1. The grasshopper *Poecilocerus pictus* fed ad libitum on fresh leaves of the milk-weed *Calotropis gigantea* is reared from hatching to death at 2 temperature levels 26 and 36°C (± 2°C) in the laboratory.

2. A female grows to a maximum size of 10.3 ± 2.1 Cal on 266th day, while a male attains a maximum of 4.75 ± 1.55 Cal on 233rd day at 26°C; the corresponding values are 10.27 ± 1.26 Cal for female on 119th day and 3.66 ± 1.06 Cal for male on 102nd day at 36°C.

3. Total food intake amounts to 68.1 or 41.5 Cal at 26°C and 148.4 or 66.1 at 36°C for a male or female. Feeding rate is about 145 cal/Cal/day in either sex at 26°C, while it is 34.1 or 299 cal/Cal/day in a female or male at 36°C.

4. Assimilation efficiency averages 30 or 57% in either sex at 26 or 36°C. While the efficiency varies little with age (body weight) at 36°C, it decreased from about 53% in the second instar to about 33% in the adult at 26°C.
Energy extraction efficiency, i.e., the percentage of energy assimilated per unit weight of food in relation to the same unit weight of faeces of *P. pictus* and a number of insects is shown to be 7 %.

5. Conversion efficiency \( K_2 \) is 51 or 48 % for a female at 26 or 36°C. A male converts only 30 and 11 % of the assimilated food at the respective temperature.

6. Enuvi amount to 3 or 4 % at 26°C and 0.6 or 1.4 % of assimilated energy at 36°C for a female or male.

7. A female oviposits 127 eggs (once or twice) in the soil at 26°C; at 36°C, it oviposits 3 or 4 times in the laboratory, producing as many as 457 eggs. Energy expended on reproduction by a female averages (3.12 Cal at 26; 11.21 Cal at 36°C) 13 % of the assimilated energy at either temperature levels.

8. At death a male contains 26 % and a female 35 % of the assimilated energy at 26°C; the corresponding values are 10 % for male and 35 % for female at 36°C.
9. Energy expended on respiration amounts to 70% for male, 49% for female at 26°C, and 89% for male and 53% for female of the assimilated energy at 36°C.

10. The energy budget of *P. pictus* is discussed with that of other orthopterans, which feed throughout the life time and that of lepidoptera, diptera and odonata, which feed only during the larval period.

11. Fortnightly observations on the number and biomass of *P. pictus* populations from 4 different chosen fields in the vicinity of Bangalore were made during the years 1970 and 1971.

12. Mean annual biomass of *P. pictus* was 33 and 59 cal/m² in Sarrakki during 1970 and 1971, 63 in Eloor, 70 in the HMT and 638 cal/m² in the HAL fields.

13. Mean energy consumed by *P. pictus* population was 0.4 (= 0.16% *C. gigantea* productivity) and 0.7 (= 0.29%) Cal/m²/year for Sarrakki during 1970 and 1971; the corresponding values were 0.8 (= 0.27%) for the HMT, 4.8 (= 1.3%) for the Eloor and 16.1 (11.3%) Cal/m²/year for the HAL field.
The host plant C. gigantea limits the density of P. pictus not as food but as shelter.

14. Assimilation efficiency of the population varied between 35 % in the HMT field to 45 % for the Sarrakki field during 1970; conversion (growth efficiency; K₁) was 15 % for the HAL, HMT, and blur field populations and 17 or 18 % for Sarrakki 1970 or 1971. K₂ values ranged from 38 to 42 % for these field populations.

15. Respiration/Ingestion (R/C) values varied between 19 and 28 % for these field populations. The proportion of energy distribution remains more or less the same, while the rate of energy flow varies among these populations.

16. The rate and efficiency of energy flow from C. gigantea to P. pictus populations is discussed in the light of available ecological energetic data.