mortality the corresponding curves A, B, and C in Fig. 2 will show increased mortality at

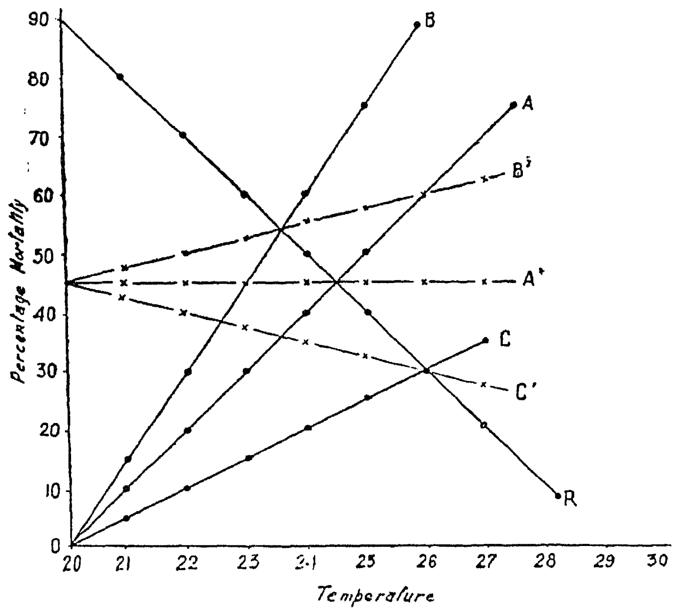

FIG. 2.* Interaction between positive (A, B, C) and negative (R) temperature coefficients resulting in positive (B′) negative (C′) and nullification (A′).

higher temperatures due to more poison reaching the site of action (generalisation No. 2).

Now with rise of temperature (generalisation No. 1) there is increase in insect's resistance which exhibits itself as a negative temperature coefficient of insect mortality (Fig. 2, R). This negative temperature coefficient of insect mortality would naturally try to nullify the positive temperature coefficient of insect mortality due to increased DDT entry and the temperature coefficient of insect mortality acutally observed in experiments would be the resultant of these two opposite factors. The value of this resultant may be positive (B′) or negative (C′) or the positive and negative coefficients may completely nullify each other (A′).

All the three possible sets of circumstances are afforded by the data of Fan, Cheng & Glenn Richards (p. 51). They found the coefficient positive with 1:10 million concentration and negative with 1 : 500 million and 1:1000 million concentrations but no definite temperature effect was noticeable with 1 : 100 million concentration.

They also report that following injection the positive temperature coefficient is irrespective of concentration. It is impossible to explain this phenomenon satisfactorily at present but injection being far more drastic than external application, even the lowest injected concentration may be acting as higher concentration applied externally.

Thus it is possible to explain all observations without presuming any fundamental reversal in the action or penetration of DDT when its concentration changes from high to low. It appears that temperature coefficient of DDT entry remains positive irrepsective of concentration but its value decreases with decrease in concentration and gets masked by the temperature coefficient of insect's resistance when a negative temperature coefficient of DDT action begins to be observed in actual experiments.

Grateful thanks are due to the Director Dr. J. N. Mukherjee and Dr. C. Potter for helpful criticisms and to Dr. B. Chatterjee for help in incorporating Chemist's viewpoint.

Division of Entomology, S. PRADHAN.
Indian Agr. Research Institute,
New Delhi,
May 5, 1949.

1. *Bull. Ent. Res.*, **40**, 2, 239-65. 2. *Physiological Zoology*, **21**, 1, 48-59.

**N.B.*—Straight line relationship presumed for convenience only.

OCCURRENCE OF CHESTNUT-BLIGHT IN THE KUMAON HILLS

A SERIOUS bark disease of chestnut in the Government Gardens, Chaubattia, on examination was found to be chestnut-blight incited by *Endothia parasitica* (Murr.) And. & And. It was first noted in a mild form at this station by late Dr. U. B. Singh and in a severe form in December 1948 by the author when a chestnut tree, about 20 years old, died suddenly. Survey of chestnut plantation showed tree infection up to 75%, ranging from light to very severe attack. Most old trees showed typical symptoms of the disease, with main trunk dead and fresh sprouts arising from the base.

Symptoms.—The fungus attacks the bark first and later the soft wood. The infected area turns brownish and then completely girdles the branch. Gradually longitudinal cracks appear on the infected areas and the dead bark starts pealing off (Fig. 1).

Numerous orange coloured fruiting pustules appear on the bark and in the