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FALLOUT OF THE COLD WAR

The thyroid nodules occurring in Marshall Islanders, reported by Conard and his associates elsewhere, in this issue of the Journal, are literally and figuratively a fallout of the cold war. It is depressing to be reminded that American atomic tests inadvertently injured a significant number of innocent people. However, in a still-free society, both virtues and faults are aired, and perhaps recording and analyzing these adverse effects will contribute to man's slow learning process.

The thyroid gland is especially vulnerable to atomic injury since radioactive isotopes of iodine are a major component of fallout, and the gland collects this iodine as avidly as it does the common stable isotope. Typically, one third of all ingested iodine is accumulated by the thyroid gland each day, and about 95 per cent of the body stores are concentrated in the 15-20-gm. gland. The element resides in the gland for many weeks on the average, thus offering a chance for significant radiation exposure from even a small dose of isotope.

That ¹³¹I should be hazardous is no surprise. Much prior evidence convincingly demonstrates the carcinogenic effect of x-rays or ¹³¹I on the thyroid gland in animals. The Hiroshima and Nagasaki explosions left their residue of tumors.¹ Childhood papillary carcinoma of the gland is strongly associated with prior radiation, although in these cases one might question whether the important factor was thymic or thyroid radiation. Recently, it has been observed that a reactor accident in the West may have left its trail of thyroid nodules downwind.

¹³¹I in doses too small to cause cell death is known to damage cell metabolism - for example, it may prevent the response to a subsequent goitrogenic stimulus.² This radiation lesion is intimately associated with DNA metabolism, as shown in Doby's report of abnormal cell nuclei.³ Al-Hindawi and Wilson⁴ have observed poor labeling of radiated rat thyroid nuclei by ³H-thymidine and a rapid turnover of the accumulated label. The observations imply that the damaged nucleus can not divide normally.

The experience reported in the accompanying article by Conard et al. is unusual in that the primary response is multinodular goiter formation, rather than induction of tumors. "Nodules," but not necessarily multinodular goiter, have been reported by Sheline et al.⁵ and others to follow childhood ¹³¹I therapy for Graves's disease, but multinodular goiters have been difficult to produce by any experimental mechanism. The documented association with radiation, both experimentally and clinically, has been tumor formation, not multinodularity. The factors dictating this unusual response are unapparent.

The authors are to be congratulated on their ability to detect nodules of 2 to 3 mm., but there may

not be total agreement on the therapy in 2 cases - total thyroidectomy - for nodular goiters. The predictable hazard, hypoparathyroidism, did in fact occur.

The implications are clear. The Islanders need constant medical supervision for life. Thyroid-suppressive therapy is indicated although it must be admitted that the experimental basis is lacking. Rapid institution of potassium iodide therapy for suppression of thyroid uptake is indicated in any population exposed to fallout.⁶ Therapy with radioactive iodine for childhood thyrotoxicosis must be viewed with reserve.

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OLD WORLD SURGEON

The Journal, through some oversight, failed to receive a notice of the death of Dr. Oscar Hirsch, over a year ago. This has been amply, if belatedly, corrected with an obituary prepared by one of his American disciples, which is published elsewhere in this issue of the Journal.

Dr. Hirsch, always unassuming, was nevertheless one of the most distinguished European medical emigrés to find freedom in this country during the years immediately before World War II. Not only was he a gifted neurosurgeon, trained in the exacting field to which he made at least one notable contribution; he had also a liberal classical education and a firm devotion to Graeco-Roman history and literature. This was acquired during the years of the late nineteenth and early twentieth century when the Gothic legacy of the Holy Roman Empire was blended with an Ottoman tincture overlaid by the bizarre imagery of the baroque.

The story is told that he once accosted a man whom he overheard reciting ruminatively a chorus from *Antigone*, as he walked along a street in Montreal. So the two sat down to discuss the relative merits of *Sophocles* and *Euripides*.

Dr. and Mrs. Hirsch were known as a kindly, gracious, cultured couple, who brought to their New World environment a valuable contribution from the old.

red. To this must be effects of chromium el, perhaps leading to stood. other than viability of complicate work in this platelets can aggregate r from the circulation such as the lung and and show hemostatic of radioactive counts sion may be an express- ble is the recent inter-lood volume" in terms be considerably larger for plasma and red-cell of such measurements aring platelet concen-ow accepted that plate- important role in the bocytopenia, especially py to acute leukemia.³ requests for platelet makes it important to ation as simple as the This is particularly true accessing the cells after ate and before transfu- will probably prove of npo of platelets transfu- l yield of cells from a a single plasmapheresis in many leukemia cen- its to achieve sufficient ave a hemostatic effect nce of serum hepatitis er the infusion of pooled, in World War I and in w preservation techniques the present report will ed to some of the new ly being introduced.^{4,5} effect of simplifying the procedure and increas- sufficiently to eliminate

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