adrenalectomized rat. The question which remains open is whether these neurones discharge as a result of neural or in response to some humoral stimuli.

I thank Prof. Eleanor Zaimis for the gift of injected rats, and Mr. B. S. C. Hollands for preparing the sections.

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Tumour of the Thymus in Magnesium-deficient Rats

During the course of examinations on the effects of magnesium deficiency in rats[1–4], tumours of the thymus developed in a few animals after prolonged periods of deficiency. This incidental finding stimulated a special investigation. Twelve male Holtzman Sprague–Dawley rats (110–125 g body-weight) were fed a magnesium-deficient diet[3] for 95 days; twenty controls received the same diet to which was added 0·6 g of magnesium sulphate per 100 g of diet. Only five deficient rats survived until the end of the experiment. Convulsive seizures accounted for most deaths during the first weeks. Animals dying later showed extensive pleural effusion and ascitis; chronic lung disease with bronchiectatic abscesses was also observed. One rat died with a large thymus weighing 1·6 g after 75 days of magnesium deficiency. Microscopic examination revealed a total replacement of the normal architecture of the gland by sheets of large lymphoid cells. Another abnormal thymus was found at autopsy at the end of the experiment. In this case, thymic tissue had extended in all directions, infiltrating the base of the heart as well as the wall of the œsophagus; the same tissue had also grown retrosternally, reaching the diaphragm. Histologically the appearance was again characterized by a predominance of large lymphocytes or lymphoblasts with numerous mitotic figures (Fig. 1). Limited infiltration with similar cells was also seen in the portal spaces of the liver, in the kidney and in the adrenal cortex. The spleen and lymph nodes were not prominently enlarged and the blood was aleukæmic in both cases. The tumour was transplanted subcutaneously in Sprague–Dawley rats and grew rapidly, killing its host in 20–25 days. No tumour of the thymus was found in rats that were not magnesium-deficient.

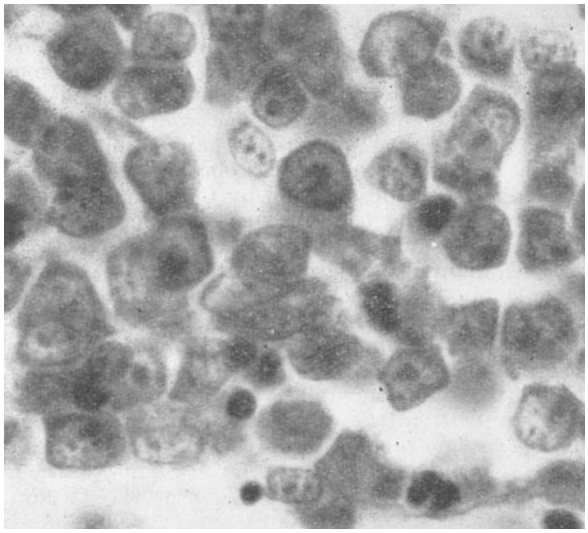

Fig. 1. Typical high-power field of the tumour. Predominance of lymphoblasts in active multiplication (Dominici, × 800)

This tumour is unusual because of its site in this species; spontaneous tumours of the thymus, with or without generalized leukæmia, are uncommon in rats[5–7]. It is also of interest that the tumour was apparently induced by a deficiency in magnesium. The chronic lack of magnesium at the cellular level might increase the removal of magnesium out of the nucleus into the cytoplasm, thus causing chromosomal aberrations and cell mutation, as suggested by Jayson[8]. However, this would not explain the electivity of the thymus. So far, six tumours of the thymus have been observed among 138 magnesium-deficient rats after 75–105 days. The occurrence of lymphoblastic adenoma of the thymus in chronically magnesium-deficient rats was also recorded recently by Jasmin[9].

Previous investigations have shown that magnesium deficiency is conducive to histamine liberation with a reduction of the number of mast cells[1,2,3,10]; it is difficult, so far, to associate these findings with the production of tumours of the thymus.

This work was supported by a grant from the National Cancer Institute of Canada.

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Rapid Induction by Acetylcholine, Bradykinin and Potassium of a Nociceptive Response in Mice and its Selective Antagonism by Aspirin

How aspirin exerts its analgesic action has been much discussed. The findings here reported suggest that it depresses certain chemonociceptive responses at or near their peripheral source, rather than in the central nervous system, and that it acts on these directly, rather than indirectly through suppressing œdema formation.

An apparently nociceptive response of mice to intraperitoneal injection of phenylbenzoquinone or acetic acid has been much used in testing analgesic drugs[1–7]. In this response, which has been described as 'writhing', 'squirming', 'stretching' or 'cramping', the dominant feature is a wave of constriction passing caudally along the abdominal wall, followed by extension of the hind limbs. It will here be called the constriction response. Whittle[8] has proposed that acetic acid and other noxious agents do not elicit this response directly, but by releasing a kinin.

Since substances acting directly are likely to have less latency than those acting indirectly, we have measured the latency of response in mice (T/O strain) after intraperitoneal injection of several endogenous substances known to elicit pain in man. Table 1 compares the speed

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