RESULTS IN RADIOTHERAPY.*

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DETROIT.

Radiotherapy is, perhaps, the most important therapeutic agent in the history of dermatology. Its possibilities are at present far beyond human conception, as its influence on heretofore incurable diseases is now beyond experiment and is recognized and applied by some of the most careful investigators in the profession.

We are to-day obtaining more perfect results in many rebellious deforming skin affections than have ever been obtained by any other therapeutic appliance. The field which has awakened the most widespread interest, and gained the confidence of the profession, has been its influence on cancer.

The purpose of this paper is to assist in outlining its field of usefulness by giving a full report of my first fifty cases of cancer, personally treated by the rays, with clinical observations and management. As there is no standard of technic to guide the operator, such reports, coming at this time from different operators, from different parts of the country, should be of great value.

Electricity, we all know, has been in the hands of the quack for some years. We must now seek to prevent the abuse of this new, wonderful therapeutic agent, the *x*-ray, in recognizing and accepting the work only of earnest and conscientious men in this line, and by co-operation in exchanging reports of our work.

When we hear a statement coming from surgeon or general practitioner that the radiotherapist is still at sea regarding the true field of this therapeutic agent and results obtained, we feel now that we are able to prove to the contrary. Until now, however, merely an extension of time has been asked to determine whether or not the results are merely temporary.

In reporting these first 50 cases of cancer, it is only fair to the treatment to state that out of this number 38 were absolutely grave, inoperable, recurrent cases, so conceded by reputable surgeons, 13 were sarcoma, 6 lymph-sarcoma, and 7 osteo-sarcoma; 37 carcinoma, 19 of which were epithelioma. The results of these cases can be summed up, briefly, as follows: With the exception of 8 cases which are still under treatment, one year has elapsed since the rest were discharged, those living to date being constantly under observation or in communication.

Cases ending fatally.....	10
Cases discharged unimproved, treatment discontinued.....	5
Cases referred for operation.....	4
Cases improved and still under treatment.....	8
Cases referred to other operators.....	4
Cases discharged, clinically cured.....	19

The ages of the patients ranged from 18 to 84; 19 females; 31 males.

CARCINOMA.

In summarizing the clinical results, many conclusions may be deducted, if cases are classified, as:

First, carcinoma, or deep seated. Of this group 13 were of the breast, 1 uterine and vaginal, 1 intestinal, and 2 rectal.

All the breast cases, except one, were recurrent, either in the old scar or the remaining breast. They were considered hopelessly inoperable. Complete disappearance of the growth occurred with the rays alone in 3 cases, and combined with the rays and knife, 2 cases; partial disappearance or reduction of growth in 5, and no per-

ceptible reduction in 3. Pain completely relieved in 6; temporarily relieved in 3; no pain, 4. Clinically cured and discharged, 5; in 2 of which a slight recurrence has appeared, after one year, and this again subsided after another short course of treatment. Ending fatally, 3; unimproved, 1; referred to other operators, 2; still under treatment, 1.

While I can from this group of cases report only 5 clinically cured—2 of which after one year have had slight recurrence—yet even this very small percentage in a class of hopeless cases, to me is most encouraging.

Conclusions drawn from this group of carcinoma of the breast, so treated, are, first, relief from pain; in a large percentage of cases when beginning treatment, patients are often requiring increased doses of morphin, when, after but few irradiations, pain is relieved in the most severe cases, and opiates no longer required, demonstrating a most powerful therapeutic action, an action influencing deep seated and superficial pain alike, and the afflicted patient thereby spends the last few days or months in comfort, compared to the untold suffering heretofore experienced with such growths.

Secondly, in an, as yet, uncertain number of cases the growth or cancer mass diminishes in size and disappears, the patient gains in flesh, feels perfectly healthy and is discharged clinically cured.

Third, malignant conditions of the breast, pathologically the same, do not react the same to the rays. More light must be thrown on the etiology of cancer and much, I think, depends on the resistance of the normal cell structure.

Fourth, metastasis occurs in a large percentage of these cases, whether neglected, operated on or irradiated. Cases in this group have been under ray treatment for six months and more, with no metastasis taking place as far as can be clinically ascertained.

Fifth, combined operation with the rays, in cases that would otherwise be considered inoperable, offers encouraging ground for work. I have in this group one case clinically cured to report. Treatment of two weeks' irradiation before operation and continued treatment as soon as the wound is solid enough to permit. In these cases large open surfaces can be safely left to granulate, and be rapidly healed with a soft scar that offers more resistance than does the complete closing of the wound with great tension on the integument, limiting the motion of the arm, which often exists in a complete Halstead operation.

Toxemia may occur, though I have found it the exception with most of my cases. Its occurrence depends on the resisting power of the patient, the age, the extent of the area irradiated, etc., etc. After few treatments this group of patients will complain of slight headache, chills, slight temperature, and, in some of the mixed infections, it is possible to cause a sudden decline and, if treatment is continued, death may be hastened by the systematic toxemia. On discontinuing treatment the patient, in from twenty-four to forty-eight hours, will gain strength, and treatment may be renewed. It is in this class of cases that metastasis may be hastened, because of the low vitality or normal cell resistance and great overloading of the excretory system. Symptoms such as just enumerated have been observed in non-malignant conditions, such as mixed tubercular infection, scleroderma, etc.

I believe in this group of carcinoma, or breast cancer, we should still continue an impartial study, limiting our cases to those inoperable, and after operation as prophylactic. We can not as yet encourage a patient with a

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localized malignant growth, which is operable, to waste, perhaps, valuable time in trying to effect a cure with the rays. However, there are cases coming to us, as radiotherapists, with such localized operable conditions who will never submit to the surgeon's knife. Such cases have existed before the rays, and to such cases the treatment offers both experiment and hope.

In carcinoma that have been previously operated on and microscopic examination of the growth made, after a series of ray treatment distinct and characteristic changes are seen to have taken place, due to ray treatment only. Such specimens have been submitted to the pathologist, with no history of the treatment given, and he has reported an unusual condition, marked degenerative changes in the cancer cell were apparent, with an obliterating endarteritis present. There were also changes resembling active repair going on in the edges of the growths, with enormous increase in fibrous connective tissue.

In just this field much is hoped for in some pathologic growths. It is possible to change the character of the growths and render them less malignant, and through radiography assist the pathologist in discovering some yet obscure field of research as to the cause of cancer.

SARCOMA.

In this group of cases there were 13; 7 were osteosarcomata; 6 lympho-sarcomata; 11 were males; 2 females. They ranged in age from 18 to 68.

In 9 the growths were located in the neck, or on the jaw; 1 on the sternum; 2, the orbit; 1, the ribs. Without exception, all were inoperable, grave, recurrent cases.

Three discontinued treatment, 2 are still being treated, 1 was referred to another operator, and 6 ended fatally. One was discharged, clinically cured, but after four months a rapid recurrence took place with metastasis and death.

In all of the cases reduction of the growth occurred. Large osteo-sarcomatous tumors diminished, each week careful measurements being made.

Relief from pain, also, resulted in every case where metastasis had not taken place, or in cases where post-mortem showed that the growth treated was only secondary to extensive involvement of the bodies of the vertebrae.

From this group of cases so treated, we have given great relief from pain, caused reduction of growth. One case is still under treatment, involving the orbit and jaw. It has been twice operated on; it was referred to me with a slight recurrence in the roof of the mouth, on side of the nose and orbit, with enlargement of glands of the neck. This recurrence has been set back, and the glands have been emptied four different times. The patient goes about, doing light work, in practical comfort.

With the treatment in this group of cases, I feel that a lengthening of the days of the patient and giving him comparative comfort, have been accomplished. My experience with these cases has led me to the conclusion that a combination of the rays and some assisting serum, perhaps Coley's, or, if operable, an early operation combined with these will produce the best results.

EPITHELIOMA.

In this superficial carcinoma we can claim much in advance, with treatment and results over those of the past. In the 37 cases of this carcinoma, 19 are of the rodent ulcer type; all males excepting 2, and ranging in age from 38 to 84. A large percentage occurred in the face and neck. Of this group, 1 ended fatally, 4 im-

proved, but were unable to continue treatment, 2 were referred for operation, and 12 were clinically cured.

This percentage can be equaled or excelled in this variety of carcinoma by many present, and in a large number of cases we must admit that superficial epithelioma has been, and is still being cured by long tested methods of treatment; yet the results obtained by a combination of the ray treatment, with curette or mild arsenical paste, far surpass those of any other known treatment. With a curette, I removed the elevated hardened borders of the lesions, as they will not react readily to the ray. This is a great saving of time to both patient and operator. But there are cases located about the eye, where the ray alone must be depended on, and in such cases this treatment is, without exception, the best therapeutic agent. It is painless in its action, and not only does it eradicate the disease, but so nearly perfect are its healing powers, that the disfiguring scar is more nearly the color of the normal skin, making the scar less apparent.

In treating this disease with the ray, I believe it is necessary to give the longest exposures that can safely be given, to gain the promptest and best results, for it seems possible, with mild treatment, to stimulate growth, and, if long continued, to cause the disease.

Epithelioma about the eye can be safely treated without permanent injury to sight. Conjunctivitis may re-result, but my experience has been that it readily subsides.

The most obstinate variety of this disease has been that involving the lip, and in many cases after reaching the burning point with the ray I have turned the cases over to the surgeon for complete removal. None of these cases have recurred, and eighteen months have elapsed since some have been discharged. Therefore, with the deep-seated variety of the lip, I think a few weeks' treatment with the ray preceding operation, the most advisable. As has been our past experience, with other treatment, epithelioma of the mucous membrane and that merely of the skin are two far different conditions.

Good results with the ray alone have been obtained in only the superficial variety of the lip. Thus far this treatment of the epithelioma has more to offer by way of effecting a permanent cure than any other known to me.

LUPUS.

My observations in lupus, here reported, will be of 12 cases, covering a period of time from November, 1900, to Jan. 1, 1903. My first case was reported Feb. 6, 1901 (*Medical News*), treated and cured by the ray alone.

While my experience has been the same in this disease as that of other operators, I report these cases especially to show the permanency of the results, as some have been discharged more than two years.

Of the 12 cases, 5 were males, 7 females; ranging in age from 14 to 74. Six were located in the cheeks; 2 the ears and auditory canal; 1 each on the nose, temple and hand. They had existed from one to twenty-one years.

Of this group, two are still under treatment, one of whom has large areas of the skull bare, and, while much improved, can never be completely cured. The general health of the other case will not permit continuous treatment. Ten of the number have been discharged, clinically cured; no other treatment than the rays being given.

From six months to two years and a half have elapsed since cases were discharged, with recurrence in but

one case. This, under treatment, healed so rapidly that the scar was not properly nourished, therefore the lesion broke out again, but responded readily after but few treatments. All cases are still living and under observation. Eleven of these cases were lupus vulgaris; one erythematosis.

I am, in a measure, warranted in passing final judgment as to the permanence of the cure of this group of cases, in which 93 per cent. occurred in the first two years' work, and, from the far-reaching, slow, natural, healing effect and the beautiful appearance of the scar, which, as a rule, more closely resembles the normal skin than any other scar, certainly this treatment offers more satisfactory results than all other forms of treatment.

ACNE.

In applying the rays to this disease, it has been only in cases of the indurated pustular form, in blonde individuals, which had resulted in disfigurement and pitting of the worst type, that were rebellious to all other treatment.

In this class of cases I have had most gratifying results. There has been not only a freedom from scarring of the new lesions, but if the treatment is carried to the production of an erythema and stiffening of the skin, the peeling which follows will aid in the removal of pits and scars from old lesions. If properly given, this treatment, in my opinion, far surpasses any other in chronic forms of acne. There has been no recurrence in these cases, and no damaging change in the skin structure and, after the desired result has been obtained, I have simply given the patient instructions regarding diet and exercise.

HYPERTRICHOSIS.

Early in my work I experimented with two cases in treating this disease, and have long since discontinued to so treat others, because of the length of time required to safely remove the hair without disfiguring the face; and a recurrence in both cases. While a great deal was gained in using this treatment, as the second growth was only about one-third of the first and was much stunted and bleached (both were brunettes), and the second series of treatments practically removed all hairs, still the danger to the patient and the time it consumes tends to discourage its use along this line.

KELOIDS AND OTHER BENIGN GROWTHS.

In keloids and other benign growths I will cite only one, that of keloid recurring after three operations for its removal, in the scar and stitch holes. After the last operation the incision was held together with oxid of zinc adhesive plaster. Yet, in one week, after apparently perfect healing of the incision, keloids rapidly developed, widening the scar, which was highly colored. Gradually erythema was produced by the ray and keloids were completely carried away, and after erythema had subsided scar became color of the surrounding skin. More than one year has elapsed since case was discharged, and there has been no recurrence.

In this variety of growths, and also verruca, both hard and soft, I have yet to treat a case that has not been as gratifying in its result as the one whose history I have just given.

ECZEMA.

The few cases I have treated have been chronic infiltrated forms of this disease, located on the hands, and the results have been thus far most encouraging. Mild irradiations produce quick reaction of a stimulating nature, then, if treatment is discontinued, in-

filtration is rapidly reduced. This variety of cases, treated with a combination of the rays and other local applications produces better results than with the ray alone.

SYCOSIS.

My results with sycosis of the most rebellious type, with multiple follicular abscesses, that has baffled all other treatment before the action of the rays was known, have been far beyond my expectations. After but few irradiations abscesses promptly disappear, inflammation subsides, hair falls out and a perfectly smooth, normal skin appears where so long the chronic inflammation had existed. In a few weeks a new growth of hair is seen, with no return of the disease. Parasitic and non-parasitic sycosis is affected alike.

The rapid cell proliferation, produced by the ray, led me to believe it might be used to prevent the ugly pitting which follows smallpox. The cases selected were severe ones, during an epidemic in our city, and irradiations were given as soon as possible after their discharge from the hospital, before all inflammation about the affected area had subsided. The patients were all females. In producing a gradual erythema, epithelial cells rapidly filled the forming pit, and soon they were heaped above the normal skin. With mild irradiations for a period of three weeks, until erythema subsided and peeling took place the characteristic scar was rendered so nearly like the normal skin that it would be difficult to discover any trace of the disease.

SCLERODERMA.

Another interesting disease treated by the rays was of scleroderma, and the only one in my experience so far. It occurred in my hospital work.

CASE 1.—A young man, 22 years of age, of Irish descent, general health always good. His barber discovered that the skin of his face had no elasticity, and a general examination was made.

The same hardened condition was found to exist on neck, arms, chest and abdomen.

When he was admitted to the hospital the patient could not smile or turn his head. The case excited the interest of nearly every member of the staff.

Treatment, as first outlined, was inunctions of olive oil, tonics, and thyroid extract. These were given for weeks, with apparently no improvement.

Ray treatment was then suggested. The arms were first irradiated and after few treatments the thickened and hardened skin began to separate from connective tissues. New locations would be tried, with the same results, though there was a slight tendency toward recurrence in location first treated, yet never to the extent of the first condition. After a series of three irradiations of same locations, the patient was sent to a warmer climate and resumed work. If any recurrence appeared it was very slight, and remains so to date.

In this case marked malaise could be produced by exposing large areas to the rays to such a degree that the patient would be confined to his bed, but after a discontinuance of the treatment for three days would again be active and treatment was resumed.

NON-DERMATOLOGIC.

In the general hospital work the ray treatment is becoming of great value, a most powerful general tissue stimulant, for all forms of retarded healing, sloughing flaps after amputation, varicose ulcers, painful bone conditions, painful adhesions after abdominal operations, etc., etc. Old chronic ulcers that have existed for years can be assisted to rapid healing with no other treatment and but few irradiations.

TUBERCULAR GLANDS OF NECK AND OTHER LYMPHATIC ENLARGEMENTS.

There were five cases of tubercular glandular enlargement of the neck which occurred in cases with distinct tubercular history. Three were absolutely inoperable, because of the extent of the glands involved, and two had recurred after operation.

CASE 2.—The first was a male, 21 years of age. He had been operated on five times in five years. The glands enlarged in February of each year. He was referred to me by the surgeon under whose care he had been. At this time glands had developed in the wound of the last operation before healing had taken place, with other enlarged glands on both sides of the neck; two were discharging sinuses, and there were ugly scars from previous operations. After a few weeks' treatment with the ray, the glands emptied completely, wounds healed promptly, sinuses closed and scars of five different operations were almost completely carried away and bleached the color of the normal skin. The patient has passed his critical season; this year (the first time in five years) absolutely free from any recurrence.

CASE 3.—Another operable case was that of a female, aged 24, suffered with a discharging gland, also an ugly scar, attached to the hyoid bone and made more conspicuous by the motion in swallowing. After six irradiations, a strap of adhesive plaster was placed over the gland and sinus to prevent motion and opening of the sinus. Healing took place in six days. Six months have elapsed since this treatment was given, and there is, as yet, no sign of recurrence.

In the other operable cases, after ten days' treatment the glands were completely reduced.

In the two inoperable cases, the necks have diminished about two-thirds in size and, as they have caused no further trouble and both patients are at work, they do not see the importance of further treatment, so it has been discontinued.

My experience with these cases has been as gratifying as with any disease yet treated. If such glandular enlargements can be slowly emptied in nature's own way, radiotherapy may have the preference over operative interference, removing some of the glands, thereby throwing more work on the remaining ones, which are more liable to become enlarged.

TUBERCULAR JOINTS.

CASE 4.—There are two cases under this head which I would like to report. One, tuberculosis of the knee joint, with tubercular history and other tubercular complications. The condition had existed for four years. There was thickening and induration of the joint, distinct rice bodies in a small amount of fluid could be felt. Patient was able to get about for only a short time, when the leg would give out completely.

With intermittent periods of a week, irradiation was continued through five months, when patient was discharged clinically cured; deposits were all carried away, except slight thickening; pain and tenderness completely relieved, and the patient was able to get about all day without discomfort. He had had everything in the way of treatment, except resection.

CASE 5.—The other case was one of tuberculosis following an injury to the bones of the hand. Large areas of dead bones could be felt with probe, and there were four discharging sinuses. With irradiation, sinuses all healed, pain and tenderness disappeared and there was fairly good motion. Patient was constantly watched by his surgeon, who was ready to scrape the bone, but this was not necessary.

Dr. John B. Murphy of Chicago reports similar cases, with good results, in tubercular granuloma, or Pott's disease.

One other result in radiotherapy and a condition which has caused probably all of us more or less anxiety is dermatitis or burn.

In many of the rapidly recurrent cases of cancer the best results are obtained by powerful stimulation, even burning if necessary. A year ago I was giving such cases only one short exposure a day, while now I give two shorter treatments daily for a week or ten days. In treating such a patient it is necessary, in fact most important, that he be told at the start what to expect, so that he may be prepared when the dermatitis appears and not be frightened into giving up the treatment and consulting another physician who is not familiar with the action of the ray. The news of a terrible burn soon spreads, and injures your reputation as an operator, when, in reality, the result obtained is the desired one. This case, I am happy to state, was not one of my own, but was referred to me for diagnosis.

The patient was a male, 74 years of age; general health, good; no history of cancer in family, but gave history of blood poison, resulting from the prick of a rose-thorn, on the hand. After acute symptoms of poison subsided, the wound refused to heal, though a similar lesion on the leg healed promptly. He was advised by a surgeon to have the rays applied to the ulcer, then about the size of a half dollar. Long exposures were given, and after the fourth, dermatitis appeared, and lasted a month, with slight improvement in the ulcer. Treatment was resumed, and after the eighth exposure dermatitis again occurred. The hand was greatly swollen, and very painful, with a gradual increase in the size of the lesion and increased pain.

The patient was first brought to me Dec. 14, 1902. The hand was then photographed. The ulcer had no appearance of epithelioma. It looked most healthy, with bright, shelving edges. There were areas of bone and tendon exposed. The condition of the skin about the ulcer was that of dermatitis, broken and parched in appearance. A static production of the ray ten inches from the ulcer produced almost instant irritation. Amputation was advised, and the patient made a good recovery.

Microscopic sections were taken from different areas of the ulcer. These revealed squamous epithelioma, with most unusual increase in the fibrous tissue which the pathologist attributed to the action of the rays and the condition, to him, was a new one.

I deem this case idiosyncratic to the rays. The mildest medication caused instant burning.

There was no sugar in the urine, and from previous history, clinically, it was not an epithelioma.

In conclusion, conditions demanding a long series of treatment with the rays, overstimulation invariably occurs if periods of vacation are not given. It develops in the old and paralytic more quickly than in the middle aged or young. The most gratifying results may be obtained in radiotherapy by the operator who carefully studies his apparatus, the tube he is using and the effect of the ray on his patient; yet, on the other hand, if he neglects this strict attention to every detail, or leaves his work to an inexperienced assistant, disappointment and failure will be the outcome.

DISCUSSION.

DR. C. E. SKINNER, New Haven, Conn.—Dr. Varney's paper and the conclusions he deduces from a clinical experience which accords very closely with all who have been using the x -ray in these conditions are very valuable. There is no point on which I saw occasion to disagree with him, but he did not mention the effect of the x -ray on the healing process in fresh operation wounds. As a rule the x -ray is considered stimulating to fresh wounds, but occasionally we get cases where the action would appear to tend toward retardation of the healing process. Two such have come to my notice. One was an amputation of the breast for fibrosarcoma, where we also removed the axillary glands which were involved. The rays were applied immediately after the operation, and after about

four applications the tissues took on a dark appearance resembling gangrene. The rays were immediately suspended and not applied again for two weeks. Meanwhile the clots which had formed under the flaps did not absorb, and it was necessary to take out some stitches and remove them. It took this case three weeks to heal when it should have healed in ten days. Another significant case was related to me by Dr. M. M. Johnson, Hartford, Conn., who had a patient with a carcinoma of the breast, which he rayed for three weeks previous to operation. At the time of operation he observed that blood did not spurt from the arteries as it ordinarily does, but merely flowed, as when a vein is cut. All these facts are significant of the conclusion that the *x*-ray exercises an influence on the circulatory function whereby the blood supply is lessened, and whether or not we are sometimes going to get into trouble with gangrene when we ray freshly-cut surfaces I think is a problem worth bearing in mind.

I would like to contribute a little to the therapy of the *x*-ray by exhibiting some photographs of a case of ichthyosis, occurring on a boy aged 15. When he was two weeks old ichthyosis began to appear and has been present ever since, the areas affected having increased. The case came to the clinic of the Yale Medical School and was exhibited before the New Haven Medical Society by Professor McDonald, the dermatologist of the institution. My assistant in radiotherapy, Mr. William W. Herrick, New Haven, was present at the meeting and saw the case. It occurred to him at once that if the *x*-ray could influence malignant epithelioma, would it not also be capable of influencing benign epithelioma. Professor McDonald consented to the trial being made and Mr. Herrick rayed one hand while Dr. McDonald treated the other hand with green soap. This treatment was begun about ten weeks ago. Mr. Herrick will report the case in full later on. The credit for the conception of the idea that the *x*-ray might be of benefit in this case and for the work actually performed belongs to him. But he has courteously permitted me to bring the case to your notice at this time.

The photographs show the conditions before and after treatment. The layers of scales on the hands and feet were half an inch thick. The right hand was rayed, the left hand treated with green soap. The back of the right hand is now perfectly normal, the scales have entirely disappeared from the backs of the fingers and the greater part of the inside of the hand. In the left hand, treated with green soap, no change has taken place except that a small portion of the scales here and there has come off. Another noticeable fact is that where the scales came off of the right hand, treated with the rays, no irritation followed, the skin appeared pink and normal and soft. Where the scales came off from the left hand, by the action of the green soap, the skin underneath was white and presented the appearance of maceration. Immediately after the sloughing of the scales on the left hand the skin which was exposed thereby would harden and crack, and the hand is now rigid. He can not use it because of the pain excited by stretching the hardened cracking integument, while the right hand is perfectly pliable and flexible. Although this case at the present time is more a curiosity than a demonstration, yet the results are significant from a therapeutic standpoint and give ground for the hope that something of use to the sufferers from ichthyosis may be gained in the future from *x*-ray therapy. I will say in closing that this is the first time within the memory of the patient that any portion of his body which was affected by the disease has become free from the characteristic epithelial accumulations.

DR. JOSEPH ZEISLER, Chicago—This subject was up for discussion a year ago, and without doubt it has been discussed since again and again. I have put myself on record with my personal experiences in radiotherapy in a paper which I read last September before the American Dermatological Association. We are living in a period when we may expect every few months from various observers comprehensive papers such as Dr. Varney's, showing the effect of the rays in all sorts of conditions. Whoever works with the rays will continually develop a justifiable enthusiasm which will prompt him to

publish his reports, and I look on the report of Dr. Varney in that light. On the whole I agree with everything he has said, and shall be the last to doubt the results he has reached. I was rather surprised to hear Dr. Varney suggest the removal of the hard edges of an epithelioma with the curette first and the use of the rays afterward. It seems to me this would antagonize the principle of radiotherapeutic measures and would turn patients from the treatment by rays, because they do not care to have a cutting operation done. The fact is, any epithelioma on the surface can be removed by the rays alone without any other measures, if the proper method is pursued. It is by no means a tedious affair. In my experience, which covers perhaps thirty cases of epithelioma of the skin, 13 to 14 applications were always sufficient to remove our epithelioma.

In regard to the cases of acne I would suggest to the Doctor that if he will extend his field of work to all sorts of acne he will be as much surprised at the result as in the indurated variety. The treatment by radiotherapy of all forms of acne has come to be my first choice. The results can not be compared to any other treatment, and it makes the internal treatment of acne almost superfluous.

I quite agree with Dr. Varney as to the difficulties in cases of hypertrichosis. At the same time I have had positive success with several cases, which have now remained free of hair for over a year. No one should undertake to remove hair with the promise that its removal would be permanent. It will return, but by repeated exposures, frequently before the new growth has started up you can keep the capillary blood vessels in a state of paresis, such as is responsible for the loss of hair.

In this connection I would point out one feature we want in future publications of this kind—not to discredit Dr. Varney's contribution but to ward off similar papers in the future. What we want from now on are reports on *x*-ray treatment after the observation of the respective cases for a year or two. Sometimes we have marvelous effects in psoriasis. I can clear any patch up in three applications, but in a few weeks the psoriasis returns. We want to know under what conditions this treatment offers permanent results. That it offers temporary results we know, but it seems to me that from now on we should only report results which allow us to look back for a period of several years.

DR. L. DUNCAN BULKLEY, New York—I wish to say that I am foolishly enthusiastic about some results I have obtained with this method. A patient in the skin hospital had her foot so affected that it was scraped a dozen times under ether, scraped down to the bone, and it would heal up for a month or two. Everybody who had seen her had tried everything they knew of for her relief, but she was crying with pain, and sometimes she used several grains of morphin, the pain was so great. A dozen or so applications of the *x*-ray cleared up everything entirely from her feet so that she could at once be up and around the clinic. It was a marvel to me. It exceeded anything I could have imagined.

I think it is interesting to mention our methods as to time, as to distance, as to the revolutions of the machine, and give some idea of the strength we use. This would help us all. I burn some few cases mildly. An epithelioma is better to be burned mildly than not. As to scraping, I think it is desirable, as it saves several applications of the ray.

DR. R. R. CAMPBELL, Chicago—Dr. Zeisler asks for data that have existed some months, and I think I can supply this as regards one disease. I believe I was one of the first to use the *x*-ray in the treatment of acne and reported some 15 cases in THE JOURNAL of the American Medical Association. Some of these cases have now gone on for almost two years without recurrence of the acne. In all of these cases all treatment other than exposure to the *x*-ray had been absolutely thrown aside and the action of the *x*-ray depended on entirely for the results obtained as reported in that article.

There is one disease in which I believe it is imperative to burn, at least in my experience it has appeared so. In three cases of tuberculosis verrucosa cutis which I have treated with the *x*-ray I could not get a semblance of a result after re-

peated exposures until I made it a point to burn. After the burn had been obtained the disappearance of the disease was very prompt. In cases of acne, of lupus, of hypertrichosis, I have not found it necessary to burn, nor have I yet produced in any patient a burn in which my efforts were not bent particularly in that direction and in which the burn was sought. As Dr. Varney has said, we must recognize the idiosyncrasies which exist in different people. This is the rule regarding the *x*-ray as well as any other therapeutic agent we may use.

In cases of epithelioma treated with the *x*-ray, which have been operated on—I am speaking of cases of epithelioma which fall into the hands of the dermatologist who finds it necessary to resort to surgical procedures—the time to institute the treatment by the *x*-ray is not after the tissue has hardened, but within two or three days after the operation has been performed. I think that is not only the case in epithelioma, but it is the case in all malignant diseases. In cases of deeper and malignant troubles, however, I question very much the ultimate efficacy of the *x*-ray. We do get temporary results. But it is a question in my mind as to whether or not we promote a metastasis, and when reaction does take place the growth goes on with a rapidity that has been unknown to us after any other procedure.

DR. G. P. EDWARDS, Nashville, Tenn.—One point touched on by Dr. Bulkley I wish to emphasize particularly, that is a more accurate technic of *x*-ray therapy. It is the custom of most of us to use our cheaper non-regulating tubes for treating these skin lesions, because they are cheaper and are not so easily destroyed. I think this is a mistake. I think we should know exactly the condition of our tube and what it is doing. In this work we should be able to maintain the same degree of exhaustion for the same class of cases. The variety of effects we are getting in these cases is not so much due to the idiosyncrasy of the case as to the idiosyncrasy of the operator in using tubes of different degrees of exhaustion. It has been my privilege to study this particular point, so when I do get a result I know how I got it.

DR. A. H. OHMANN-DUMESNIL, St. Louis—The important point in radiotherapeutics is technic, also the proper lamp glass, whether hard or soft. I have had a very unfortunate experience in the effects of radiotherapy. A young lady of Memphis, Tenn., was treated by Dr. Lassar of Berlin, and when I saw her she had an *x*-ray burn nearly healed, but with a very thin scar all over the face. She came to me to be relieved of the scar. I have seen a case where the foot had not been covered by lead in which there was an affection of the metatarsal bones. Those are cases I think it is well to speak of with this idea only, not to declaim against *x*-ray therapy, but as a reminder to all to be careful in their technic in every detail in order to avoid such consequences, which are difficult to ameliorate or make completely well, some of them requiring months and months. The case of injury to the metatarsal bones has been of nearly nine months' duration, and the man can not walk with ease yet. This is not encouraging to the use of *x*-ray therapy. You may say it shows great negligence on the part of the operator, but he should not have been negligent, and this part of the technic should not be forgotten.

DR. J. H. DUNCAN, St. Louis—I have had considerable experience with the *x*-ray treatment in my dermatologic work, and have had my share of success, not only in new growths, but in ordinary skin lesions. The longer I use the ray the more careful I am in the selection of my cases, and I am afraid if we are not careful before long the dermatologist will be relegated to the *x*-ray specialist, and the real diagnostician, the scientific dermatologist, will have to take a back seat. I hope, then, that we will not attempt to treat all of the skin lesions we come in contact with by the ray, but select our cases and rather use the *x*-ray as an adjunct to other treatment. While we know, for example, that the *x*-ray may relieve permanently a new growth, realizing the length of time it may take to produce that result, I am of the opinion that curettement with the application of a plaster, or some kind of operation, then the healing of the wound by the *x*-ray would not only facilitate matters, but would probably make a more permanent cure. I was, and am, to a

large extent, enthusiastic in this matter. I have had success in cases of acne, infiltrated thickened chronic eczemas, hypertrichosis, etc. My experience with the ray has been most gratifying in breast lesions and in the treatment of epithelioma or cancer of the lip. I have had experience in the treatment of a small affair no one has mentioned, but it was a most annoying affection. It was a case of verruca, 30 or 40 warts on the back of the hand. The result in that case was satisfactory. Of course, we would not use the ray for one or two warts, but the entire back of the hand was covered with verruca.

We can all give our experiences in these things, but let us not get too enthusiastic about the *x*-ray to the exclusion of other old and well-tried remedies.

DR. J. B. GUTHRIE, New Orleans—There is a little point in *x*-ray technic that I worked out and subsequently found mentioned, but no details given, in Williams' work. The feature of the method I refer to consists in the simultaneous use of two or more *x*-ray tubes connected to the same generating source, coil or static machine, as the case may be. I have found this procedure of especial value in the treatment of cutaneous lesions when, as is often the case, they are widely disseminated or located on opposite sides of the face, rendering treatment by a single exposure impossible. Where two tubes are run at the same time two exposures of the same patient are rendered unnecessary, for all of the diseased area receives treatment at the same time.

I have a tube stand with arms of the usual double-jointed type with two arms instead of one. Each of these arms carries a tube which is connected to the proper terminal of the machine. If we call the tubes A and B, the connections are as follows: The cathode of tube A is connected to the cathode of the generator, and the anode of tube B is connected to the anode of the generator. The anode of tube A is then connected with the cathode of tube B by a piece of flexible wire. This puts the tubes in series, and connected in this way each tube takes the current it needs and allows the excess to pass on to its fellow. It is not essential that both tubes be of the same vacuum, although the tubes operate best when this is the case. A high tube and a low one will both glow provided that the aggregate resistance of the tubes does not exceed the sparking capacity of the generator. It is necessary to use a spreader that is long enough to prevent sparking across from one wire to another. When only one of the tubes is to be used the other is short-circuited by connecting both wires leading to it to one terminal. It is sometimes desirable to have a high tube and a low one on the stand. Then when one tube is in use the other swings out of the way.

The device I have described has been very useful to me, and I consider it a time-saver. I have never utilized it to treat more than one patient at a time, but this is possible. It is most useful in skin work for the reasons I have named. I mention it with the hope that some of the members of this Section will find use for it also.

DR. J. N. ROUSSEL, New Orleans—I want to suggest the use of oxygen in the treatment of parasitic skin diseases by the *x*-ray. In my experience oxygen in spray, which we might obtain either by means of a bag of oxygen or the static breeze, accelerates the action of the ray materially in the treatment of ringworm and sycoses.

DR. H. R. VARNEY, Detroit—In reply to Dr. Skinner's inquiry as to the action on the normal tissue, I would state that as far as I have been able to determine it is a specific cell stimulant, producing a stimulation that is characteristic in itself, an inflammation that exists for days and weeks, and even months.

In answer to Dr. Zeisler regarding the scraping of the hard epithelial border, I do that in cases where they wish to gain time. I hope I have not appeared too enthusiastic; Dr. Zeisler's criticism is a timely one. In my paper I have reported only one case that has occurred in my work since the first of January. I have been operating for two and a half years and have given about ten thousand exposures.

I believe I mentioned verruca in my paper. I have had some very interesting cases in that line with very gratifying

results. They, of course, sometimes disappear like magic with no treatment, yet are troublesome in certain localities. The multiple tube I have never used, but can readily see that in aene and other conditions we would gain time with it.

Dr. Bulkley's suggestion for more knowledge regarding technic in this line of work would be of great value to us all if it could be given with some definite rule; but as operators, we all know that there is no definite dosage in giving the ray, as no two tubes produce the same ray; no two patients react the same to the ray; nor does the disease under treatment. Therefore, each operator must, to be successful, establish his own technic, by carefully studying his apparatus, the tube he is using, the patient under treatment and the disease being treated.

CLAMP FORCEPS FOR REMOVAL OF NASOPHARYNGEAL TUMORS.*

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The report of the following case is made to illustrate the advantage of having a suitable clamp to aid in the removal of nasopharyngeal tumors by the galvano-cautery and to call attention to an instrument which I believe will be found advantageous in very many cases. It would also aid in the removal of some growths by the cold-wire snare.

The patient, E. J., a young man 22 years of age, had been troubled with partial occlusion of the nares and the necessity for frequently clearing the throat for about five years. Later, there had been complete occlusion of the left naris, but the right was permeable a part of the time. There had also been frequent bleeding of the nose. The patient's personal and hereditary history gave no clew to the cause of the trouble. The thoracic signs were normal. On examination of the nares I found the right side three-fourths closed by swelling of the inferior turbinated body; the left side was free at its upper and front part, but was completely closed posteriorly by a growth in the nasopharynx.

On rhinoscopic examination, I discovered a fibrous tumor with a broad base attached to the vault and posterior part of the nasopharynx, measuring about $1\frac{1}{2}$ inches in length, and about $\frac{3}{4}$ of an inch in its other diameters. This growth three-fourths filled the nasopharynx. Its surface was smooth and marked by several enlarged blood vessels. It was hard to the touch and firmly attached, with but a slight groove at the lower part between the tumor and the pharyngeal wall, so that a wire could not be made to hold.

The left naris and the nasopharynx were anesthetized as thoroughly as possible with cocaine and through the left naris I passed into the nasopharynx and brought out at the mouth, a No. 5 soft male catheter, both ends of which were then held to the left. A similar catheter of different color was next passed through the same naris in like manner and both of its ends were held to the right. The two ends of a long No. 20 platinum wire were then introduced into the ends of the catheters that came out of the mouth and passed back until they came to the turn in the nasopharynx. The catheters were then drawn out through the nostril until the ends that protruded from the mouth were out about four inches nearer to the lips. This caused the wire to make the turn in the nasopharynx, after which both ends were easily pushed in until they came out of the catheter through the nostril. I then passed the clamp-forceps through the mouth, into the nasopharynx and crowding upward and backward grasped the tumor firmly and locked the clamp on its base. Next the loop of wire protruding from the ends of the catheters out of the mouth was carried under the handles of the forceps and drawn back into the mouth so that it must of necessity slide up behind the blades. The catheters were then removed, the wires being carefully held so they could not become crossed in the

naris. Next, these wires were slipped through the tubes of a galvano-cautery *ecraseur* and the electrode and wires were made fast to the handle. The loop was now made tight on the tumor by turning the ratchet on the handle.

I then told the patient that as we burned off the tumor it would necessarily cause pain, but I wished him to stand it as long as he could, and that I would cut off the current the instant he requested it. With this understanding, the current was turned on, the loop heated and allowed to burn into the tumor for about three seconds when at the patient's signal the current was cut off. He was allowed to rest for a minute or two and then the current was again turned on in the same way, the ratchet being tightened in the meantime. Thus I proceeded burning into the base of the tumor about a sixteenth of an inch at a time until it was completely cut off, without very great discomfort to the patient and without hemorrhage.

In this case the clamp was of signal service because it would have been impossible to engage the tumor in the galvano-cautery loop without it. I believe that the instrument will greatly facilitate the removal of many of these tumors and will make the operation more thorough, even when they might be removed without it, for with it the tumor can be secured at once and the loop of the snare, when carried under the handles and drawn back into the mouth, must necessarily engage the base of the tumor.

The nasopharyngeal clamp forceps has the general form of Loewenberg's nasopharyngeal forceps. The blades, however, are longer and much more curved. The

Author's clamp forceps for removal of nasopharyngeal tumors.

curved portion, which is two inches in length, is so shaped as to accurately fit the vault of the pharynx in the ordinary adult; each blade is protected at the back and outer side by a piece of ivory, so that a short circuit will not be made when the galvano-cautery snare is applied, and the roughened faces of the blades are each provided with four short sharp spikes to prevent slipping. When the instrument was first made the curve was not so great as at present and the blades were not provided with the spikes. I found that it did not accurately fit the vault of the pharynx, and furthermore, that it would slip when the tumor was grasped. The present form appears to meet the conditions perfectly. The handles are provided with an arrangement for locking, similar to that used with many other forceps.

34 Washington Street.

Sudden Blindness After Paraffin Injection.—Dr. Lee Maidment Hurd reported to the Section on Laryngology and Rhinology of the New York Academy of Medicine on May 27 a case in which there had been instant loss of vision following a paraffin injection for nasal deformity. The patient was a man of thirty-three years without any history of syphilis, whom he had given, some months previously, two or three injections of paraffin with the object of improving a nasal deformity. The man returned requesting another injection, and while this was being given he became blind. Ophthalmoscopic examination revealed the typical appearance produced by embolism of the central artery of the retina. While the possibility of this accident being a mere coincidence was freely admitted, the opinion seemed to prevail that it was directly connected with the paraffin injection. The blindness is permanent.

* Read at the American Laryngological Association, Washington, D. C., May, 1903.