THE MORALITY OF CASTRATION FOR CARCINOMA OF THE PROSTATE

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THE ethical problem inherent in the new surgery of castration for carcinoma of the prostate gland calls for a solution. No one, however, would blame the moralist for moving slowly to a decision upon castration for prostatic carcinoma. For the moralist's approval or disapproval of the surgery at issue upon purely ethical grounds is fraught with such consequences to life that he must use the utmost caution in formulating his decision. The critical data to sway his judgement, either pro or contra, must wait upon medical findings. While as yet all the medical facts have not been brought into the open, still sufficient evidence has been forthcoming from scientific medical journals to insure an intelligent discussion of the moral issues contained in the present operation.

In the interests of clarity we must start this paper with an explanation of the terminology to be employed. At once there is need to note that medical men use the term castration in a much wider sense than do moralists. They speak of surgical, endocrine, and X-ray castration. For them, any procedure, surgical, biochemical, or roentgenological, which ends in the suppression of the gonadic androgen supply merits the term castration.

But to the moralist following the customary wording of the schools, castration signifies the extirpation of the genital organs. Such castration is known as perfect if it involves the resection of the penis with the scrotum and its contents; as imperfect, if it involves the removal only of the contents of the scrotum. Medication by estrogenic substances or by roentgen ray, though productive of impotence, is not, in the moralists' sense of the term, castration. Moreover, surgical castration for carcinoma of the prostate permits the scrotum and much of the contents to remain intact.

If we now examine the disease, carcinoma of the prostate, for which castration in the medical sense is indicated, we discover that the disorder manifests two striking characteristics. First, it is excruciatingly painful and fatal; second, it presents a wide incidence in males past

fifty years of age. In an editorial of July 18, 1942, the *Journal of the American Medical Association* informs us as follows:

> Prostatic cancer is now recognized as one of the most frequent types of malignant disease in men. The pessimistic attitude of the majority of urologists with regard to the prognosis of cancer of the prostate is accounted for by these factors: 1) the condition is without noticeable symptoms for a long time; 2) the growth displays a tendency to early invasion by the perineural routes of the pelvic sacrum lumbar vertebrae and femur.[1]

In a paper read before the Georgia Medical Association, Ballinger and McDonald make this statement: "Approximately fifteen to twenty percent or more of all men past fifty years of age who have prostatic obstruction and who neglect this obstruction will have cancer of the prostate. This means that about one out of every four men in this room are candidates for prostatic cancer."[2]

Up to the present time there has been little hope for the victims of the disease. Nor is the blame to be laid at the double doors of medicine and surgery. Radical surgery would lay the axe to the root of the disease. But radical surgery is impotent when the patient presents himself to the surgeon. For then it is too late. The disease has so spread as to put radical surgery out of consideration.

> Colston admits that in all the cases treated at the Brady Institute (Johns Hopkins) over a period of fifteen years only four or five per cent were suitable for radical operation. Lowsey states that the malignant growth is discovered in time to effect a cure by total extirpation in less than five per cent of the cases of carcinoma of the prostate gland. This is because there are no symptoms in the early stages of the disease.
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> Thompson and Emmet say that all investigators who have made post-mortem studies of carcinoma of the prostate submit evidence that metastasis and invasion of structures beyond the prostate are likely to occur early in the course of the disease even in cases in which the primary lesion is small. It would appear therefore that complete surgical extirpation is rarely possible.[3]

Where possible, urologists even today prefer the radical operation to castration. Nor do the protagonists of castration proclaim it a

[1] *Journal of the American Medical Association*, July 18, 1942, p. 950.
[2] *Journal of the Medical Association of Georgia*, Oct., 1942, p. 383.
[3] *Jour. A. M. A.*, July 18, 1942, p. 950.

cure for prostatic cancer. They appraise it modestly in terms of prolongation of life.

We may now ponder the facts upon which the new treatments for carcinoma, namely, gonadic enucleation, endocrine therapy, or roentgen ray, rely for justification and acceptance. All three procedures focus upon the suppression of the testicular supply of androgens to the prostate gland. Androgens are the male sex hormone produced principally by the interstitial cells of the testes. Though a subsidiary source of androgens may be derived from the adrenals, yet it is a fact which no scientist disputes that the primary supply of androgens originates in the gonads. There are two reasons which militate for the suppression of the testicular output of androgens. First, prostatic cancer results from an overgrowth and invasion of the adult epithelial cells of the prostate gland into adjacent organs; second, the suppression of androgens normally atrophies epithelial tissue. Here be it noted, no claim is advanced that androgens are carcinogenic, and that their suppression is a cancer cure. "There is a tendency to believe that we are developing a cure of carcinoma of the prostate. We should be very careful to avoid this impression. We have here the best method of palliation recommended to date."[4]

Let us now weigh the evidence for the claims advanced in the preceeding paragraph. The first of these claims depends for its proof on the presence of large amounts of acid phosphatase in the cancerous tissue. Kutscher and Wolberg were among the first to make this clinical finding.[5] In their long serial research upon prostate glands, the Gutmans found small amounts of acid phosphatase in prepubertal glands, a rise in content of the enzyme at puberty, and a high level in adult age.[6] This clinical work has been confirmed by many investigators, as a check of references in any scientific medical journal will show.[7] Acid phosphatase, then, in large amounts serves to identify the presence of adult epithelial cells. Since the Gutmans likewise discovered large amounts of acid phosphatase in carcinoma of the prostate, the conclusion was evident that the malignant overgrowth

[4] *Journal of Urology*, Dec., 1942, p. 699. [5] *Cancer Research*, April, 1941, p. 293.

[6] A. B. Gutman and E. P. Gutman, "Acid Phosphatase," *Proceedings of the Society for Experimental Biology and Medicine*, Dec., 1938, p. 529.

[7] *Cancer Research*, April, 1941, p. 293.

was made up of an adult rather than a more primitive neoplastic epithelium. Brilliant confirmation of this thesis was forthcoming in the outstanding work of Huggins and Hodges,[8] Huggins, Stevens, and Hodges,[9] Huggins, Scott, and Hodges,[10] and others too numerous to quote.[11]

Acid phosphatase served as another useful diagnostic acid. For whenever the enzyme has run well over the normal limits, metastasis to the bone has invariably occurred.

Our findings also agreed in general with Robinson, Gutman and Gutman, and those of Huggins in that most of the cases (5 out of 7) with elevated acid phosphatase had roentgenologically demonstrable metastases to the bone.[12]

The acid phosphatase level is undoubtedly more significant in cases of carcinoma of the prostate, and whenever it has been increased appreciably, metastases has invariably been present. However, metastases has also been present when the acid phosphatase levels have been normal. Thus there are false negative but no false positive reactions.[13]

The second claim previously made was that the suppression of androgens atrophies epithelial tissue and the injection of androgens stimulates the growth of the same cells. Huggins has done some remarkable work in this field. His introduction to "Studies On Prostatic Cancer" deserves citation.

Carcinoma of the prostate gland is peculiarly favorable for endocrine investigation since frequent serial observations of the activity of phosphatases in serum were found to provide objective indices of the activity of the neoplasm when the enzymes were increased above the normal. In the present paper data are given for the values of serum phosphatases in carcinoma of the prostate and in normal men. We shall demonstrate that acid phosphatase of serum is reduced in metastatic carcinoma of the prostate by decreasing the activity of androgens through castration or estrogenic injections, and that this enzyme is increased by injecting androgens. We have been unable to find previous observations indicating any relationship of hormones to carcinoma of the prostate gland.[14]

To gain a greater measure of confidence in the interrelationship of androgens and carcinoma of the prostate there is need perhaps to cite some other authorities.

[8] "Studies in Prostatic Cancer," *Cancer Research*, April, 1941, p. 293.
[9] *Archives of Surgery*, Aug., 1941, p. 209. [10] *Jour. Urol.*, 1941, p. 997.
[11] *Arch. Surg.*, Aug., 1941, pp. 209–22.
[12] Chute, Willets, Gens, in *Jour. Urol.*, Dec., 1942, p. 684.
[13] Higgins, Gosse, in *Cleveland Clinical Quarterly*, April, 1941, p. 81.
[14] *Cancer Research*, April, 1941, p. 293.

It has been shown that when androgenic hormones are reduced sufficiently prostatic epithelium undergoes atrophy. Conversely the injection of androgens stimulates the growth of prostatic epithelium and the injection of estrogens retards its growth. Furthermore eunuchs who are without a primary source of androgens do not develop prostatic hypertrophy.[15]

The relationship between androgens, prostatic epithelium, and phosphatase is shown in figure 1. Androgen activates adult prostatic epithelium, acid phosphatase increases, tumor increases, symptoms increase. Estrogens neutralize androgens, inactivate adult prostatic epithelium, acid phosphatase decreases, tumor decreases, symptoms decrease.[16]

To this the *Journal of the American Medical Association* adds the weight of its opinion in an editorial on castration for carcinomatous prostate: "The rationale of this therapeutic measure is based on the fact that adult prostatic epithelium undergoes atrophy when androgenic hormones are greatly reduced or inactivated."[17]

Here a summing up of the aim of the foregoing medical discussion may be advantageous. Androgens stimulate the growth of adult epithelial cells. Suppression of androgens by surgical castration or by estrogens atrophies the epithelial tissue of the adult prostate. But the adult cancerous prostate is made up of an overgrowth of epithelial cells. Hence, if the androgens are suppressed, the epithelium of the adult prostate atrophies, and life is thereby saved, in the sense that it is at least prolonged.

We turn now to the ethical issues involved in the use of (1) estrogens, (2) castration, (3) roentgen ray. Let the discussion begin with the use of estrogens. Some repetition is unavoidable. Estrogens are the female sex hormone.

The present general belief is that there exists an androgen-estrogen balance and if the estrogen is withdrawn in old age, the androgen overactivates the pituitary gland to increase its gonadotrophic hormone. This in turn causes prostatic enlargement. The interrelationship of the testes, prostate, and pituitary glands has been recognized for some time. Changes in the physiology of one cause changes in the physiology of the others.[18]

Whether an unbalance between androgens and estrogens is the causative factor in carcinoma of the prostate remains in the field of theory.

[15] Higgins, Gosse, in *Clev. Clin. Quart.*, April., 1941, p. 80.
[16] Alyea, Henderson, in *Jour. Urol.*, Dec., 1942, pp. 673–74.
[17] *Jour. A. M. A.*, July 18, 1942, p. 950.
[18] Alyea, Henderson, *op. cit.*, p. 673.

But that estrogens neutralize androgens is a fact clinically demonstrable.

For a first proof we cite the clinical cases reported by Huggins and Hodges.

> Estrogen was given during periods of eight to twenty-three days.. The results were similar to those observed following castration: namely, a sharp decrease of acid phosphatase.[19]
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> [These same investigators] made serial observation on the levels of acid phosphatase in the serum of eight patients and demonstrated by this objective method that castration and the administration of estrogens caused a significant decrease of this enzyme and the administration of androgens increased it.[20]
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> The use of the estrogenic hormone is of the greatest value as evidenced by increase in appetite with a progressive gain in weight, with an improvement in the blood and hemoglobin and decrease in urinary discomfort. We have not yet done any orchidectomies which eliminate completely the gonadal androgens elaborated by the testes.[21]
>
> After ten days of intensive therapy with injections of stilbestrol (synthetic estrogen) their glands became markedly smaller and softer, though after castration they had not shown a great deal of reduction in the size of their prostates. The results with stilbestrol alone were the equal in every way of those when stilbestrol and castration were used.[22]

From the various citations given, and they could easily be multiplied, the conviction emerges that often enough estrogenic medication works the same beneficial effects in prostatic carcinoma as does the more radical measure of orchidectomy. Likewise, it is to be noted, it produces the same untoward effect, namely, impotence. So universally known is this ill effect of prolonged estrogenic therapy that we will content ourselves with a single citation.

> There were the usual well-known unpleasant side effects of stilbestrol therapy although none of them was serious. The majority of those taking the drug lost their libido and the power of erection. Also most of those taking stilbestrol especially over a period of time had tenderness, hypertrophy and sometimes pigmentation of the nipples and frequently also some hypertrophy of the whole breast.[23]

[19] *Cancer Research*, April, 1941, p. 295.
[20] Huggins, Stevens, Hodges, in *Arch. Surg.*, Aug., 1941, p. 211.
[21] J. Robertson, in *Jour. Med. Assoc. Georgia*, Oct., 1942, p. 386.
[22] Chute, Willets, Gens, in *Jour. Urol.*, Dec., 1942, p. 683.
[23] Chute et al., *ibid.*, p. 686.

The solution of the ethical issue attendant upon the use of stilbestrol or estrogens in general seems, in our opinion, to call for an application of the principle of the double effect. A biochemical agent has been discovered which is a specific for neutralizing androgens; these, in turn, stimulate the malignant overgrowth of the prostate gland. But this neutralization of androgens brings on impotence. From the use of estrogens, then, follow a good and an evil effect. There is a grave reason, prolongation of life, to offset the inducement of impotence. Moreover, we must not forget that impotence occurs in men who have generally reached an age of three-score years. But does the good effect come only through the evil effect? It seems not, for impotence here consists in a lack of desire and the power of erection, and both of these depend on androgens for their activation. Estrogens on the other hand do not completely eliminate androgens.

In fact this failure to eliminate androgens constitutes Huggins' chief objection to endocrine therapy without castration in the treatment of carcinoma of the prostate.

> Endocrine castration as opposed to surgical castration is at first glance attractive since it can be carried out without surgery and is financially economical. However, it is unsound since the inhibition of the androgens by estrogens is not complete and complete inhibition or elimination of androgens is the basis of the modern treatment of advanced prostatic cancer. Moreover this partial inhibition is temporary.[24]

From this it seems that estrogens inactivate but do not destroy the interstitial cells which elaborate androgens. These cells may be reactivated by injections of androgens. Should, however, proof be discovered that estrogens destroy the interstitial cells, we would then rather invoke the principle, *pars propter totum*, which now claims our consideration in orchidectomy or castration.

Our justification of orchidectomy as a licit therapeutic agent in the treatment of prostatic cancer is conditioned, first, upon the failure of estrogenic medication to effect the same measure of relief as does orchidectomy. The reason for the preference lies in the fact that the mutilation of the genitals inherent in orchidectomy demands a far

[24] Huggins, in *Chicago Medical Society Bulletin*, Feb. 20, 1943, p. 461.

stronger reason for liceity than does the use of stilbestrol which entails no such mutilation. In all fairness, however, it must here be stated that orchidectomy excises only the gonads; the scrotum and much of its contents are left intact. And the untoward psychological effects which spring from eunuchism are not stamped on the consciousness of the orchidectomized.

Now to our defense of orchidectomy. It begins with a presentation of certain medical facts that serve to back up our position.

> Carcinoma of the prostate is one of our most serious urologic problems and is difficult of early diagnosis, without which there is little hope of cure. It is not only a frequent but a fatal disease. The life expectancy according to Dr. Keyes, for patients under fifty years, from the first symptoms to complete urinary retention, was six years, four years for those under sixty and two years for those whose first symptoms appear after sixty. The incidence of malignancy in our hands is, roughly speaking, around 20%.[25]
>
> In carcinoma of the prostate the tumors are capable of penetrating into the bladder or into the rectum with resulting ulceration and infection. Metastases are usually abundant, particularly in the bones. The almost complete destruction of the bone-marrow leads to an extreme anaemia.[26]

Metastases produce excruciating pain. Thereafter narcotics in ever increasing amounts are a daily necessity until the effectiveness in producing analgesia wanes and life becomes a living death.

So heavy is the hand of death upon the victims of prostatic carcinoma at the time they reach the surgeon that their condition is tragic. Many are inoperable. The areas of metastic involvement are so large as to preclude any radical surgery. Many have intolerable pain. Many have been daily drugged with huge doses of morphine. Many must be regularly catheterized. Many suffer from large amounts of residual urine. Orchidectomy then is done with the purpose of relieving such unbearable conditions and thereby saving life, at least by prolonging it.

The paramount obstacle to a moral justification of orchidectomy is created by the excision of a perfectly sound organ or by the inhibition, at least, of the perfectly normal functioning of an organ bestowed upon man, not for his specific good only, but also for the general wel-

[25] Robertson, in *Jour. Med. Assoc. Georgia*, Oct., 1942, p. 386.
[26] McCallum, *Textbook of Pathology*, pp. 1103–4.

fare of the human race. The removal of an organ or the inhibition of a vital function moralists designate as a mutilation. The principles which regulate mutilation focus, as a rule, upon resections of pathological parts which by their very disorder create a peril to life. But here we are confronted with a normal part, which, moreover, is functioning normally. How justify such surgery? We turn to moralists old and new for counsel.

For solution of the present problem all moralists rely upon the principle, *pars propter totum*, which paraphrased signifies that the various parts of the human frame exist for the good of the whole organism; whence the conclusion that any individual part, if it become a menace to the whole body, may be sacrificed to the good of the whole. Now, the part may become a menace to the whole first, by reason of its intrinsic pathological state, or secondly, by force of extrinsic circumstances. As the latter condition of extrinsic circumstances bears directly upon our problem, there is every reason here to examine it more in detail.

At this juncture there comes to mind the classical example used by De Lugo to illustrate the point we are making. He tells of a tyrant who bids a captive either to cut off his hand or suffer death. May the captive do the bidding of the tyrant and so mutilate himself? The answer of De Lugo is in the affirmative, with this reason adjoined:

> All [moralists] concede the lawfulness of the action when a man imprisoned by a tyrant and held in chains can escape death in no other way than by cutting off his hand to which are attached the chains. Now it matters little whether this amputation becomes necessary as a result of the purpose and command of the tyrant or independently thereof, since in either case the amputation must be done to escape death.[27]

Modernized, this incident changes its circumstances to a railway, an oncoming train, an unfortunate victim, a foot wedged in a fork of the tracks.

But De Lugo continues to develop the basic ethical concept back of his example and in so doing hits upon an illustration quite apposite to the matter in hand.

> For in both the aforementioned examples, a prudent management of the bodily members to conserve life dictates the amputation of one member to preserve the

[27] *Disputationes Scholastici et Morales* (ed. Fournials), VI, 53–54.

others and thereby save life itself. Nature too, as some inform us, does the same in the conduct of an animal known as the beaver. This animal, which huntsmen pursue and kill for its health-giving privates, will, when escape is impossible, bite them off and fling them to the pursuers, who thereupon cease from the chase. And thus by the loss of one member the beaver purchases life itself.[28]

Now whether any animal so behaves is of small moment. What counts heavily is the principle exemplified in such behaviour.

De Lugo maintains that all moralists of his period permit a man whose hand or foot is chained to amputate it in order to save himself from a fire or an attack of a wild beast. Moralists today do not differ from De Lugo and his contemporaries. For in this sense speak Aertnys-Damen,[29] Marc-Gestermann,[30] Loiano,[31] Vermeersch,[32] Noldin,[33] whose works offer us a cross section of modern opinion. There are some, however, like Prümmer, who dissent from De Lugo in allowing a captive to amputate his hand at the command of a tyrant who would otherwise have him put to death.[34] But for the purpose in hand we need not enter into this dispute, as it centers about the co-operation of the prisoner in the sin of the tyrant and does not directly concern the principle at stake. All that concerns us is to know that there is a common moral teaching to the effect that a sound member may be amputated, when, owing to extrinsic circumstances, that part becomes a menace to life.

Moreover, some modern writers treat of a case which approximates, if it is not identical with, the matter of our inquiry. Vermeersch, in unison with all moralists, outlaws vasectomy done for eugenic reasons. Yet he would allow the operation if vasectomy could restore to normal a man vexed with abnormal lusts.[35] Upholding this opinion are De Smet,[36] Creusen,[37] Wouters,[38] Jorio,[39] Payen.[40] Naturally the approval of these writers is qualified according to the efficacy of this

[28] *Loc. cit.*
[29] *Theologia Moralis*, II, n. 567.
[30] *Institutiones Morales Alphonsianae*, II, n. 767.
[31] *Institutiones Theologiae Moralis*, II, n. 382.
[32] *Theologia Moralis*, II, n. 246.
[33] *Summa Theologiae Moralis*, II, n. 328.
[34] *Manuale Theologiae Moralis*, II, n. 116.
[35] *Theol. Mor.*, II, n. 323.
[36] *De Matrimonio*, n. 441.
[37] In Vermeersch, *Theol. Mor.*, II (ed. Creusen), n. 299.
[38] *Man. Theol. Mor.*, II, n. 527.
[39] *Theol. Mor.*, II, n. 195.
[40] *Déontologie médicale d'après le droit naturel*, n. 345.

operation to accomplish its set purpose. But whether or not such a purpose be thereby obtained is to us a matter of unconcern. What we wish to stress is the fact that these authorities permit perfectly sound organs which are functioning normally to be sacrificed for the good of the whole organism. And Bonnar approves of ligature of the vasa for enlargement of the prostate.[41] Ligature certainly would not shut off the supply of androgens, for hormones are carried to other organs by the blood stream.

But here it may well be asked whether vasectomy for prostate cancer need rely only upon the argument drawn from extrinsic necessity. Is there not likewise an intrinsic necessity which justifies the excision of the gonads? The point is this. Androgens are not a cause *per se* of carcinoma of the prostate. They are, however, a cause *per se* of stimulating the growth of the prostatic epithelial cells, so much so that both the overgrowth of these cells and their invasion into adjacent organs depend for continuance on the stimulation of these androgenic hormones. For while the cancerous cells have within themselves the potentialities of overgrowth and invasion, yet they depend for the actuation of these potentialities and especially for their continuous functioning upon the supply of androgens forthcoming. Now, it is quite evident that such overgrowth and invasion constitute a serious menace to life. We may, therefore, set up the following argument: A "continued" overgrowth and invasion of cancerous cells is a menace to life. But androgens cause this "continued" overgrowth and invasion of cancerous cells. Therefore androgens cause a menace to life. Herein seems to be verified in all its force the old adage, *causa causae est causa causati.*

But—and the objection challenges attention—does the suppression merely of the gonadal supply of androgens save life? The force of this question lies in the fact that there are extra-gonadal sources of androgens.

Clinical studies of patients with several types of tumors of the adrenal cortex and observations on rodents have demonstrated that androgens are formed in varying amounts in extra-gonadal sources, especially in the adrenals; thus castration in the guinea pig is not accompanied by complete regression of the accessory sex glands and pre-pubertal castration of the rat does not greatly interfere with the

[41] *The Catholic Doctor*, p. 86.

pubertal development of the prostate until the animal is thirty-five days or more of age. In cases in this series (Huggins') in which the results of orchidectomy were unsatisfactory, was enough androgen produced in extra-gonadal loci to activate the carcinoma? This question cannot be answered at the present time.[42]

The problem of extra-testicular androgens has been met by injections of estrogens which have the power of inhibiting prostate secretions. "In senile dogs with spontaneous cystic enlargement of the prostate, castration or the controlled administration of estrogens eliminates prostatic secretion and produces prostatic atrophy."[43] "Androgenic activity may be suppressed chemically by the administration of estrogens or by surgical or roentgenologic castration."[44] In several of the studies cited in the present paper, estrogens were employed only as an adjunct treatment to orchidectomy. Thus Huggins used stilbestrol to relieve annoying hot flashes, to reduce further the levels of acid phosphatase, to offset the injections of androgens. And Ballinger and McDonald state, "In addition to castration, estogens were administered in the form of stilbestrol one mg. daily."[45]

The beneficial effects of castration upon the victims of prostatic cancer are extremely startling, so much so that staid, scientific medical literature abounds in such adjectives as miraculous, spectacular, very spectacular, astounding, and other equally extraordinary superlatives, as one may see at a glance in the *Journal of Urology* for December, 1942. In more scientific language the effects of orchidectomy are thus summed up by Huggins:

> Amongst the changes following upon orchidectomy are increased appetite and relief of pain. These effects are often seen within several days. They result in gain in weight and return of anemia to normal. Frequently there is a decrease in the primary tumor so that the hard, nodular, craggy prostate becomes smooth and soft and decreases markedly in size. Frequently changes occur in the bony metastases on roentgenographic examination; usually the lesions undergo increased calcification within several months. This increased density is often followed by a stabilization in growth or by disappearance of the metastases to X ray examination.[46]

Nor does Huggins omit the ill effects of orchidectomy. "Certain undesirable symptoms also occur, notably abolition of the adult sexual

[42] Huggins et al., in *Arch. Surg.*, Aug., 1941, p. 221.
[43] *Ibid.*, p. 211.
[44] *Jour. A. M. A.*, July 18, 1942, p. 951.
[45] *Ibid.*, p. 384.
[46] Huggins, in *Chic. Med. Soc. Bull.*, Feb. 20, 1943, p. 460.

capacity and the onset of hot flashes similar to menopausal changes in women."[47]

Little has thus far been reported of roentgen ray, the third method of treatment in carcinoma of the prostate. Nor is the reason for this any but the most natural; for X-ray therapy of this disorder has not won to its side many adherents. True, Munger, an outstanding advocate of roentgen ray, has reported a considerable degree of success in patients under his care. But the experts in this same field seriously challenge the effectiveness of irradiating the gonads. They vigorously maintain that the interstitial testicular cells which elaborate androgens are radio-proof, that is to say, X-ray resistant. But fairness demands that Munger himself be heard on this topic.

Following the clinical presentation last year I was rebuffed by certain X ray men, various pathologists and certain urologists whose chief counter was 'testicular irradiation has no effect upon the interstitial cells.' Be that as it may, and I am not in a position as yet to state how much effect organically there is upon the interstitial cell of the testicle through irradiation, but I can say with all certainty that if the interstitial cells are the station from which emanate that factor responsible or related to the establishment of carcinoma of the prostate then I say, gentlemen, X ray does have some effect basically, at least, upon the functioning of the interstitial cells. Surgical castration certainly removes the testicle and thereby the carcinogenic factor within the testicle, stilbestrol does definitely depress this factor within the testicle and in eighty-five percent of cases irradiation seemingly stabilizes or reverses the process. I believe all the factors involved are still unheralded. I believe that the biochemists may show us the answer to this problem.[48]

Until irradiation of the gonads, as a therapy for prostatic cancer, is established upon better evidence and receives as a result a scientific accolade, we feel that ethical approval of it must be withheld. For it produces certain sterilization but only doubtful arrest of the cancerous growth. Hence it appears, in contrast to estrogens and orchidectomy, as a doubtful remedy and as such it cannot merit ethical preferment over estrogens and orchidectomy. And here a last word on the whole subject, a word most welcome, as it comes from a deservedly recognized specialist who spoke at the June, 1944, convention of the American Medical Association.

Radiation in small doses in conjunction with administration of these chemical substances will control pain to some extent. Radiation of the pituitary in one

[47] *Loc. cit.*

[48] *Jour. Urol.*, Dec., 1942, p. 702.

instance failed to modify favorably the course of the malignancy. Radiation of the adrenals has not been attempted to date. The procedure which will in most instances insure the most rapid favorable effect on the malignancy is castration. The plan for the most prolonged satisfactory control of the malignant process consists of castration and the subsequent symptomatic administration of the aforementioned chemical substances in as small dosage as possible.[49]

Conclusions, from an ethical standpoint, as regards recent treatments of carcinoma of the prostate:

1) Estrogens should be employed first. 2) If estrogens prove ineffective, all ethical objection to orchidectomy ceases. 3) If further scientific evidence proves orchidectomy with subsequent use of estrogens the most effective way to prolong life, then orchidectomy may be employed first with a subsequent use of estrogens. 4) If further evidence bears out Huggins' claim that a protracted use of estrogens alone is carcinogenic, all ethical objection against the immediate use of orchidectomy disappears. 5) X-ray treatment of the gonads is ethically objectionable.

[49] William P. Herbst (by permission).