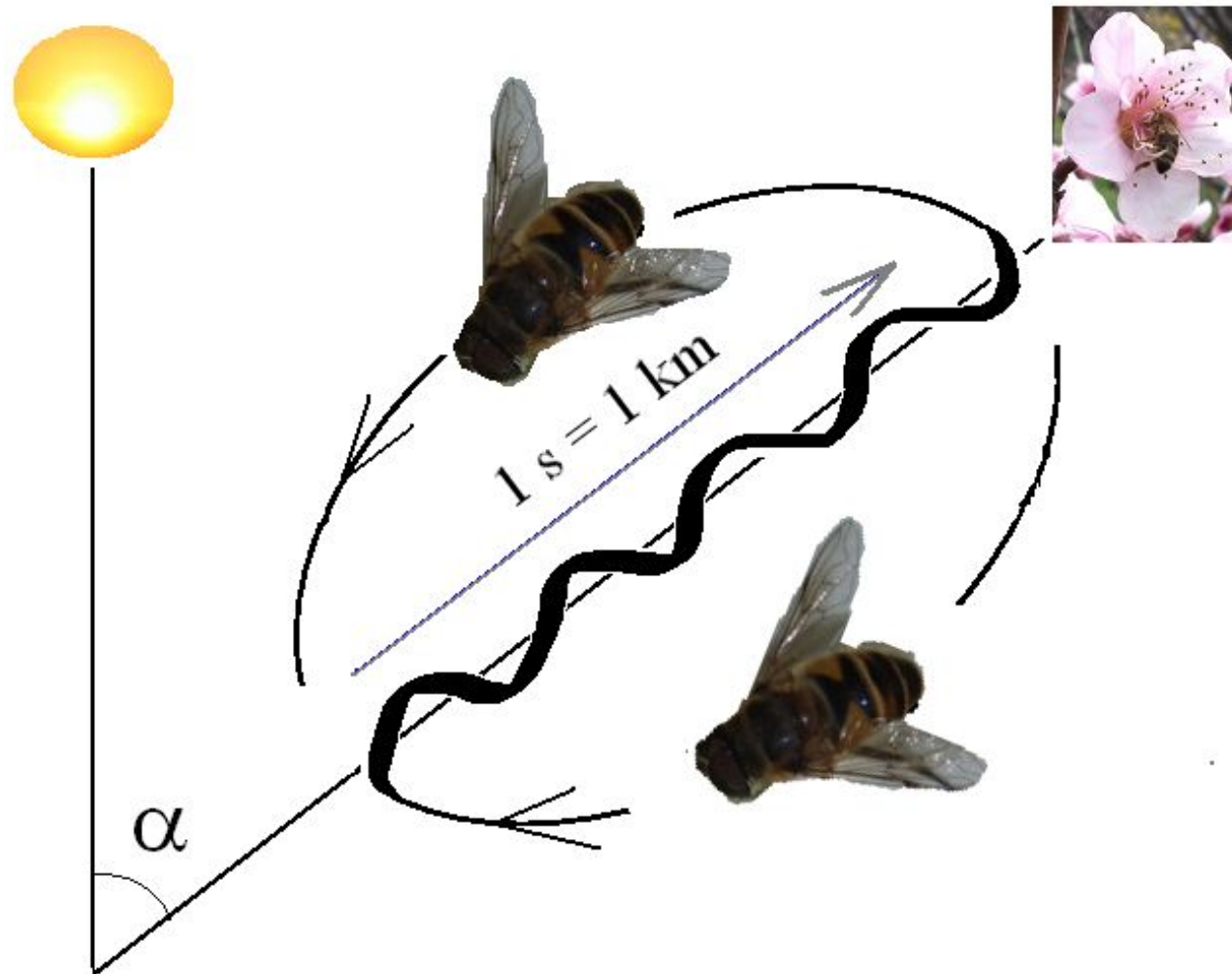
Translated by Leigh E. Chadwick  
With a new foreword by Thomas D. Seeley



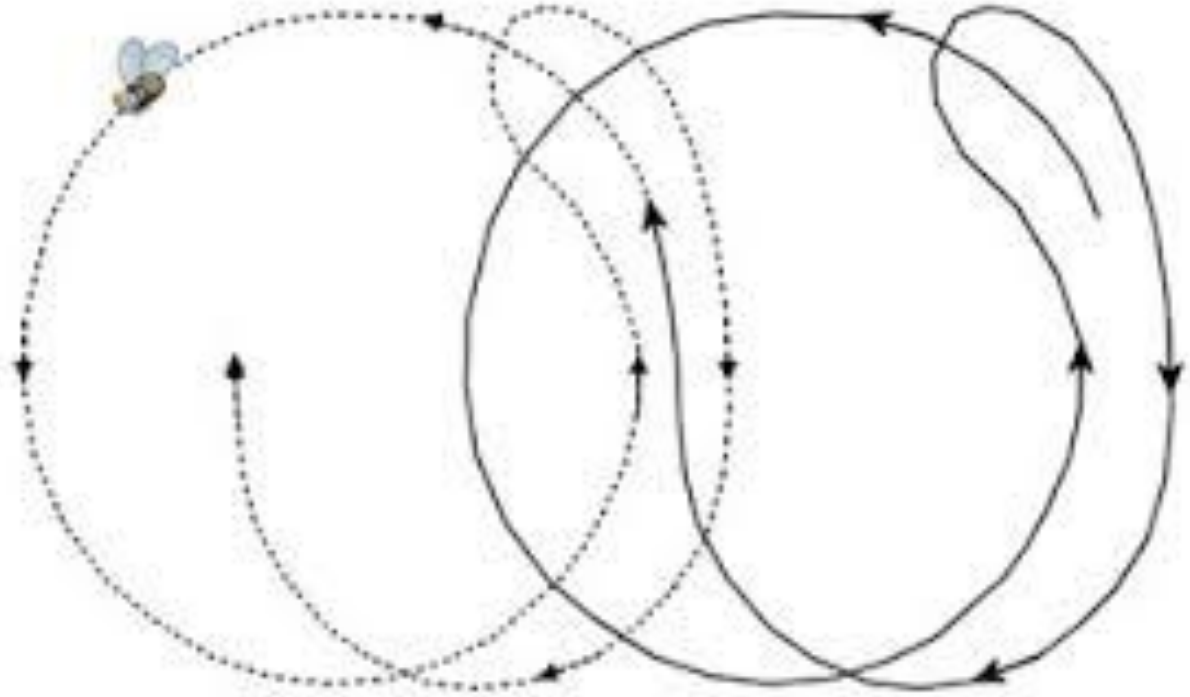




von Frisch observed that once one honey bee finds a feeding station, many other soon appear at the same station. This suggests that the first bee recruits other bees to the food. How might honey bees recruit help in collecting food?



von Frisch's discovery of the dance language of the honey bee required careful determination of the correlations between movements of bees inside the hive and the locations of feeding stations.

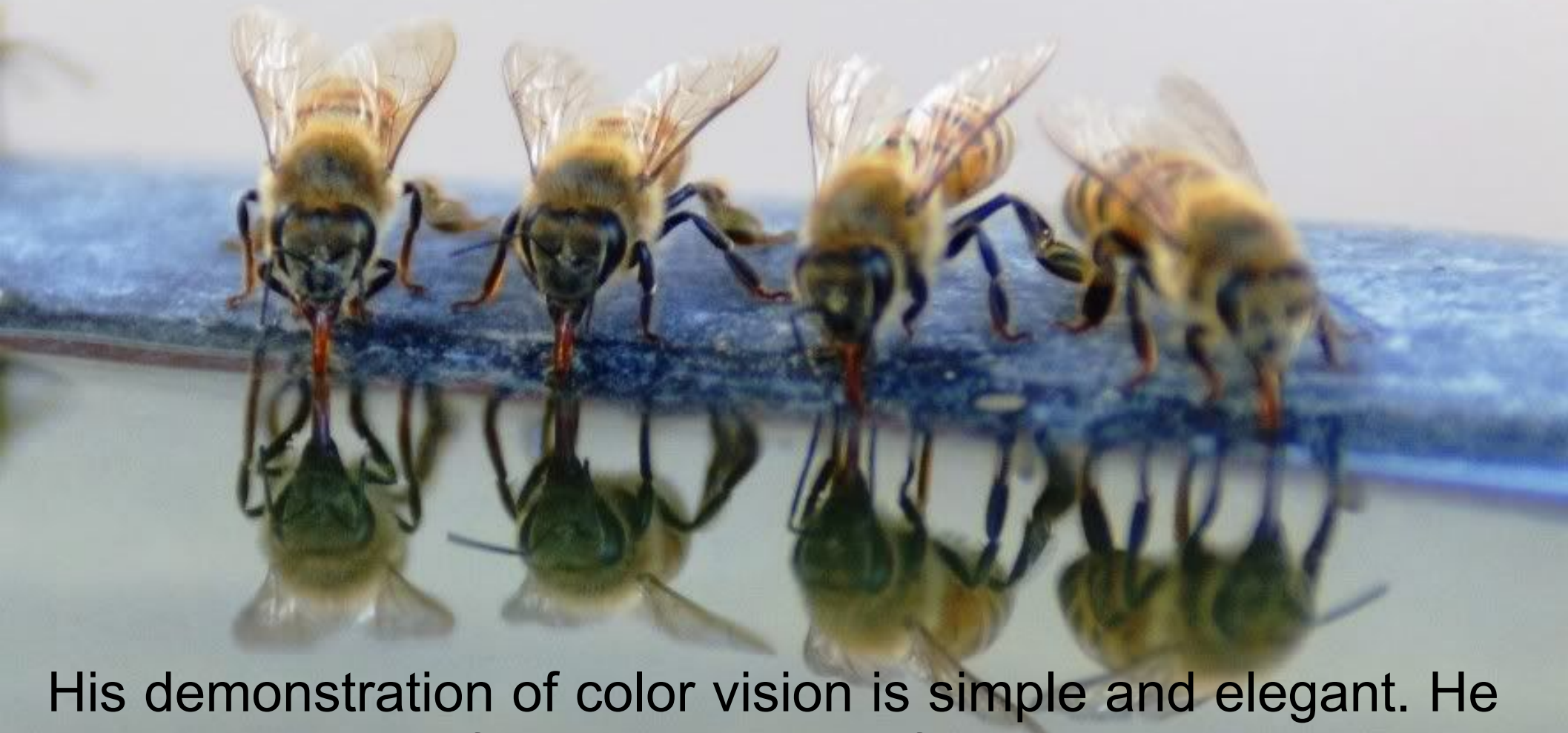


He found two types of dance.

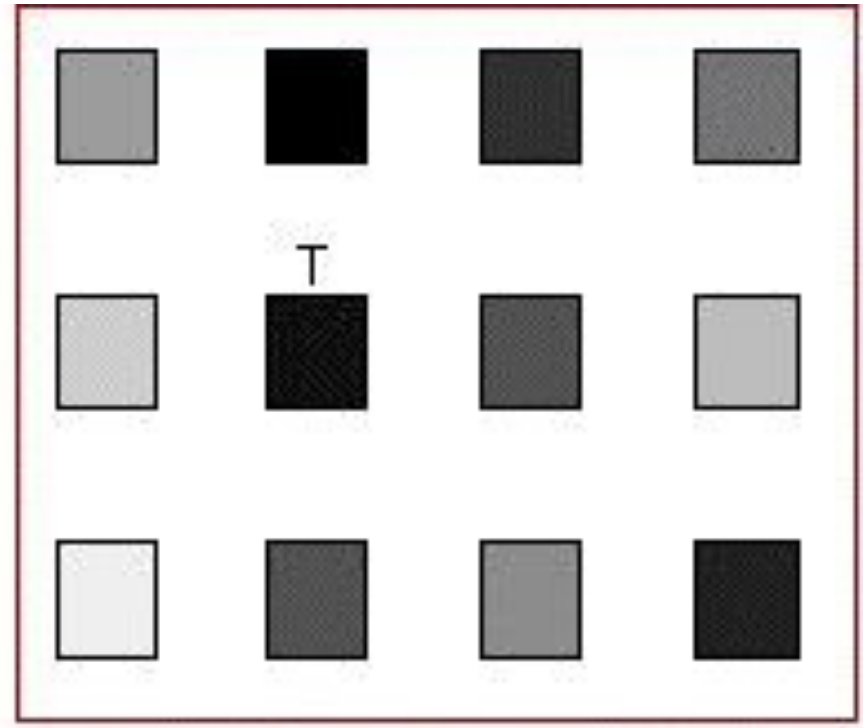
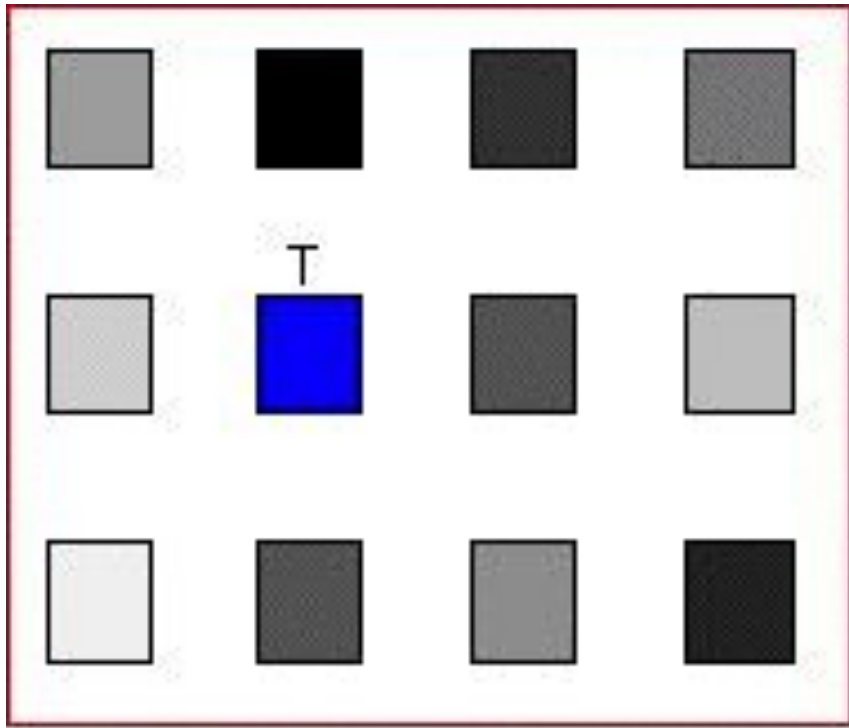
The round dance causes bees to look for food a short distance (up to about 50 meters) from the hive.

The waggle dance tells bees the direction and distance to fly to find more distant food sources.

Second, he demonstrated that honey bees have color vision.



His demonstration of color vision is simple and elegant. He trained bees to feed on a dish of sugar water set on a colored card.



He then set the colored card in the middle of an array of gray-toned cards, as illustrated below.

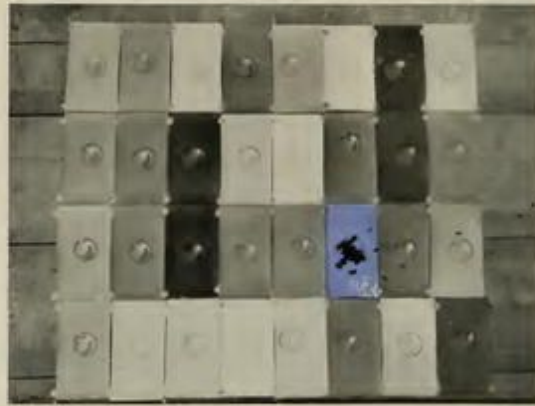


Fig. 1.

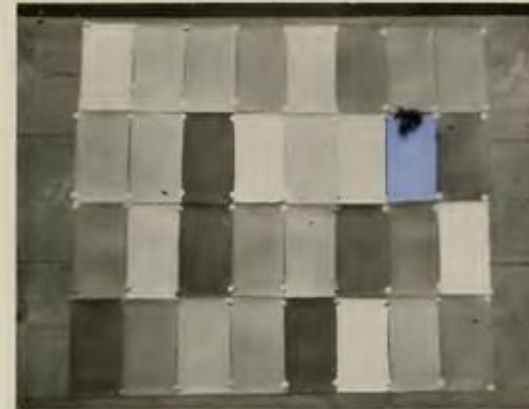


Fig. 3.

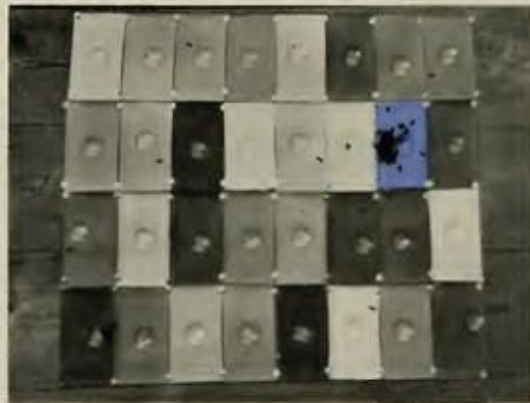


Fig. 2.

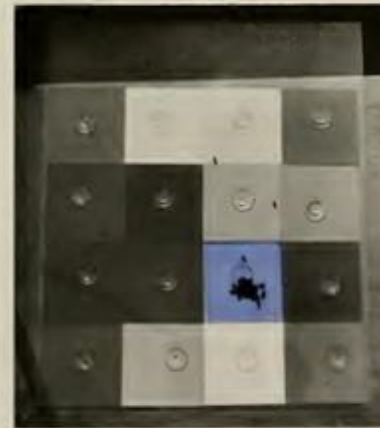
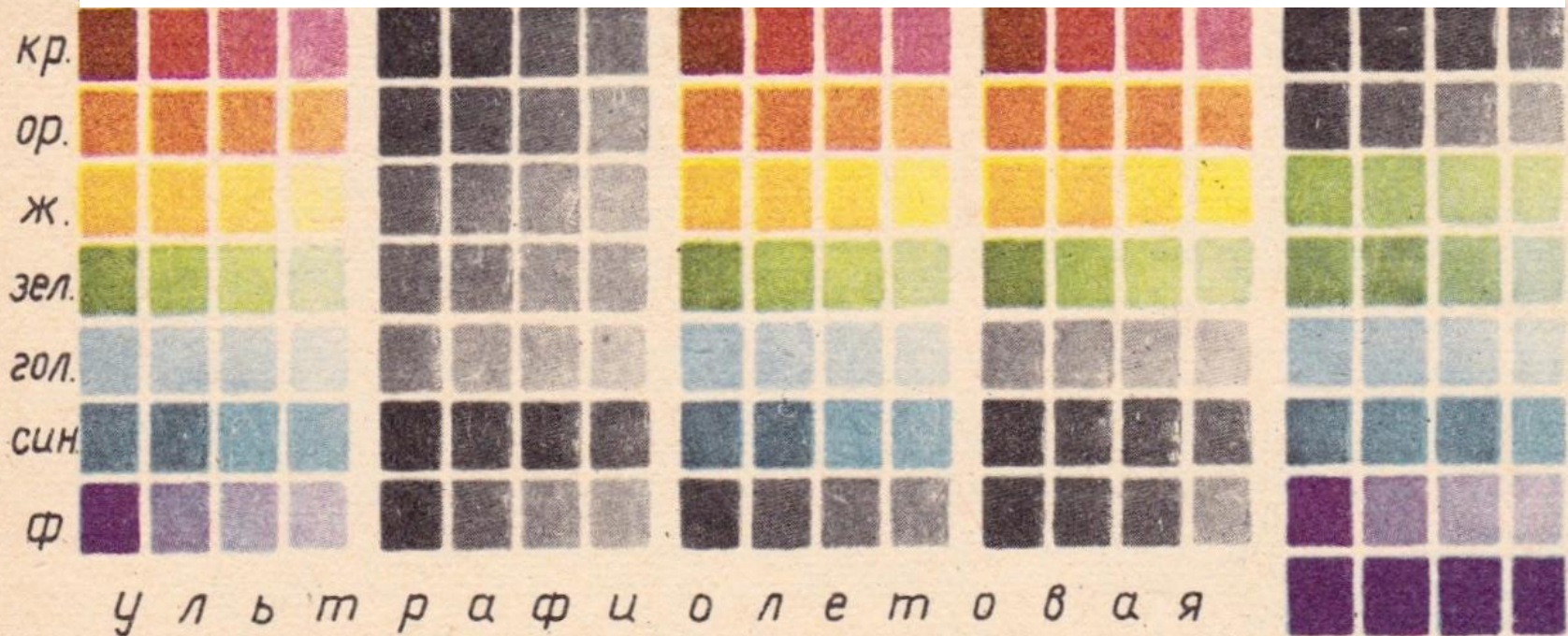


Fig. 4.

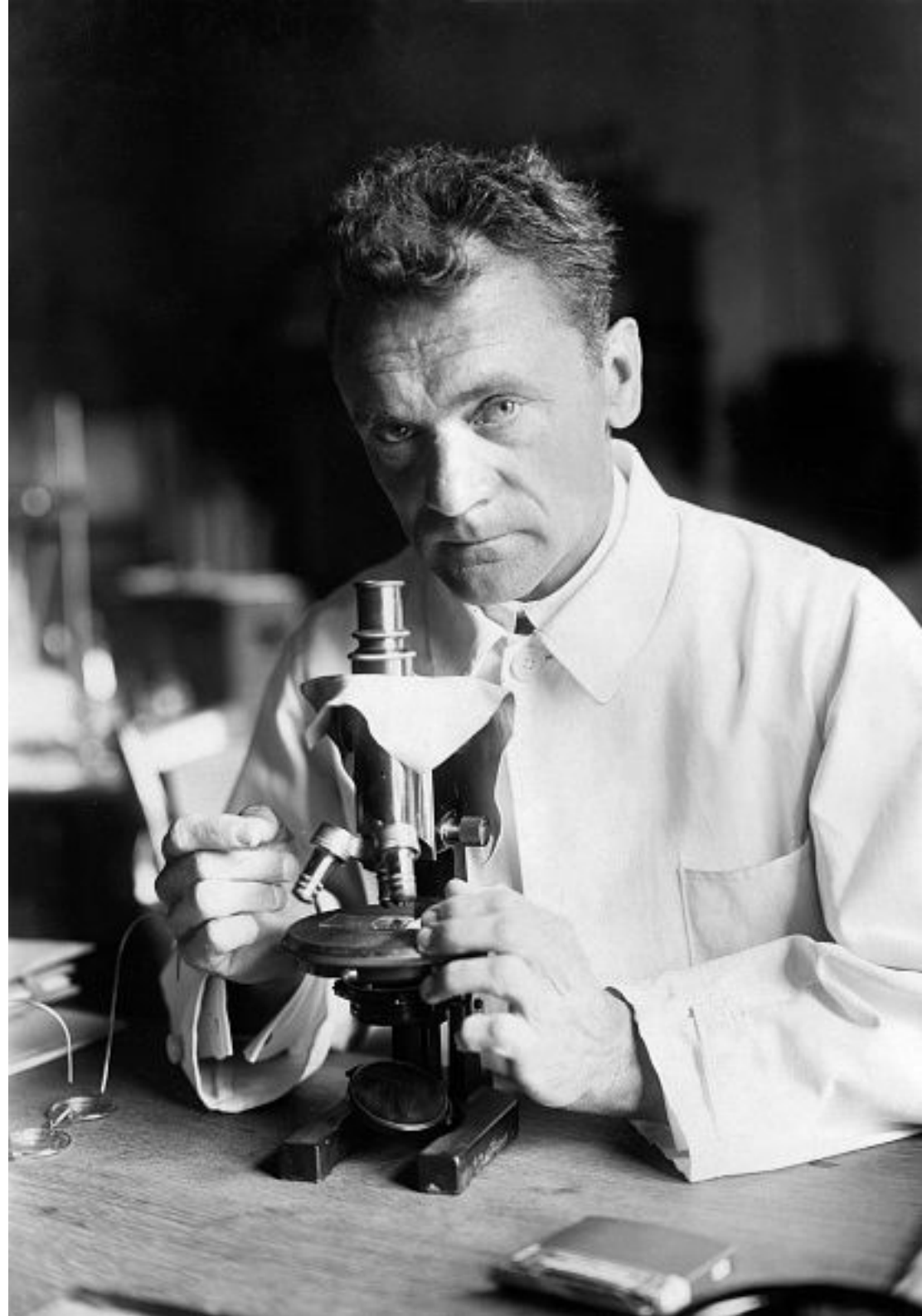
If the bees see the blue card as a shade of gray, then they will confuse the blue card with at least one of the gray-toned cards; bees arriving to feed will visit more than one card in the array. On the other hand, if they have color vision, then the bees visit only the blue card, as it is visually distinct from the other cards.



This clever test for color vision can be applied to any animal which can learn to recognize a feeding station using visual patterns.



His theory, described in his 1927 book *The Dancing Bees*, was disputed by other scientists and greeted with skepticism at the time. Only much later was it shown to be an accurate theoretical analysis.





Karl von Frisch died on  
June 12, 1982 in Munich.



Thank you for attention!

1)[https://en.wikipedia.org/wiki/Karl\\_von\\_Frisch](https://en.wikipedia.org/wiki/Karl_von_Frisch)

2)[https://www.nobelprize.org/nobel\\_prizes/medicine/laureates/1973/frisch-bio.html](https://www.nobelprize.org/nobel_prizes/medicine/laureates/1973/frisch-bio.html)

3)<http://www.animalbehavioronline.com/frisch.html>