processing or using, material under priority control and may be deprived of priorities assistance.

(h) *Appeal.* Any person affected by this Order who considers that compliance herewith would work an exceptional and unreasonable hardship upon him, may appeal to the War Production Board setting forth pertinent facts and the reasons such person considers that he is entitled to relief. The Director of Industry Operations may thereupon take such action as he deems appropriate.

(i) *Communications.* All reports required to be filed hereunder, or communications concerning this Order, shall, unless otherwise directed be addressed to:

"War Production Board
Safety and Technical Equipment Branch
Technical and Scientific Equipment Section
Washington, D. C. Ref: L-144"

Issued this 12th day of June, 1942.

J. S. KNOWLSON,
Director of Industry Operations

SPECIAL ARTICLES

EFFECT OF ORCHIDECTOMY ON SKELETAL METASTASES FROM CANCER OF THE MALE BREAST

A SYSTEMATIC study is in progress of the effects of induced hormone imbalance on the course of primary inoperable and metastatic breast cancer in both sexes. Among the procedures employed have been: (1) castration by irradiation of the ovaries; (2) bilateral oophorectomy; (3) the parenteral administration of limited amounts of estradiol monobenzoate; (4) the parenteral administration of testosterone propionate.

The immediate elevation of the serum calcium and subsequent radiographic evidence of extension of the skeletal metastases have been reported[1] in three female patients who received 400 to 500 mgms of testosterone propionate over periods of from 7 to 10 days. A fourth patient (Case I), a male with osseous metastases from a cancer of the breast, received 925 mgms of testosterone proprionate in 17 days. The only subsequent chemical abnormality observed was a slight elevation of the serum calcium level to 11.7 mgms. Measured radiographically, however, the metastatic lesions increased rapidly in number and extent. Pathological fractures of the humeri and vertebrae occurred before death 10 months after treatment.

From the evidence it was concluded that a steroid hormone imbalance due to the administration of testosterone propionate not only failed to inhibit the progress of metastatic mammary cancer but seemed to accelerate the activity of the growth in both sexes.

The effect of surgical castration on the osseous metastases from inoperable mammary cancer has been studied in a male of 72 years (Case II). Bilateral orchidectomy was performed in February, 1942. In the four months since operation evidence which suggests a regression of the growth has come to hand. The ulcerated lesion of the left breast has decreased in diameter from $7 \times 4 \times 2$ cm to $5 \times 3 \times 1.5$ cm. There has been complete relief of bone pain, previously a persistent and troublesome manifestation. Radiographic evidence indicates that the areas of decalcification, representing metastatic deposits of cancer in the ribs, vertebrae and scapula, have shown no increase in extent. Furthermore, in these areas an increased density has appeared, interpreted as a reflection of increased calcification and healing of the lesion. No chemical alteration was noted beyond a recent elevation of the serum alkaline phosphatase (5.9 to 11.1 units).

The rates at which estrogenic substance and 17 ketosteroid were excreted in the urine of these 2 patients were estimated before and after treatment (Case I—testosterone, Case II—orchidectomy). The results are given in Table 1.

TABLE 1

CASE I		
	Estrogens	Androgens
1/12–15/40	34.0 M.U.	44.5 mgms.
1/15 /40	Daily injections of 50 mgms. testosterone propionate begun	
1/15–18/40	34.0 M.U.	40.9 mgms.
1/18–21/40	22.0 M.U.	41.8 mgms.
1/21–24/40	50.0 M.U.	56.7 mgms.
CASE II		
	Estrogens	Androgens
2/ 6– 9/42	22.5 M.U.	11.7 mgms.
2/ 9 /42	Bilateral orchidectomy	
2/13–16/42	16.7 M.U.	3.0 mgms.
2/23–26/42	8.6 M.U.	12.0 mgms.
3/ 9–12/42	13.3 M.U.	8.7 mgms.
4/ 1– 4/42	Trace (less) than 4 M.U.	10.2 mgms.

The decrease in estrogen excretion after orchidectomy as well as a stable 17 ketosteroid output are striking features. Control of disease as extensive as that observed in Case II is unusual. It may be unassociated with the operative procedure employed, although this appears improbable.

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[1] J. H. Farrow and H. Q. Woodard, *Jour. Am. Med. Asn.*, 118: 339–343, January 31, 1942.