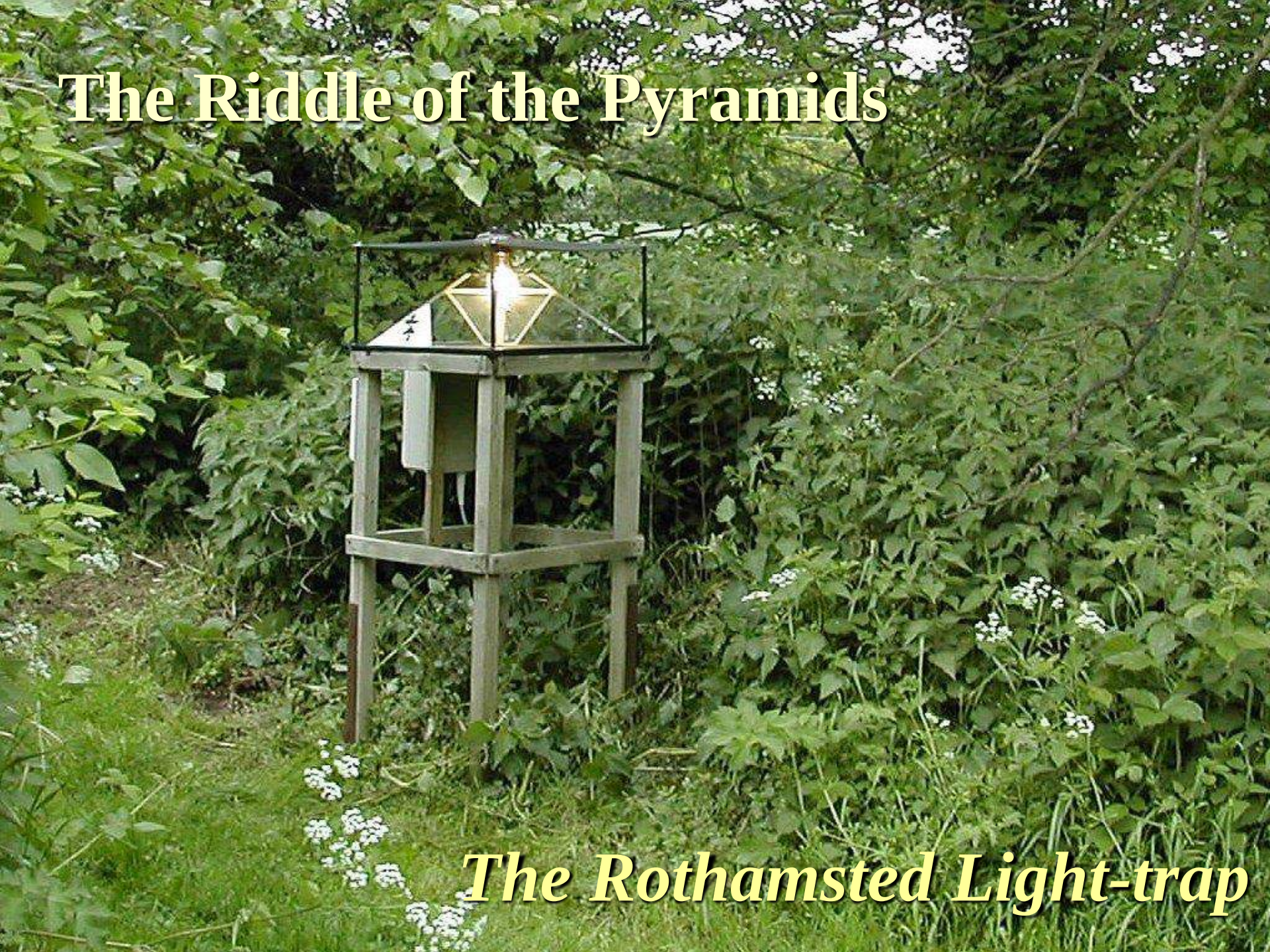
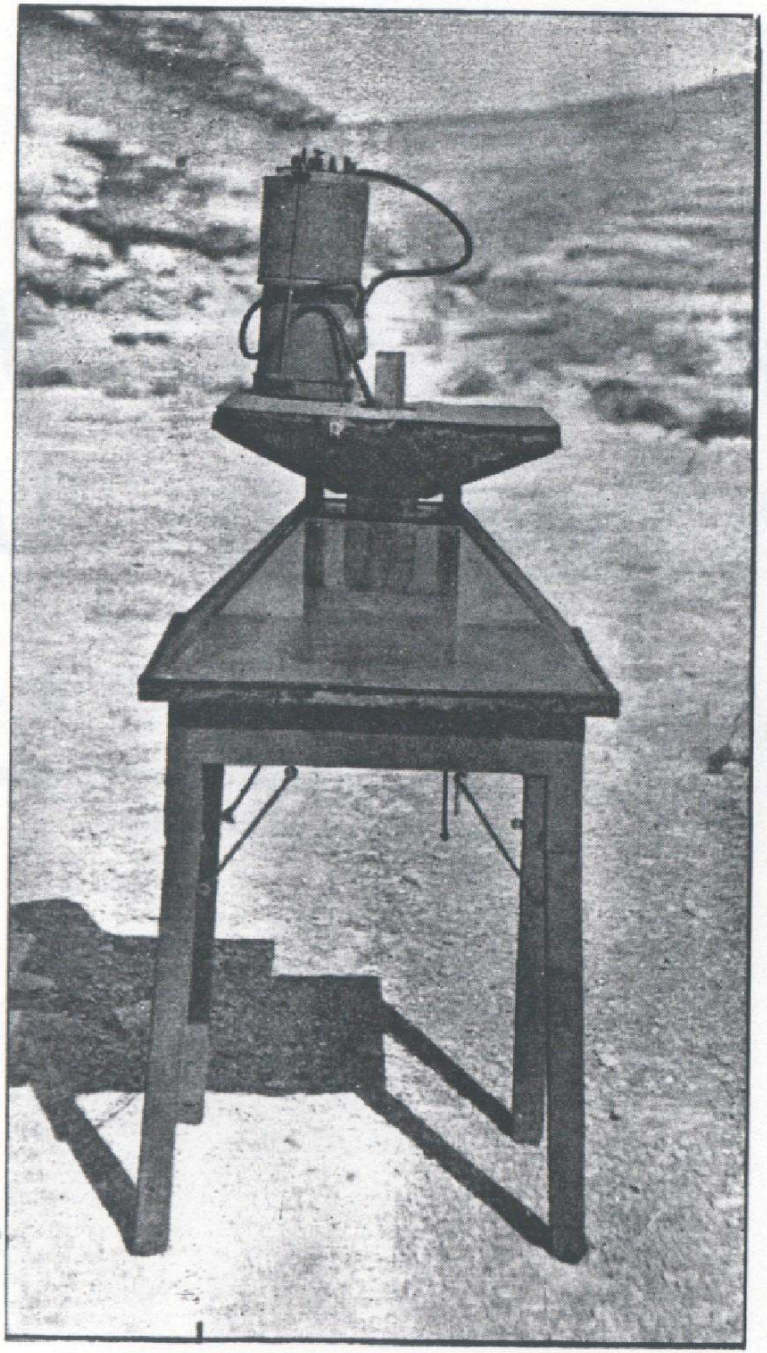
The Mythology of the Rothamsted Insect Survey

- Ian Woiwod

The Riddle of the Pyramids



The Rothamsted Light-trap



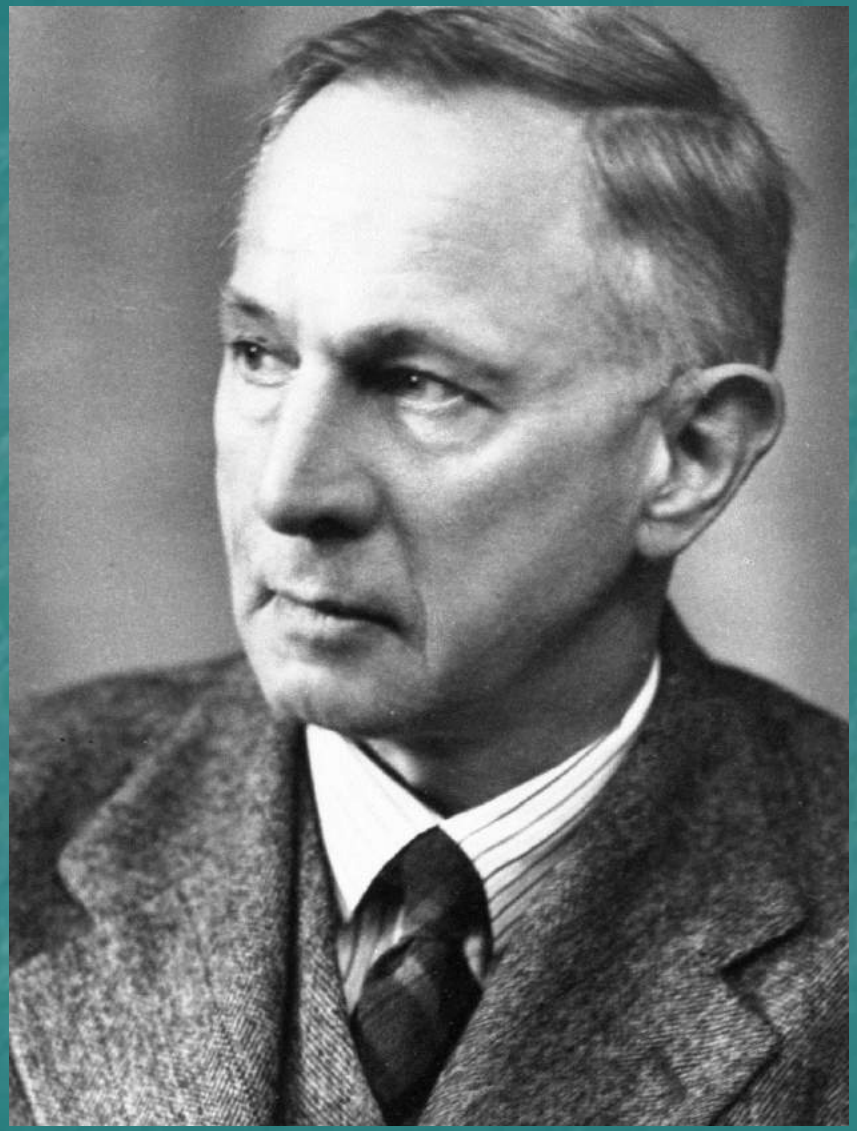
A new type of light trap for insects (M. of Ag. Egypt, Bull. 28 1923)

For cotton pests in Egypt an efficient portable light-trap

Carrington Bonsor Williams ('CB') 1889-1981

The 'Grandfather' of the Rothamsted Insect Survey

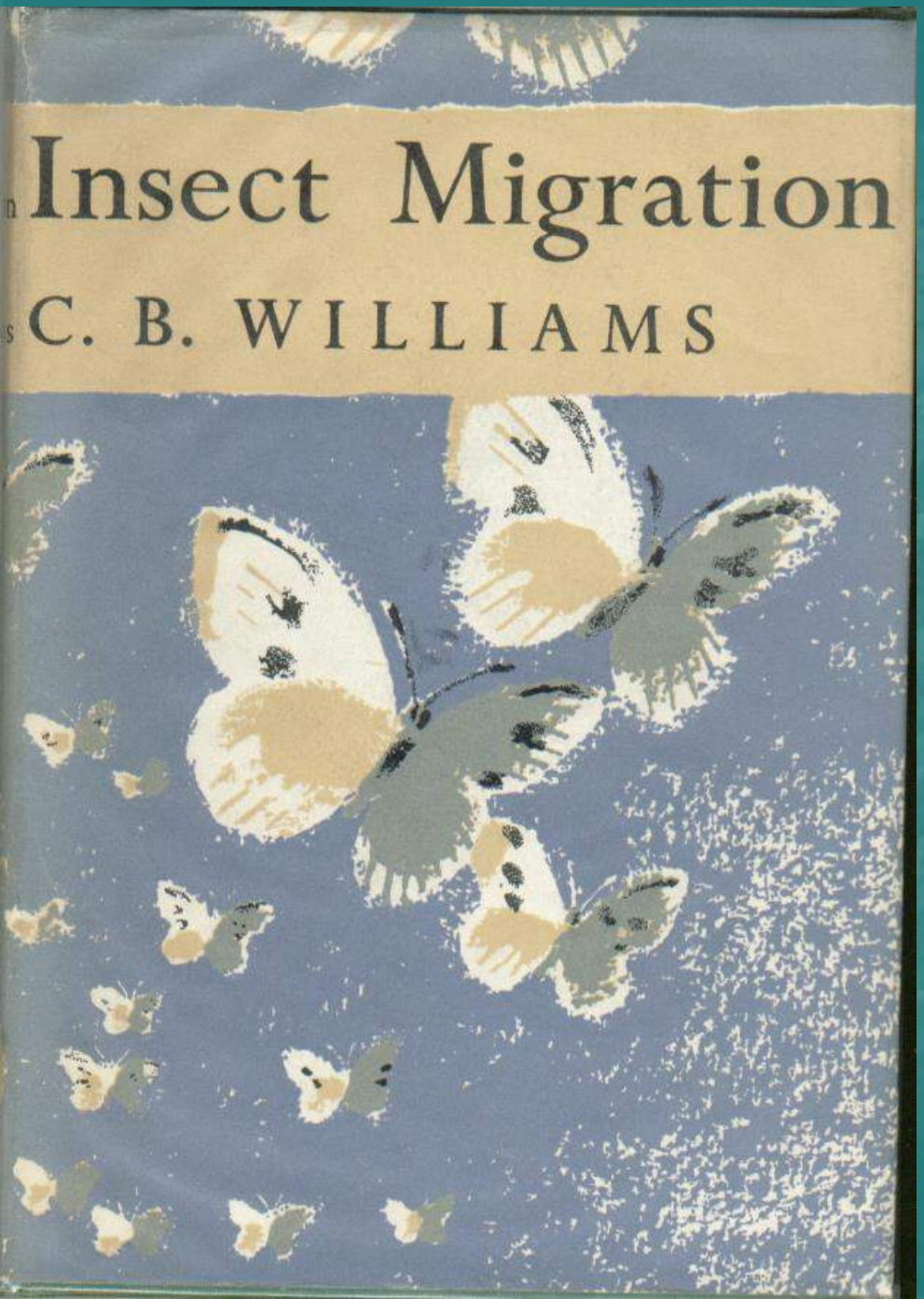
1921-1927 Director entomological section of the Ministry of Agriculture in Egypt



circa 1948

Trinidad (1916-1921)

- Saw his first butterfly migration in British Guiana. (The Cloudless Sulphur – thousands flying SE for a fortnight).
- Developed a passionate interest in insect migration.



- ***Butterfly Migration***
- 1930
- The first academic book on the subject

- ***Insect Migration***
- New Naturalist No 36 1958
- The first popular book on the subject

CB at Rothamsted

- Head of Entomology Department
- 1932-1955 (23 years)
- 6 staff in 1932, 36 in 1955

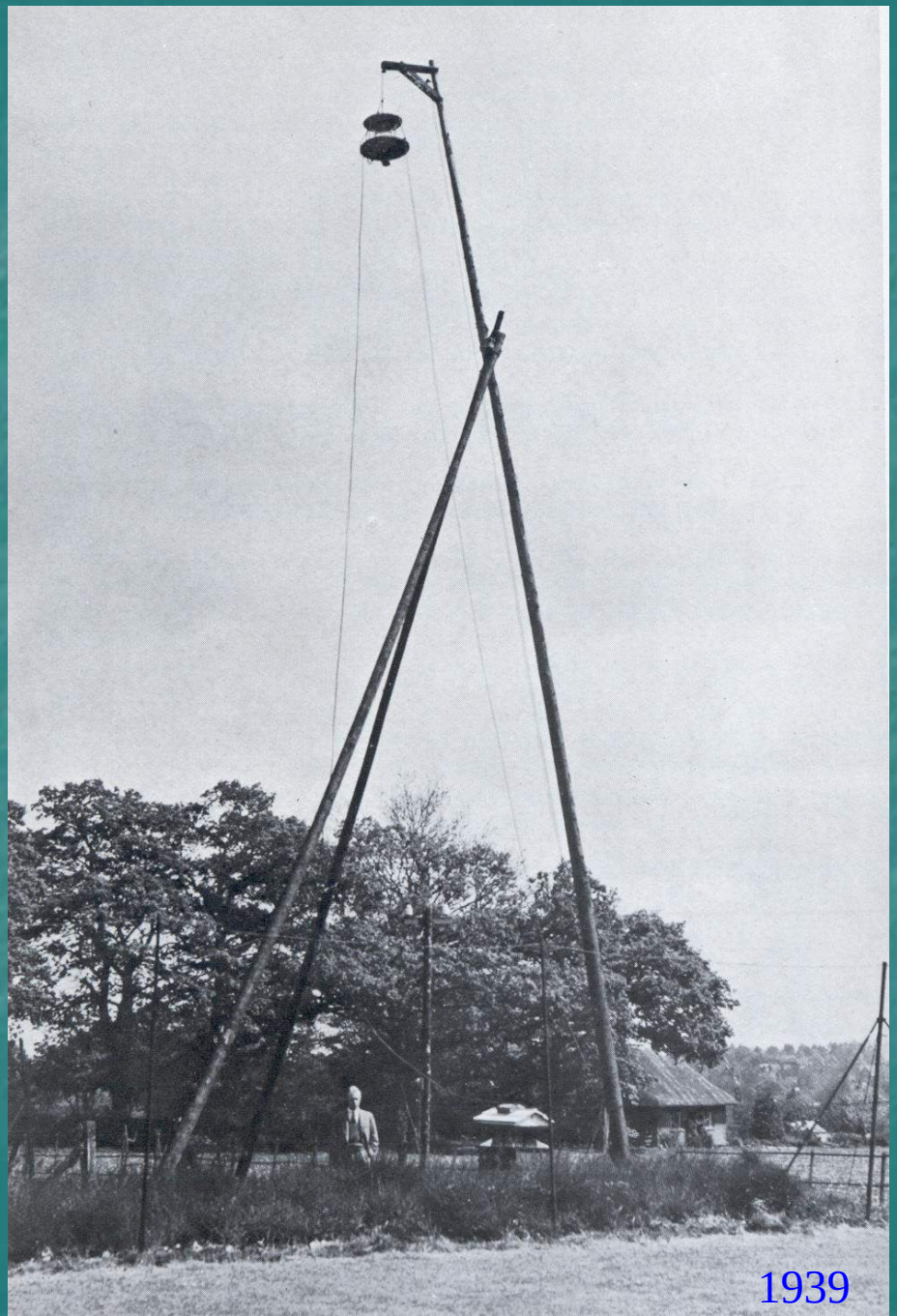
C.B. Williams and light-trapping

Rothamsted trap Barnfield

- Light-trap at Barnfield on the Rothamsted estate 1933-36 and 1946-49 and identified all the macro-moths on a daily basis.
- initially to study the effect of weather on insect numbers

Early statistical modelling

the first real quantitative insect ecologist



CBs Moth Studies at Rothamsted

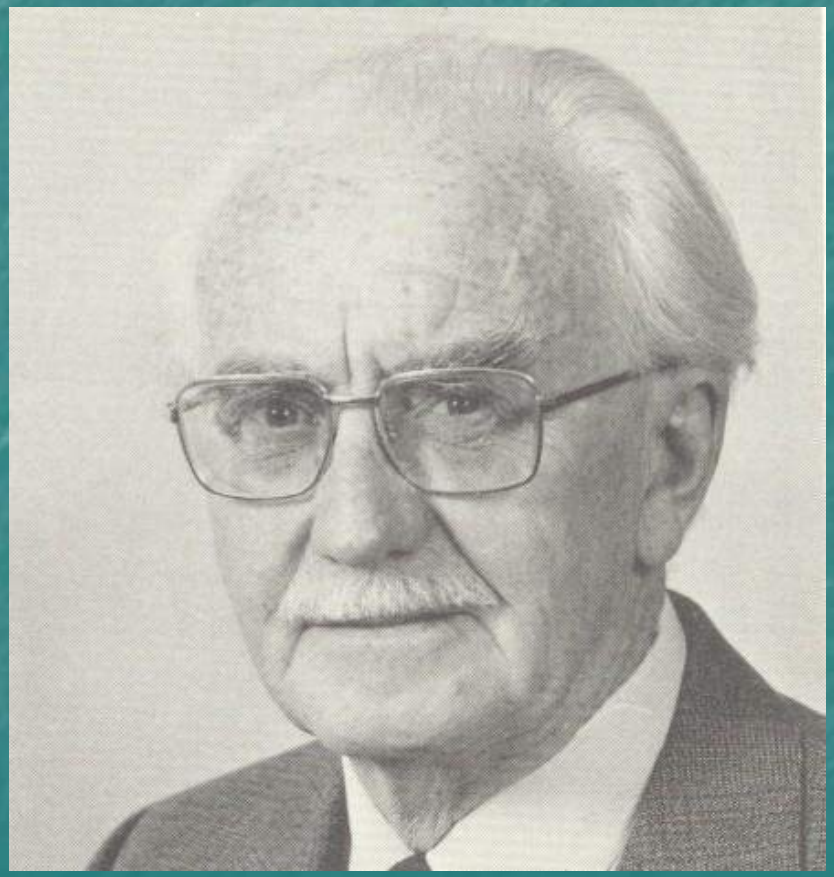
effect of weather

- phenology
- sex proportions
- time of activity
- influence of moonlight
- trapping methodology
- ethics of collecting
- species frequency (diversity)
- height of flight of moths

C.G. ('Johnny') Johnson

- Appointed 1945 to work on the dispersal of the black bean aphid
- Pioneered the use of suction traps for sampling flying insects
- In 1969 published a book 'Migration and dispersal of insects by flight'

L. Roy Taylor

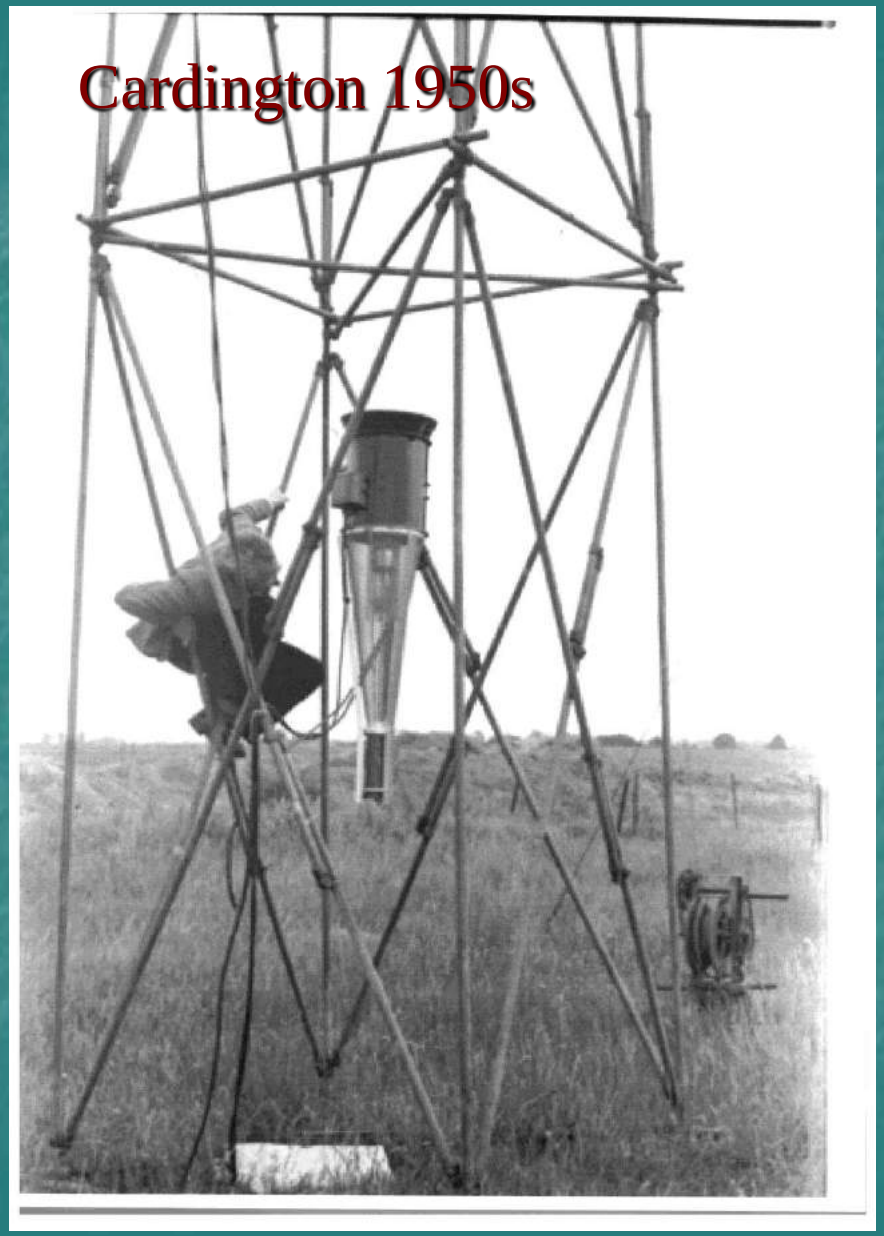


- At Rothamsted 1948-1984
- Came to work with CB on moths but not for long!

The collaboration begins

Johnny and Roy working on a suction trap

The Cardington Experiment 1950s


Cardington 1950s

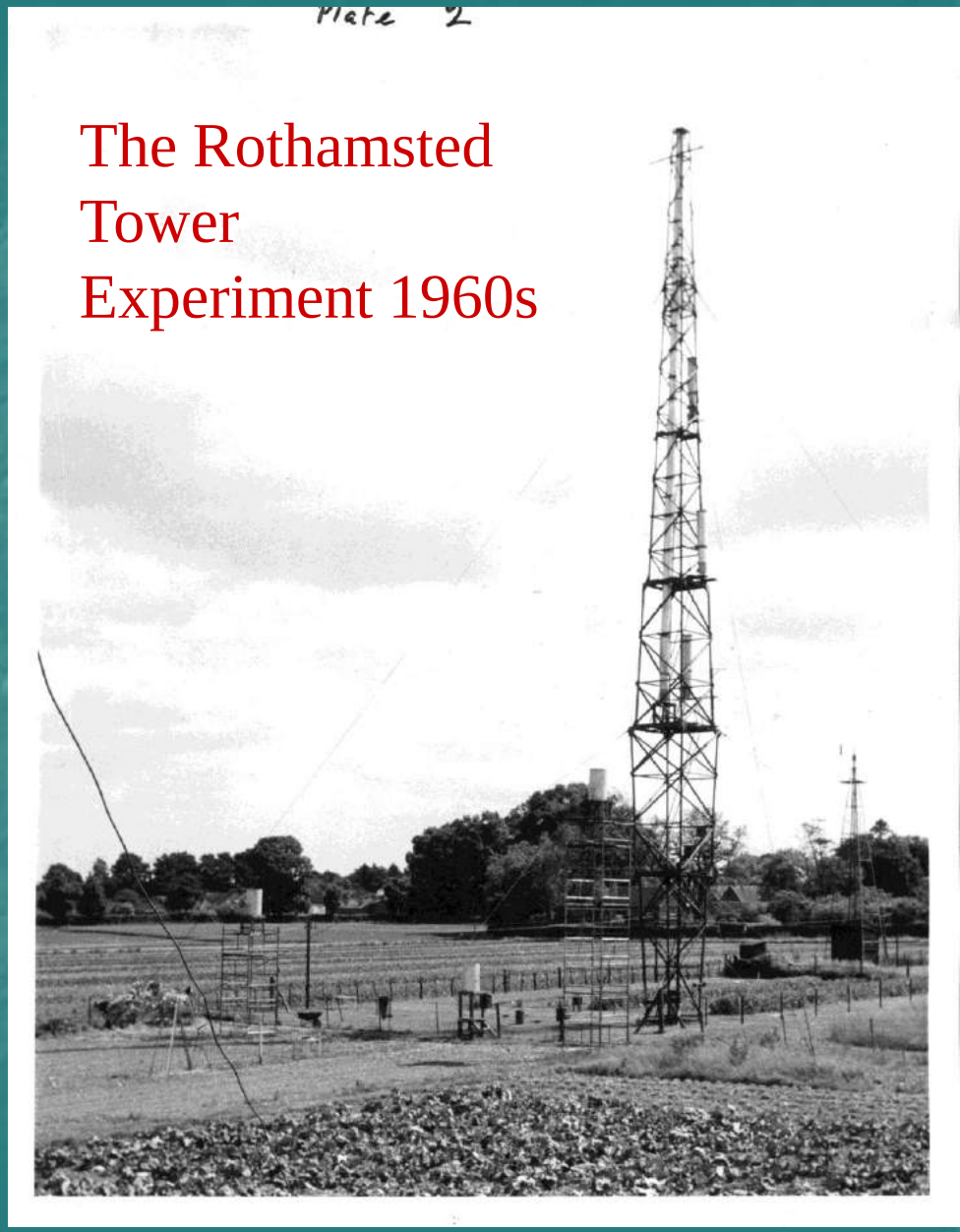
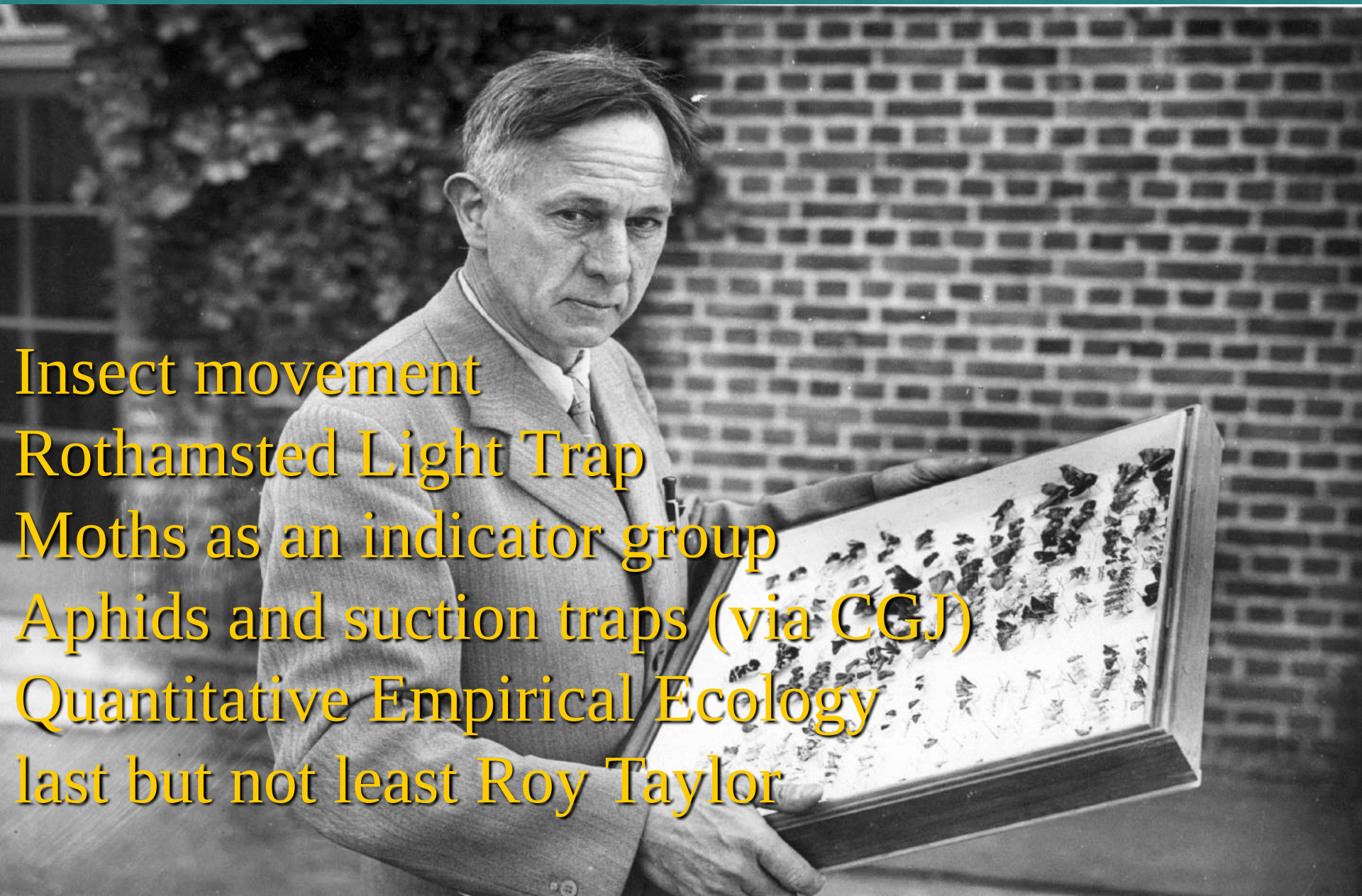


Plate 2
The Rothamsted Tower Experiment 1960s

What did CB bring to the Insect Survey?



Insect movement
Rothamsted Light Trap
Moths as an indicator group
Aphids and suction traps (via CGJ)
Quantitative Empirical Ecology
last but not least Roy Taylor

Space the Final Frontier

- In 1950s population dynamic modelling was developing fast
- Roy saw that it wasn't applicable to aphids
- The spatial element was missing

Association of School Natural History Societies

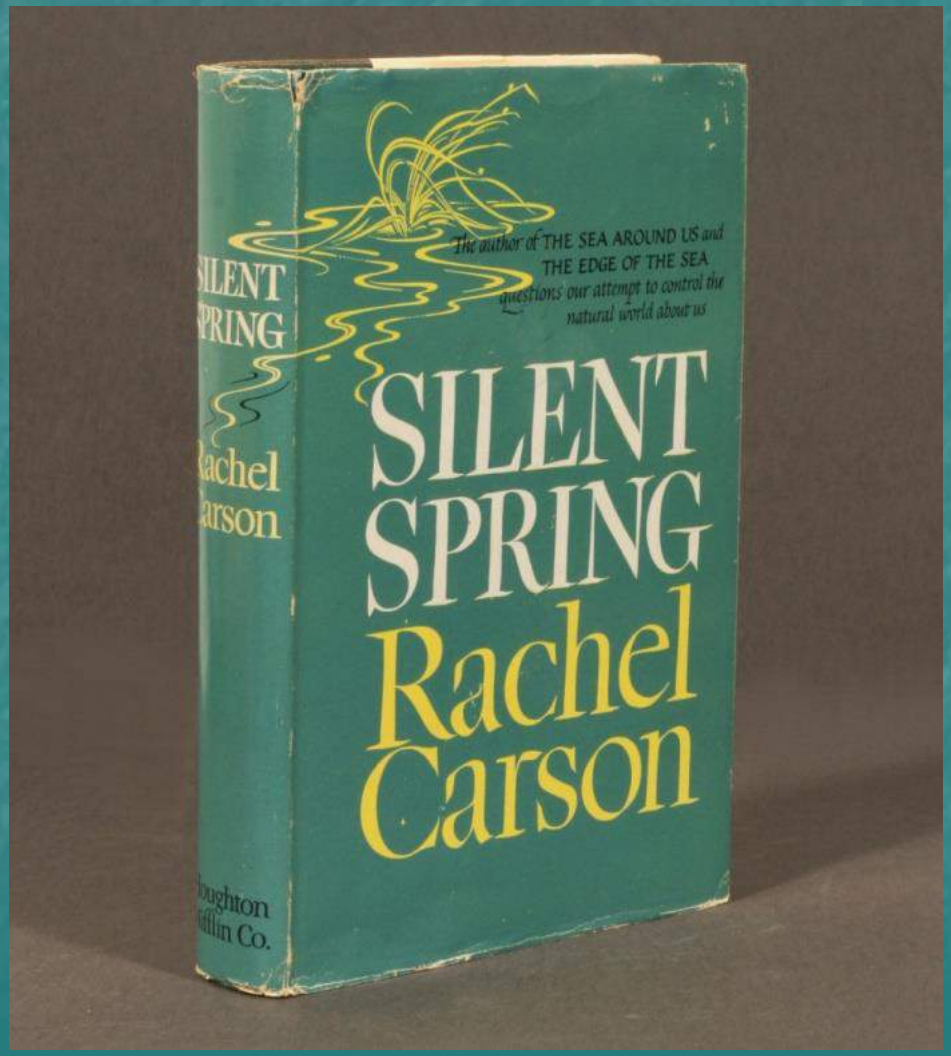
- Request to Fred Bawden for suitable collaborative projects in 1959.
- Passed to Roy
- Proposal to monitor moths with a cheap light-trap, South's moth books, pupil volunteers.
- The Rothamsted light-trap was the obvious choice.

The Insect Survey Begins

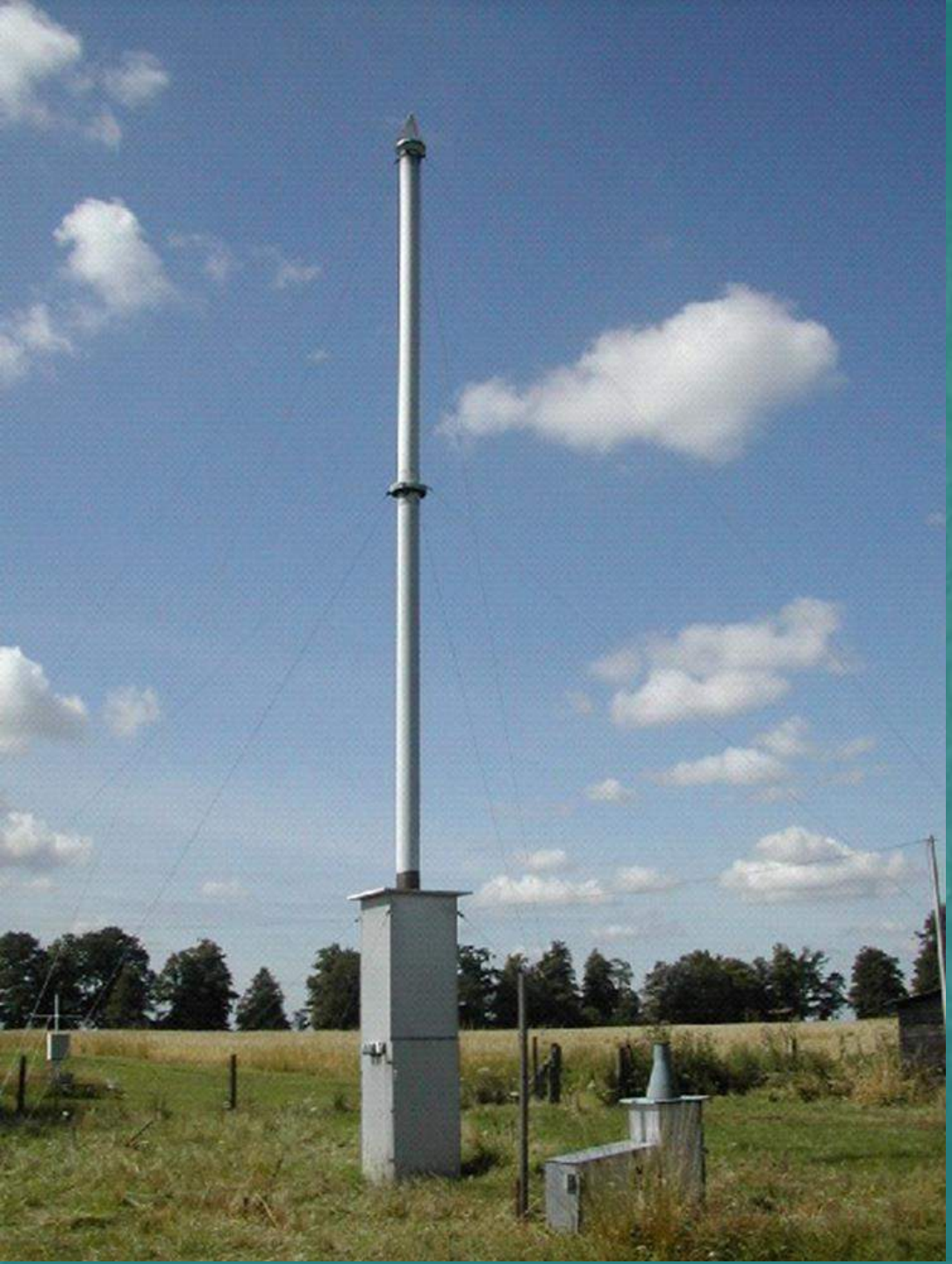
- 1960 a light trap is replaced on Barnfield where CB sampled
- Large moth declines noted
- National network develops

Rothamsted Insect Survey

Silent Spring published in 1962



- Sparked environmental concern
- Politicians took notice, Sanders Report, questions in the house
- Money became available for Roy Taylor to develop RIS suction trap network



- The first Survey suction trap was erected on this site at Rothamsted in 1964
- By 1968 national networks of light and suction traps had been established
- The networks became known as

: ***The Rothamsted Insect Survey***

Rothamsted Insect Survey