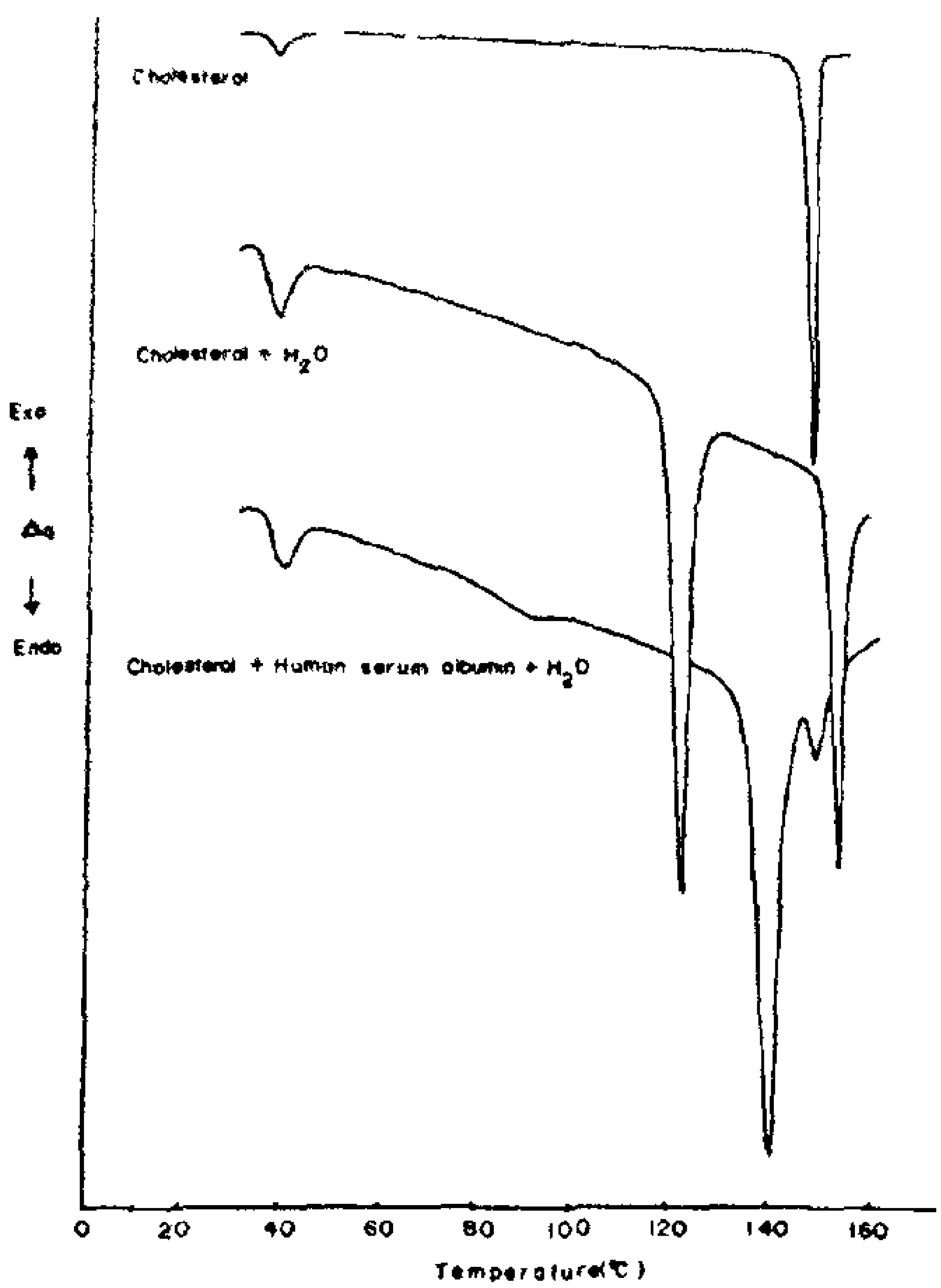

Figure 1. Differential scanning calorimeter scans of cholesterol, cholesterol $+H_2O$ and cholesterol $+$human serum albumin $+H_2O$. Samples were crimped in aluminum pans and the heating rate was 10°C/minute.

sclerosis. Nevertheless, unesterified cholesterol is known to be an important component of atherosclerotic plaques and the involvement of the phase transition would still remain a possibility. It would also be interesting to contrast various implications of cholesterol with respect to homiotherms and poikilotherms. Homiothermy is the characteristic of the highest form of life. Whether the 37°C phase transition in cholesterol is in any way of significance in maintaining or imposing the need for the constancy of physiological temperature around 37°C in higher forms of life needs to be explored in an evolutionary context.

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OCIMUM ADSENDENS: AN INDICATOR PLANT OF CHROMIUM

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SEVERAL plant indicators have been suggested to locate groundwater[1] and economically important metalliferous ore deposits[2–4a]. In this study, *Ocimum adsendens* has been found to be an accumulator of chromium to serve as an indicator plant for this heavy metal.

The area, under investigation, is Kondapalli Reserve Forest in Krishna district, Andhra Pradesh, included in the Survey of India toposheet No: 65D/10. The geological formations, in this area, are khondalite and charnockite suite of rocks, ultramafics including chromite, and quartz and pegmatite veins. Earlier workers[5–9] have studied the geology of the area.

The chromite ore occurs as massive bodies, irregular veins, lenticular and pocket-like lenses, or as dark bands in layered rocks. All these chromite occurrences are distributed in an area of ten square miles in the Kondapalli hill range. Brown and Day[10] described this deposit while other workers[9, 11, 12] studied its mineralogical characters.

The most conspicuous feature of this area is the dominance of the plant *Ocimum adsendens*, locally called "Konda Tulasi" occurring exclusively overlying the chromite ore body. It is absent on the soil derived from any other geological formation. It occurs with profuse growth in the mining areas, and also right on the dumps of the concentrated ore (figure 1). It is also

Table 1 *Distribution of chromium (in ppm) on ash weight (% basis) in ocimum adsendens and its organs*

	Whole plant		Root		Stem		Leaves	
Location of the plant	Ash	Cr	Ash	Cr	Ash	Cr	Ash	Cr
On the soil in the mining area	9.19	270	2.9	480	6.5	40	16.8	60
On the termite mound in the mining area	4.49	530	3.2	600	6.78	130	15.6	500
In the pit of an abandoned mine	12.76	370	3.8	470	12.3	80	11.3	40
On the dump with 48% chromite concentrate	11.96	950	3.7	1100	2.45	230	13.4	340

Figure 1. *Ocimum adsendens* on the concentrated chromite ore.

found: (i) along the stream courses in which concentrated chromite particles occur; (ii) by the side of the railway track where the concentrated ore spilled while loading the railway wagons, and (iii) along the track, laid for the motor vehicles to ply, with the tailings left in the wake of mining operations.

The plant samples of *Ocimum adsendens* were collected from: (i) the soil, (ii) the mining pits, (iii) the termite mounds in the mining area, and (iv) the dumps of the concentrated ore. The samples of the whole plant and its different organs, *viz* root, stem and leaves were dried at 70°C in a hot air oven, and ashed at 500°C in a muffle furnace. The chromium content was determined by atomic absorption spectrophotometry and the values are given (table 1) on the basis of the ash weight of the plant material.

Certain species of plants are called 'accumulator plants' which have unusual affinities for relatively rare elements, most of them heavy metals, which may or may not be essential to the plants[13]. Brooks[4b] has classified chromium, with respect to toxicity to plants, as 'severe' and pointed out the abundance of chromium in plant ash as 9 ppm. Table 1 shows that *Ocimum adsendens*, with unusually high concentration of chromium, is not only an indicator plant but also an accumulator plant. Lyon *et al*[14] reported that *Pimelea suteri* is an accumulator plant with its ash containing 26000 ppm of chromium.

Ocimum species are reliable indicators not only for chromium but also for copper. Brooks[4c] stated that *Ocimum homblei* (now called *Becium homblei*) is "one of the most reliable indicator plant ever recorded" for copper; and, with the aid of this species, greatest success has been achieved in the discovery of copper deposits in Zambia, Central Africa[15].

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STUDIES ON ANTARCTIC KRILL: I—LENGTH WEIGHT RELATIONSHIP IN ADULT, *EUPHAUSIA SUPERBA*, DANA 1850

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ANTARCTIC Krill—an euphausiid—having an estimated standing stock of 650 million tonnes[1], is considered to be the world's largest single source of natural proteins. Recent studies[2-4], on the biological productivity off Queen Maud Coast, have indicated, not only the abundance of Antarctic Krill, especially, *Euphausia superba*, Dana 1850, but also have highlighted its key role in the food web of the Indian Ocean sector of maritime Antarctic[5].

Although distribution and abundance of *E. superba* has been studied, rather extensively[6], there is a dearth of information about its biological aspects, especially from the Indian Ocean sector of Antarctic Ocean. During the course of the first (1981–82) and the second (1982–83) Indian scientific expedition to Antarctica, a series of observations were undertaken on the distribution, abundance and growth of *E. superba* and the results on length weight relationship are presented, here.

Area of sampling lies within the geographical coordinates—latitude 55 to 67°S and longitude 10 to 37°E. Deploying a 500 μ mesh size Bongo net, samples were collected, through vertical hauls, from 300 metres to the surface. Depending upon the distribution and abundance, a few vertical hauls were taken with an Indian Ocean Standard net, (300 μ mesh) having 1 meter wide opening. Measurement of length and body weight was as per Nemoto[7] and length weight data was analyzed by the method of Le Cren[8].

Specimens of *E. superba* were in the size range of 30–42 mm in length and 82–521 mg in wet weight and thus can be called as adult and sexually matured individuals, 2–3 years old[9]. Mean length and mean body weight was 34.18 mm and 202 mg, respectively.

The length weight data[8] were analysed by using linear regression, $\log W = a + b \log L$ and the equation derived could be expressed as $\log W = (-1.081) + 2.181 \log L$ (figure 1a). At 95% confidence limit, the value of b ranges between 2.269 and 2.892. The parabolic representation was $W = 0.029 \times 10^{-5} L^{2.181}$ (figure 1b).

As assessed from r (coefficient of correlation) value, which was 0.995, there seems to exist a high degree of relationship between length and weight[10] in *E. superba*. Though the present set of observations pertain only to adults (males and females, combined), the slope of the regression line was found adequate to fit the equation and thus appropriately represents the length weight relationship.

Estimation of length weight relationship, as an indicator of growth progression[8], is not only essential for understanding the biology and population dynamics of the species concerned but also for the proper

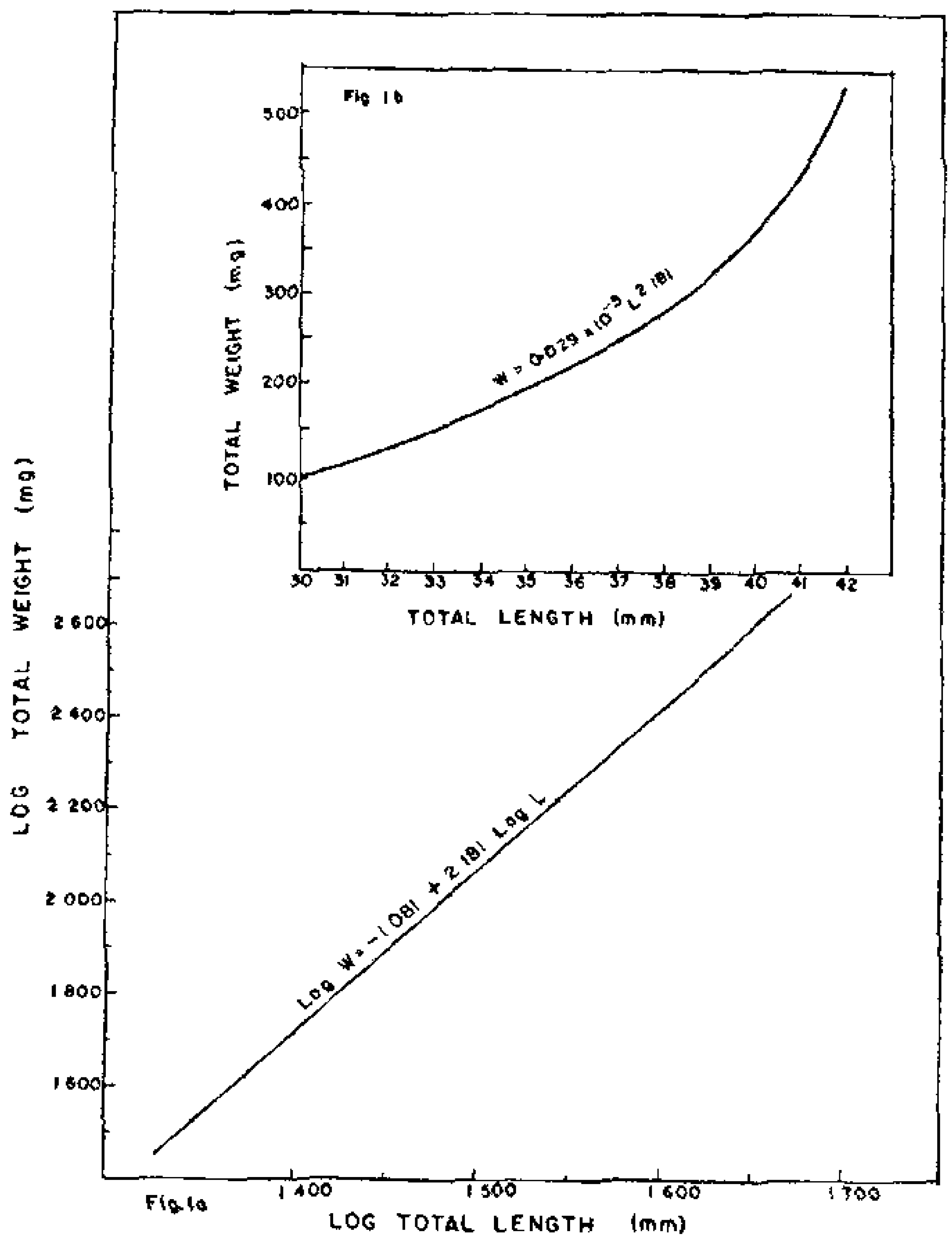

Figure 1. Length-weight relationship in the Antarctic Krill, *Euphausia superba*. Dana 1850. **1a.** Linear regression equation, **1b.** Parabolic representation.