Observations on Chrysomyia Megacephala (Fabr.), Our Common Blow-Fly, in the Orient.

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As I have already reported, I was interested to find that this subtropical Indian species had extended as far north as Japan. Yet it was very rarely seen in the vicinity of Yokohama, the climate evidently fixing this as the northern limit.

In Central China, on the other hand, I found this species to be the predominant fly in the valley of the Yangtze. It is the one against which all the fly campaigns of that thickly populated region are waged. Strange to relate, however, this species there shows a remarkable adaptation to man's habits of living. It is a common custom in Central and Southern China to conserve all human excrement in liquid form for use on the garden crops. This is stored in nooks and corners along the narrow streets, in large "kongs" (jars) about four feet across the tops. The fermenting mass "smells to heaven," being worse if anything than carrion, hence these flies have gradually become accustomed to breeding in it. The whole surface of the mass in each kong, during the summer, is packed with writhing maggots—not room enough for another one to get in edgewise. The jars are so constructed, however, that the maggots cannot crawl out when fully fed, due to a rim at the top. Nevertheless, the farmers and gardeners do just what is best to insure the breeding of the flies, for they dip out the top layer, from day to day, spreading it as fertilizer on the soil. The larvae then dig in and pupate contentedly, emerging in a few days to contaminate the foods, etc.

It is now generally recognized that the adults are very fond of sweets, and these substances are used in most of the fly-traps for baiting them. Foods exposed for sale in all of the small stalls along the narrow streets are covered with swarms of these blue flies. Hence it is not difficult to understand why such diseases as amoebic dysentery, typhoid, etc., are so prevalent there. The filthy habit, too, of spitting, so common in China, is attractive to these flies. You see them everywhere in the streets, feed-

ing on the sputum on the ground. Going from this straight to exposed food, or to the sticky mouths of children, it is not difficult to understand why tuberculosis is so widespread in China.

The missionaries at Soochow, in their attempt to check the flies early in the season while few in number, offered ten coppers per hundred. The thrifty Chinese, however, began bringing them in in enormous numbers. This led to an investigation, and it was found that some individuals, who had been specializing in breeding the maggots for duck feed, decided that it was far more profitable to rear the adult flies, selling them to the rich foreigners.

At Nanking the fly campaign was rather effective, though also expensive. There they used cyanide of potassium by the ton, under the direction of Professor Woodworth. Fifty of the native city police were delegated by the Governor to place a small amount of the poison in each exposed kong in the city, every few days. Just enough of the cyanide solution was used in each case to stop the activities of the writhing mass of maggots on the surface at each receptacle. This treatment cost the city, for the chemical alone, about 5000 Mexican dollars in 1923. Due to the exigencies of civil war, this appropriation was not supplied in 1924, and the blow-flies became distressingly abundant again.

HAWAIIAN REFERENCES TO *Chrysomyia megacephala* (Fabr.).

1907. Van Dine, Rpt. Haw. Agr. Exp. Sta., p. 47. (*Calliphora dux.*) Injurious blow-fly of sheep.

1907. Van Dine, Fifth Proc. Haw. Livestock Breeders' Assn., pp. 45-64. (*Calliphora dux.*) Full discussion of this sheep pest.

1908. Van Dine, Rpt. Haw. Agr. Exp. Sta., pp. 21, 36. (*Calliphora dux*). Discussed as the sheep maggot-fly.

1909. Terry, Proc. Haw. Ent. Soc., II, p. 91. (*Lucilia dux* Esch.). Observed as a carrion feeder in South China.

1916. Kuhns, Proc. Ent. Soc., III, p. 267. (*Lucilia dux.*) Reared from maggots on the beach.

1916. Swezey, Proc. Haw. Ent. Soc., III, p. 272. (*Chrysomyia dux* (Esch.) as determined by Knab.)

1917. Illingworth, Proc. Haw. Ent. Soc., III, p. 429. (*Chrysomyia dux.*) Referred to as the sheep maggot-fly of Hawaii.

1918. Bridwell, Trans. Med. Soc. Haw., 1916-17, p. 31. (*Pycnosoma dux.*) Carrion breeder which contaminates foods.

1922. Fullaway, Proc. Haw. Ent. Soc., V, p. 12. (*Chrysomyia dux.*) Collected at Waimea, Hawaii.

1923. Bryan, Proc. Haw. Ent. Soc., V, p. 193. (*Chrysomyia dux* Esch.) Exhibited specimen taken near Sydney.

1923. Illingworth, Proc. Haw. Ent. Soc., V, pp. 266-7. (*Chrysomyia megacephala* (Fabr.)). Synonymy, and notes on distribution.

1923. Illingworth, Proc. Haw. Ent. Soc., V, p. 277. Collected on shrubbery at Parker Ranch, Hawaii.

1923. Illingworth, Proc. Haw. Ent. Soc., V, p. 280. Breeding in carrion, Honolulu.

1924. Illingworth, Proc. Haw. Ent. Soc., V, p. 377. (*Chrysomyia megacephala* (Fabr.)) Further notes on distribution in the Orient.