An increased amount of thiocyanates was noted in thyroids in which cysts appeared. Their content was 7·49 ± 1·4 μg SCN^-/ml. of thyroid extract. Statistical analysis showed a high significance difference ($P < 0.001$) between the thiocyanate content in cystoid thyroids and those without cysts. The correlation coefficient for thyroid weight (the ratio: $\frac{\text{thyroid weight(g)}}{\text{100 kg live weight}}$ was used for analyses) and thiocyanate content in the thyroid extract was $r = +0.67$. The correlation coefficient for the SCN^- level in blood plasma and the SCN^- content in the thyroid extract was $r = +0.44$. The last correlation coefficient turned out to be highly significant ($P < 0.001$).

It should be noted that well-known goitrogenic plants, such as Swedish turnip, appear frequently in the investigated areas. Earlier investigations[13,14] have also shown a lower iodine content in water and milk from areas with a greater goitre intensity in human beings (Table 2).

Table 2. Mean Iodine-level in Water and Milk from an Area with Varying Intensities of Goitre in Human Beings

Area*	Iodine in water (μg %)	Iodine in milk (μg %)
I	4	3
II	2–4	2–3
III	0–2	0–2

* See Table 1.

The results obtained suggest that thiocyanates—among other factors (as, for example, the lack of iodine)—provoke an abnormally enlarged thyroid in cattle, or that they can appear as an accompanying compound and an indicator of other sulphuric compounds having goitrogenic effect[3].

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Action of γ-Aminobutyric Acid on *Cancer borealis* Muscle

In several crayfish preparations[1–5] γ-aminobutyric acid (GABA) mimics the natural inhibitory transmitter. Moreover, it has recently been found in large amounts in *Cancer borealis* peripheral nerve and muscle[6], suggesting a possible role as inhibitory transmitter. The action of GABA on *C. borealis* muscle has not been examined. It has been reported that GABA has no inhibitory effect on *C. anthonyi* muscle[7] and that it blocks excitatory junctional potentials in *C. magister* muscle while scarcely changing membrane conductance[8]. Thus, it seemed of interest to investigate the action of GABA on *C. borealis* muscle.

Two microelectrodes were inserted into the superficial muscle fibres of the 'opener' or 'closer' of the dactyl of the walking leg. One, filled with 3 M potassium chloride, recorded resting potential; while the other, filled with 3 M potassium citrate, altered membrane potential by passing current. The efferent nerves were stimulated and excitatory junctional potentials were recorded. The effect of GABA on excitatory junctional potentials and membrane conductance was studied.

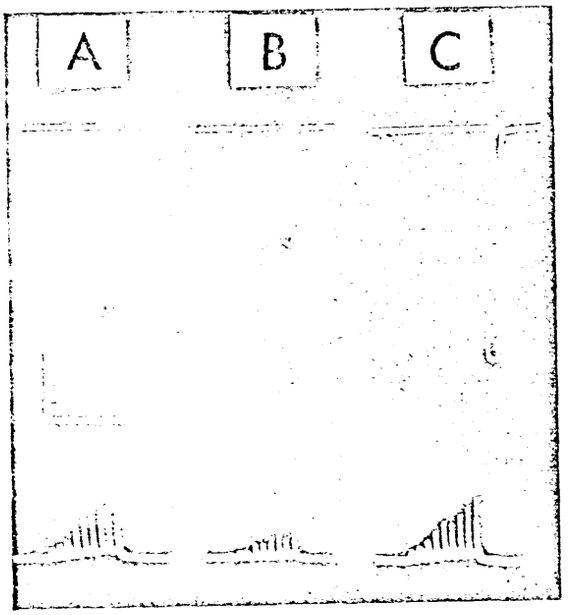

Fig. 1. ('Opener' muscle.) Effect of GABA (10^{-6} g/ml.) on the change in membrane potential resulting from a square pulse of applied current and on excitatory junctional potentials arising from stimulation of the efferent nerves. Records show excitatory junctional potentials and hyperpolarization recorded (*A*) while the muscle fibre was bathed in normal crab Ringer; (*B*) immediately after the application of 10^{-6} g/ml. GABA; (*C*) 20 min after return to normal crab Ringer. Note the large decrease in the effect of applied current and the marked decrease in the size of excitatory junctional potentials. Current was monitored periodically and was found to remain constant. Changes in resting potential are not considered significant. Scales: upper records, 4 mV, 100 msec; lower records, 2 mV, 100 msec

In both the 'opener' and 'closer' muscles, GABA in concentrations of 10^{-6} g/ml. or greater produced within a few sec: (1) a decrease in the size of excitatory junctional potentials of up to 80 per cent; (2) a marked decrease in the effect of applied current, indicating an increase in membrane conductance (Fig. 1).

In crab muscle the natural inhibitory transmitter reduces excitatory junctional potentials and produces a selective increase in membrane conductance, bringing the membrane potential toward a particular level—the 'reversal potential'[7,9]. Thus, in crab muscle both GABA and the natural inhibitory transmitter produce an increase in membrane conductance.

A more detailed comparison of the action of GABA and the natural inhibitory transmitter in crab muscle—such as that made by Boistel and Fatt[1] in crayfish muscle—has not as yet been made.

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