

*Kinetics Studies of o-Terphenyl and Fluorene*, ROBERT L. HARVEY JR. and EUGENE A. KLINE, Tennessee Technological University.

Fluorene reacted with o-terphenyl at high temperatures in sealed tubes at high temperature and produced biphenyl by cleavage and triphenylene by coupling. A study of concentration effects of the model H-donor, fluorene, showed increased amounts of both biphenyl and triphenylene with decreased concentration of the H-donor.

Temperature effects in another kinetic study of the first order rate gains of triphenylene showed 65 kcal mol<sup>-1</sup> less activation energy for the cleavage to biphenyl compared to that for the coupling to triphenylene. The study was carried out from 410°C to 470°C.

Deuterium labelling studies were carried out to further elucidate the mechanisms involved.

*The Effect of Temperature on the Formation of Perithecia Development of Diaporthe phaseolorum var. caulivora*, KIM GOODE and J. W. HILTY, The University of Tennessee.

*Diaporthe phaseolorum var. caulivora* which causes soybean stem canker, is of major economic importance because of its ability to invade and kill actively growing plants.

The ascogenous state of *D. phaseolorum var. caulivora* was studied under laboratory conditions to determine the effects of temperature on the development of perithecia.

Inoculated stem segments were incubated at 15, 20, 22, 24, 25, 26, and 30 C. Perithecia were formed more abundantly at 22 C.

The number of perithecia formed per unit of stem was inversely proportional to temperature at 24 C and above. No perithecial development occurred at either 15 or 30 C.

Perithecial ontogeny was followed histologically.

*Species Composition and Relative Abundance of Dog Biting Mosquitoes From a Suspected Focus of Dog Heartworm Disease in Knox County, Tennessee*, LAWRENCE J. HRIBAR, University of Tennessee.

Veterinary records, soil survey maps, and topographic maps were used to locate a suspected focus of the Dog Heartworm, *Dirofilaria immitis* (Leidy), in Knox County, Tennessee. Mosquitoes were collected nocturnally and diurnally from April until September 1983, using a dog-baited modified Magoon trap. Eight hundred thirty-four mosquitoes were collected nocturnally. *Psorophora ferox* was the most abundant species, comprising 72.9% of the specimens collected. Other nocturnal collections were: *Aedes sticticus* 11.8%, *Culex salinarius* 6.4%, *Aedes trivittatus* 6.2%, *Psorophora horrida* 1.3%, *Aedes triseriatus* 0.4%, *Aedes vexans* 0.2%, *Culex erraticus* 0.2%, and unidentified *Culex* species 0.2%. Twenty mosquitoes were collected diurnally: *Psorophora ferox* 40%, *Aedes trivittatus* 35%, *Aedes triseriatus* 15%, unidentified *Aedes* species 5%, and unidentified *Psorophora* species 5%.

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**INJURY TO AUTOMOBILE PAINT BY SPHAEROBOLUS**

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GLEBAL COLLECTION AND DISCUSSION

During the summer of 1983, in several areas in the vicinity of Nashville, Tennessee, numerous small black masses slightly less than 1 mm in diameter were observed on automobiles in certain parking areas. Up to three hundred such spots were counted on a single car which had been parked in the area. These small black masses were also observed on buildings, doors, curbs, paved surfaces, sidewalks, and on lamp posts up to a height of 10 feet.

Small metal plates with a surface area of one square foot were positioned at different angles and heights to determine the direction of origin of the small black masses. Observations revealed the accumulation of the small black masses on the underside of the plates. As many as 68 masses accumulated on the plates exposed for 1½ hours during the morning periods. It was determined that the masses originated from the ground cover.

Microscopic analysis of the hardwood chips, which were used as mulch, revealed the presence of a fungal growth. The surface of the chips revealed the presence of numerous small glebal masses. Hardwood chips were placed in a culture dish containing moistened filter paper. The dishes were covered with glass plates and observed periodically. Numerous small black masses accumulated on the surface of the glass exposed to the fungus. The small black masses were identified as glebal masses of the puffball relative *Sphaerobolus stellatus*. While the fungus occurs in temperate climates throughout the world (Brodie, 1978), it is relatively uncommon, and no record of its occurrence in such profusion as in the present instance has been reported.

The fruiting body of *Sphaerobolus* consists of a peridium surrounding the gleba. The gleba is spherical, 0.6-0.9

mm in diameter, has a sticky outer surface, and is brown or black in color. At maturity the outer layer of the peridium breaks in a stellate fashion while the inner peridium everts, remaining attached to the outer peridium only at the periphery, and forcibly discharges the gleba for a considerable distance. The glebal mass contains gemmae as well as basidia and basidiospores, and remains viable for periods of 11 years or more (Walker, 1927; Buller, 1933; Ingold, 1971).

The force responsible for glebal discharge is generated in the inner peridium. The mechanism is osmotic and involves the hydrolysis of glycogen to glucose. The glebas have been discharged up to 14 feet 6 inches vertically and 18 feet 7 inches horizontally (Walker and Anderson, 1925; Walker, 1927; Engel and Schneider, 1963).

The glebas which adhered to the painted surfaces of the automobiles eroded and pitted the paint. This action is presumably due to some metabolic product of the fungus. The glebas were difficult to remove and left the painted surface defaced.

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