cells from chronic leukemias explain Isaacs' observation that after irradiation the proportion of mature cells in the cell population is increased, for as our experiments with colchicine showed[3] X-rays prevent the onset of mitotic division. The immature cells capable of such division are therefore bound to decrease in numbers first, and only later the more mature cells developed from them.

Summary. In irradiated marrow cultures of nonleukemic cells the ratio of effect of 50 r of irradiation on progranulocytes to the effect on the more susceptible lymphocyte is the same as with a dose of 400 r of irradiation. An increase of 8 times in the amount of irradiation, that is from 50 r to 400 r, produced an increase of only about 1.7 times in the effect on either progranulocytes or lymphocytes. Leukemic progranulocytes showed a greater decrease from a dose of 300 r than nonleukemic progranulocytes from a dose of 400 r, but the character of the curves is similar which suggests that the mechanism of action of irradiation on leukemic cells is probably a prevention of the onset of cell division as was shown to be the case for nonleukemic cells. Leukemic progranulocytes which failed to mature in the patient also failed to mature in cultures in a medium containing normal human cord serum with or without irradiation. All of these observations are explained if the action of irradiation is to prevent the onset of mitotic or amitotic division and not by directly killing cells and if the leukemic process depends on a fundamental change in the cell affecting its rate of division and maturation and not on any alteration in the environment.

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Microscopic Lesions Without Functional Impairment of Striated Musculature of Suckling E-Low Rats.*

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In endeavoring to determine the minimal prophylactic dose of alpha tocopherol which would insure the normality of the cross-striated musculature in suckling young rats, alpha tocopherol dis-

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solved in ethyl laurate was administered at the 6 mg and 10 mg levels by stomach tube to a considerable series of mothers on the first day of lactation. The young were observed daily for evidences of the slightest impairment of gait, capacity to right themselves promptly when placed on their backs, et cetera. Thirty young were thus studied from mothers receiving 6 mg of alpha tocopherol and 41 from mothers receiving 10 mg. Sixty-four young from mothers receiving the solvent alone were also observed; in the last mentioned group all young showed paralyses or evident impairment of muscular function. Virtually all the young from mothers receiving either dose of alpha tocopherol appeared to be perfectly normal in their gait, righting reactions, et cetera.

Histological study of 16 muscles was made in the case of several animals from each of the 3 groups. To our surprise in the case of the 6-mg group, 12 of the 16 muscles examined showed the typical microscopic lesions of dystrophy, although these were not extensive; *i.e.* plenty of normal musculature remained, a fact in harmony with the complete lack of observable motor impairment of these animals.† In the 10-mg group microscopic lesions were entirely absent from all muscles studied. The muscles examined were diaphragm, gastrocnemius, adductor magnus, semimembranosus, extensor digitorum longus (communis), flexor digitorum profundus, biceps brachii, triceps brachii, psoas major, erector spinae group, sternomastoideus, serratus anterior, acromiotrapezius, pectoralis major, masseter and tongue. The masseter and tongue musculature proved themselves to be the least likely to be affected, the gastrocnemius and sternomastoideus the most likely to be affected.

† After this manuscript was sent for publication a paper by A. M. Pappenheimer (*Journal of Mt. Sinai Hospital*, 1940, **7**, 65) appeared which carries the statement that histological degeneration of the musculature was observed in young rats exhibiting none of the usual symptoms of E avitaminosis.