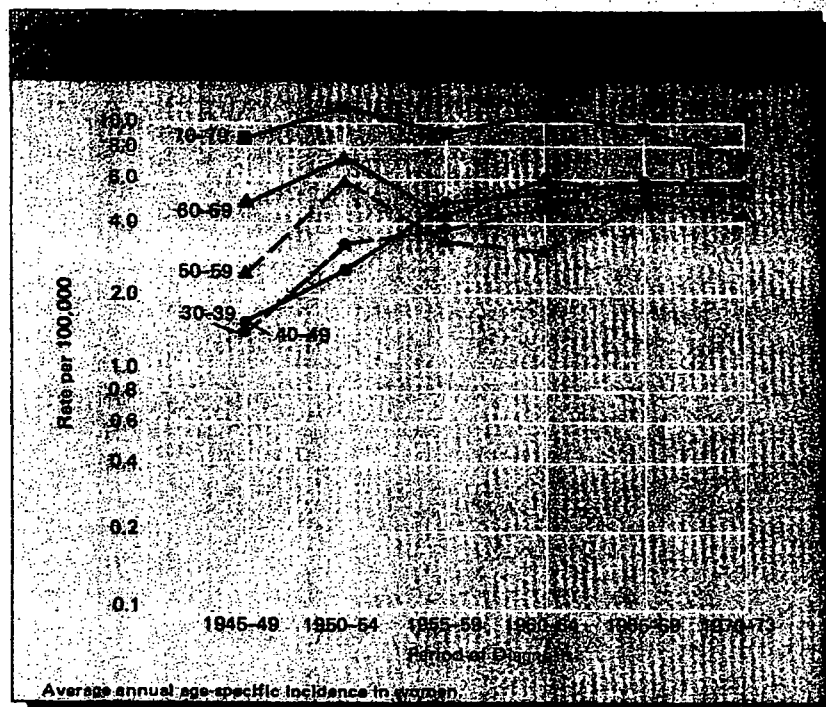
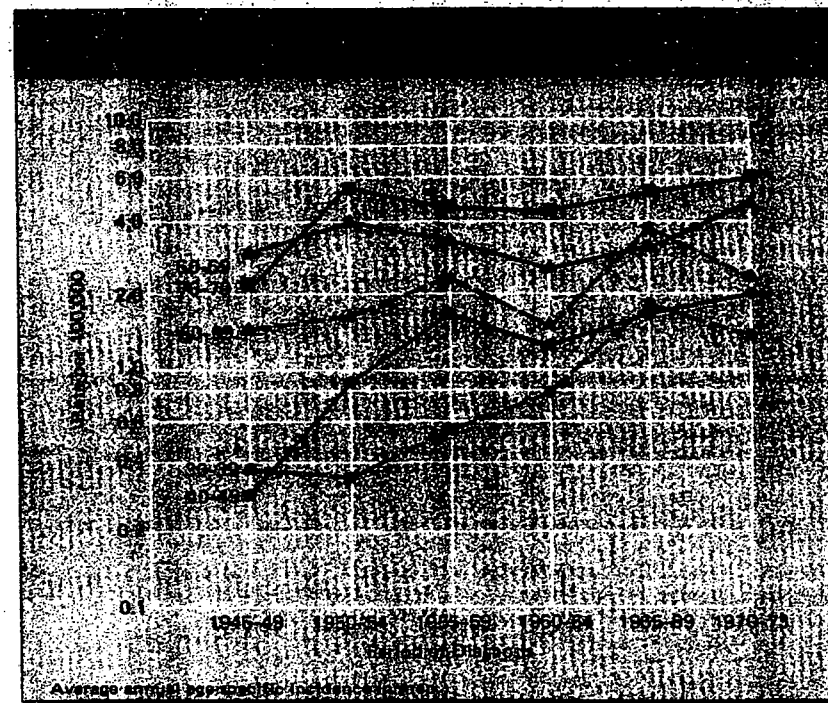




of 2.5 percent for thyroid carcinoma in patients with toxic goiter is similar to the 2.8 percent reported by Mortensen and colleagues⁵⁴ in their study of subclinical thyroid cancer in 1,000 consecutive routine autopsies. In the Olen and Klinck study of toxic goiter and carcinoma⁵⁵, 50 percent of the carcinomas were "occult sclerosing" or papillary in type, and in no instance did carcinoma arise from a pre-existing adenoma.

It is now accepted that Graves' disease, myxedema and Hashimoto's thyroiditis are closely related immunogenetic disorders. Two of these diseases may co-exist in the same patient, aggregate in the same family, or demonstrate a high concordance rate in monozygotic twins. The incidence of each disease is at least four times greater in women than in men. Hashimoto's disease tends to be uncommon in American blacks and increases in incidence with age,

whereas Graves' disease (diffuse toxic goiter) is not uncommon in blacks, tends to peak during the third and fourth decades, and is distinctly uncommon after age 60. Hashimoto's thyroiditis and Graves' disease are significantly associated with a number of other diseases characterized by abnormal immune reactivity to autologous antigens such as pernicious anemia, primary (Addison's) adrenal insufficiency and myasthenia gravis. The prevalence of thyroid carcinoma in patients with the diffuse chronic lymphocytic thyroiditis of Hashimoto has been reported variously as being between 1.5 and 3.0 percent. Focal lymphocytic thyroiditis is commonly seen in association with papillary and follicular carcinomas. The frequency and significance of these focal lymphocytic infiltrations are not known precisely, although they may represent secondary immune responses to



proliferating parenchymal tissues.⁵⁶⁻⁵⁸

In the National Cancer Institute's Veterinary Medical Data Program, it was observed that the beagle, boxer and golden retriever breeds were at increased risk of developing clinically apparent thyroid cancer. Several beagle colonies used in laboratory research have exhibited a familial predisposition to lymphocytic thyroiditis, indistinguishable from Hashimoto's disease.⁵⁹ Although thyroid neoplasia was not identified in these colonies, further follow-up beyond six years and careful pathologic study may serve to describe the incidence of thyroid cancer in dogs with antecedent thyroiditis.

A prospective epidemiologic study would determine whether Hashimoto's thyroiditis is a specific precursor of thyroid carcinoma. The diagnosis of struma lymphomatosa may be established through a biopsy or a combination of immunolog-

ic tests and thyroid scintiscans. Crile and Hazard⁶⁰ did not observe a single case of clinically apparent thyroid cancer in 222 patients with Hashimoto's thyroiditis after follow-up of more than 1,000 person-years. Most of these patients were maintained on daily doses of two-three grains of desiccated thyroid, which may have diminished any inherent risk of their developing subsequent neoplasia.

Human Radiation Exposure and Thyroid Cancer

From the 1920's through the 1950's, many infants, children and young adults received X-ray therapy to the head, neck and mediastinum for cervical lymphadenitis, mastoiditis, enlarged palatine and nasopharyngeal lymphoid tissues, pertussis, acne, hemangiomas or keloids, or to shrink an allegedly enlarged thymus gland that