XXI.

FURTHER REPORT ON THE USE OF RADIAN, THE X-RAY AND OTHER NONSURGICAL MEASURES, COMBINED WITH OPERATIONS ABOUT THE HEAD AND NECK.*

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In presenting for your consideration the material with which I have busied myself for the past twenty years or more, in other words, since X-rays, radium and other similar modes of treatment have been in vogue, I am hoping to elicit a discussion so that I may learn more.

While I am sure that I shall not be able to bring out anything new or original, I do know that I am presenting a fair amount of material, most of which is malignant disease, and unfortunately accompanied by an enormous mortality. I am further cognizant of the fact that my report is accurate although pessimistic as to the ultimate results. If reporters on malignant disease will carry out this plan they will go a long way towards progress and assist that grand society, organized principally for control of cancer.

It is only by following up our cases and repeatedly making reports upon them that any sort of statistics can be prepared.

In order to save the reader looking up my previous papers, I wish to state that in 1904 I reported on the "Use of X-ray and Radium in Cancer About the Nose, Throat and Ear" (1) with negative results. In 1907 I reported on "X-ray, Radium and Fulguration in Malignant Disease of the Nose, Throat and Ear" (2). In this report I found no result—that is, cures from these remedial agents. In 1912 I reported on the "Use of Autolytic Solution in Combination of Operations and X-ray in Cancer of the Head and Neck" (3), with encourag-
ing results in a limited number of cases. Subsequent application of this treatment (autolytic solutions of cancer) in a large group of carcinoma cases proved it to be of no specific value.

In 1914, I reported on “Carcinoma of the Larynx With Special Reference to Radium Therapy” (4), in which one case was described in detail. Extensive study was reported upon the microscopic changes of the carcinoma by the use of radium; no startling results were reported in this paper, nor any cure of extensive carcinoma.

In the same year (1914) I reviewed the entire literature for the last twenty years, of “Nonoperable Methods of Treatment of Inoperable Malignant Disease” (5), and showed in the conclusions that authentically no cures had been reported from any of these procedures, but that X-rays, radium and allied agents and chemical substances, like the colloidal, copper, silver, etc., also eosin compounds, promised results.

In 1917, I presented “Experience With Suspension Laryngoscopy in Over Two Hundred Cases, With Report” (6), in which I cited a most encouraging case of carcinoma of the larynx that apparently was cured by surgical procedure, carried out through the intralaryngeal route, by suspension laryngoscopy, and the employment of deep X-ray therapy, both before and after operation. As will be shown later, I was too hopeful in this case.

In the same year I presented two papers entitled “Further Report on the Treatment of Malignant Disease of the Larynx” (7) and “Management and Statistics of Malignant Disease of the Upper Respiratory Tract” (8). These papers were profusely illustrated, especially with case reports, many of which are again presented in this paper, because at that time many had just been operated upon, whereas I report on their subsequent course now.

The region to which I confine my treatment is the head and neck, which comprises ophthalmologic, otolaryngologic, stomatologic, oral and general surgery, as well as the dermatologic field. The pathologic conditions that I have treated are:

1. Carcinoma, epithelioma and adenocarcinoma.
2. Sarcoma.
3. Endothelioma.
4. Papilloma.
5. Angioma.
7. Fibromyxoma.
8. Neuroma.
10. Fibroma.
11. Adenoma.
12. Lymphoma.
13. Lypoma.
15. Epulis.
17. Verruca.
18. Rhinophima.
19. Leucoplakia.
20. Paraphinoma.
22. Keloid.
23. Tuberculoma.
24. Exostosis and osteitis.
25. Hematoma.

The forms of treatment employed were:
1. Surgical.
2. X-ray (surface and deep).
3. Radium (surface and deep).
4. Surgical diathermia.
5. Cautery (sprays and galvano- and electrolysis and ionization).
6. Lysins and chemotherapy.

To bring out details in the management of these various pathologic conditions, I have decided to pass in review some of the cases which I have treated and observed, selecting one case of each type, stating the history in the briefest possible manner, omitting the reports of negative findings or laboratory tests, as for instance, Wassermann, etc. (some of the conditions cannot be presented in illustrations because nothing showed externally). In the conclusion of your discussion, I
will be pleased to answer any question which may have been omitted in the presentation.

Case 1 (Fig. 1).—Male, age 53 years. Clinical diagnosis: Epithelioma of right lower lid. Applied 50 mg. of radium element screened by 1/10 mm. of aluminum, this for eight hours.

The following morning I excised the growth wide of the involvement and immediately performed a plastic (pedicle method) operation for reconstruction of the lid. (Fig. 2.) Two weeks later I rearranged the flap to make a better cosmetic effect. (Fig. 3.) The microscopic examination of the mass removed showed a distinct epithelioma and areas can be made out of changes due to the radium application.

Case 2 (Fig. 4).—Male, age 48 years. Clinical diagnosis: Epithelioma of the inner canthus and lower lid, side of nose and face on left side. This I removed surgically wide of its
point of involvement. After the wound was healed and observed for a short time a recurrence was found about the nasal margins. Fifty mg. of radium pure was applied, screened by 1.4 mm. of aluminum for six hours, once a week for five weeks. (Fig. 5.) Three months later, no recurrence.

Case 3 (Fig. 6).—Man, aged 67. Diagnosis, clinically and microscopically: Epithelioma of dorsum, left side of nose as far as the upper lip. Spontaneous ulceration. Fifty mg. radium pure, screened by 1/10 mm. of aluminum applied for four hours, at different portions of the involved surfaces. Each surface received from three to eight applications of the same amount of radium. After one and one-half years he was finally declared well. It is now over one year, and there has been no recurrence.

Case 4.—Female, age 46 years. Epithelioma of the lids,
secondary involvement of eye and orbital tissue of right side. Attending ophthalmologist was compelled to exenterate the orbit and remove both lids. The growth recurred. I applied 150 mg. of radium pure, screened by 1/10 mm. of aluminum all over the cavity and margins for ten hours. Two months later all evidences of epitheliomatous structure was gone from the orbital cavity, but on two points at the inner canthus there was still evidence of suspected growth. (Fig. 7.) Fifty mg. of radium pure, screened by 1/10 mm. of aluminum, was applied for six hours. (Patient returned to her home and I have not seen her since.) Subsequent use of partial mask in Cases 2, 3 and 4, to replace the defects, is preferable to plastic operations for these old people.

Case 5 (Fig. 8).—Male, age 61. Microscopic and clinical diagnosis: Epithelioma of right inner canthus. Two erythema doses of X-ray treatment given within a period of nine weeks.
Not alone did the growth fail to diminish, but actually grew. The patient passed out of my hands.

Case 6 (Fig. 9).—Female, age 66 years. Epithelioma of the tip of the nose. Treated by X-rays for two months (type of treatment not known). Stated that the growth was rapidly increasing. The growth protruded for half an inch. Patient refused to submit to anything else than the radical removal of the growth. I removed the growth wide of its margins by means of the Percy cautery. (Fig. 10.) After about two months the nose appeared healed. (Fig. 11.) Patient refused any kind of plastic cosmetic operation. Fig. 12 shows the growth to be a true epithelioma, very much inflamed and possibly changed by reason of X-ray treatment.

Case 7 (Fig. 13).—Male, age 71. Rhinophima with secondary epitheliomatous degeneration. The growth is seen to hang down over the man's lip and he was compelled to hold...
it up by a sort of sling in order to be able to breathe, speak and eat. A thorough decortication with adaptation of the surrounding healthy skin in order to cover the raw surface, produced an excellent cosmetic and physiologic result. (Figs. 14 and 15.) The microscopic examination (Fig. 16) showed the typical histologic picture of hypertrophy of the epithelium, blood vessels, glands and connective tissue, but also in spots suspicious areas of an epithelioma. Consequently I had him X-rayed for three erythema doses within six months. He lived five and one-half years longer, dying from cardiovascular disease, with no recurrence or evidence of carcinoma in any other part of the body.

Case 8 (Fig. 17).—Male, age 46 years. Epithelioma of the lip. This was excised and the parts immediately approximated. (Fig. 18.) X-rays were subsequently employed for three erythema doses over the submental and submaxillary
regions (glands tributary to this region), as well as the operated area. There has been no recurrence now for over two and one-half years. Fig. 19 gives the microscopic proof of the epithelioma. It has been the rule and still is, in some of

the clinics, to remove the lymph glands and block from the submental region and make a greater sacrifice of the lower lip than in this case. This makes the operation much more formidable, causing considerable deformity of the mouth, and from observation of the cases treated like the one illustrated here it would appear that it was unnecessary. Time alone will

tell. The question also arises whether one may not treat the epithelioma of the lip simply with the X-rays or radium without surgery. Conflicting reports make me choose the procedure as outlined in this case. I have treated twenty-six cases of facial epithelioma similar to these illustrated, by means of surgery, X-ray, fulguration, carbon dioxid and radium,
and I must say that nothing will compare to the use of radium. Some of the early cases were operated upon several times and finally developed into true cancers with fatal results.

Case 9.—Male, age 45 years. Carcinoma of the anterolateral part of the tongue and that portion of the floor of the mouth (no photograph obtainable). (Operated away from home.) By means of a Percy cautery the growth was removed wide of its involvement. Lips and mouth were protected by speculum containing running cold water. Six weeks later the wound was healed and the tip of the tongue was fixed to the floor of the mouth. (Fig. 20.) During the healing process a sequestrum came off due, no doubt, to the extreme heat of the cautery. This was a portion of the alveolar process of the lower jaw. (Fig. 21.) Patient’s neck region was X-rayed for a period of two weeks, when he disappeared from observation. About two months later he returned with a recur-
rence in the neck (Fig. 22), but none at the site of original growth. Fig. 23 showed a typical alveolar carcinoma. The subsequent course of the case was rapidly developing metastatic condition, which caused the patient's death.

Fig. 29.  Fig. 30.

Case 10 (Fig. 24).—Male, age 53 years. Carcinoma of the base of the tongue and soft palate, tonsil and pharynx, also glands of neck. Preliminary X-ray treatment (one erythema dose to the neck) to attempt to block off further invasion of the lymphatics. Radical operation. Lived for about six weeks, in a miserable condition; feeding possible only with a stomach tube.

Case 11 (Fig. 25).—Male, age 61 years. Microscopic diagnosis: Carcinoma of the half of the tongue. There were no glands of the neck present. Advised operation, removal of tongue. Patient refused operation. Under deep X-ray treatment the neoplasm grew to such proportions as to make breath-
ing impossible through the mouth or nose. A tracheotomy was performed. One hour after this the patient disappeared and was never traced with the aid of relatives and police.

Case 12.—Male, age 55 years. Suspected epithelioma of
dorsum and lateral portion of tongue. No glandular involvement of the neck. Consulted the clinic at Johns Hopkins, and being a prominent physician from the South, he was given special attention by Dr. Barker, etc. A piece of the tissue was removed by them and diagnosticated papilloma or nonmalignant growth. He received very intensive treat-

ment by radium (exact dose, etc., not stated in their report). Patient presented himself to me with two very agonizing symptoms, namely, hyperesthesia and excessive salivation. It was impossible for him to eat anything but the blandest food, and even this caused pain. There was a history of lues, although the Wassermann was always negative. The tongue looked
white and felt hard on the surface. There was an enlargement on the left side near the base (Fig. 26), with a distinct line of demarcation. I diagnosed the condition as a radium burn and treated it as such. The line of treatment was

**Fig. 37.**

**Fig. 38.**

absolute rest to the tongue by insisting on feeding him with an esophageal tube and coating the tongue with various substances that could be made to stick, such as starchy pastes containing tragacanth. This was, however, without any lasting benefit. Atropin proved to be of most value. Recently he consulted the Mayos and more radium treatment was advised.

**Fig. 39.**

**Fig. 40.**

They believed that he had a malignant disease engrafted upon a luetic tongue. There were no enlarged glands present in the neck.

Case 13.—Male, age 58 years. Sarcoma of tonsil. Came to me with a severe radium burn of the right side of the base of the tongue and pillar and cheek. (Fig. 27.) The radium had
been applied by means of needles into a tumor of the tonsil microscopically diagnosed sarcoma. The growth had entirely disappeared when he presented himself to me and showed only a dirty slough within the tonsillar fossa. He gave a history of having been operated upon for peritonsillar abscess with pus discharge. The physician who made the diagnosis of sarcoma and had the radium applied had not seen any pus. The radium burn healed very readily following the application of bismuth subiodid powder.

Statistical: I have treated seventeen cases of carcinoma of the tongue, either surgically or combined with X-rays, radium, diathermia, cautery, etc. All the cases have succumbed to the disease or some immediate complication, bronchopneumonia and sepsis occurring in more than one case.

Case 14.—Male, age 60 years. Epulis in the left first upper molar. Transillumination and radiograms showed the greater portion of the antrum involved. (Fig. 28.) Sublabial operation, wide resection of the growth, removal of the greater portion of the superior maxilla. One hundred mg. of radium element, screened by \( \frac{3}{4} \) mm. of silver filter, was placed into the cavity created by the operation and allowed to remain for twelve hours. The wound healed slowly, and in about two weeks a recurrence was observed. He was X-rayed intensively, but the growth progressed so rapidly in spite of this (Fig. 29) that a more radical procedure was decided upon, namely, total resection of the upper jaw (Fig. 30). Subsequent to this operation the patient received 50 mg. of radium screened as above, at periods of three days apart, for from three to
six hours. The recurrence was kept in abeyance and great hopes were entertained for his cure, but, as usual, after two months glands began to develop in the anterior and posterior triangle and nothing could stop the final fatal termination. Fig. 31 shows the microscopic section.

Case 15.—Male, age 52 years. Carcinoma of the upper jaw similar to the one just described. A radical total resection of the upper jaw was performed; Figs. 32 and 33 show the end result, Fig. 34 the microscopic section. This case never received any X-ray or radium treatment, either before or after operation, and is shown as one of the cases to prove my contention in the introduction, that perhaps what we consider good treatment in the use of the X-ray and radium in carcinoma may be just the opposite. The patient is living, fourteen years after operation.

Statistical: I have had 19 cases of carcinoma of the upper jaw, all operated; most of them belonged to the inoperable type. In the majority, X-rays, radium, Percy's cautery or some other nonsurgical measure was employed in conjunction with operations. Only two cases lived and can be spoken of as cured. Most of the patients died from carcinoma metastasis.

Case 16 (Fig. 35).—Carcinoma of the larynx. Male, age 46 years. When I saw him first, he had a well developed neoplasm, but entirely within the larynx and confined to one side. Laryngotomy was performed and the growth removed, the wound being immediately closed except for the retention of a tracheal canula. Six weeks later he returned with a
marked recurrence. Laryngeal fissure was then performed, all the growth removed and the fissures opened for subsequent X-ray and radium treatment. This was instituted almost immediately after operation, but in spite of this fact recurrence was noticed, especially about the left posterior part of the larynx. During this intensive X-ray and radium treatment (16 mg., all that was obtainable at the time) pieces of the growth were removed at an average of once a week for microscopic examination as to control of the effect of the treatment. These sections clearly demonstrated slow but positive destruction of cancer cells. At the end of one year the laryngeal cavity appeared free from carcinoma, both macro- and microscopically (Fig. 36). Patient returned to his home town, his physician reporting that there was no recurrence in situ, but he developed marked neurotic and neuritic symptoms, including pains radiating down the arm, chest and legs, so severe that morphin had to be administered. The neurotic symptoms were very peculiar and ordinarily would be considered as hysterical. They were so unusual and constant that I may be pardoned for mentioning them again in detail. “Always before a thunderstorm appeared he became very restless and panicky and insisted on locking himself in a dark room, until the storm passed. He would frequently do this twenty-four hours before the storm came on.” These neuritic painful conditions usually followed such a nervous spell, and the pain would center itself in the big toes. He died three years from the time I first diagnosed his case as carcinoma, or over two years after X-ray and radium were employed.
A postmortem examination was made, and no evidence of any metastasis could be found. I received the entire larynx and made a thorough macroscopic and microscopic examination, but could not demonstrate any carcinomatous tissue. (Fig. 37.)

Case 17.—Male, age 53 years. Came with a rapidly growing swelling on side of neck (Fig. 38). Examination within the throat and mouth revealed no primary growth. He was given deep X-ray treatment intensively, but the growth continued to increase until a tracheotomy was necessary. The tumor finally ulcerated (Fig. 39) and a microscopic section (Fig. 40) showed a typical carcinoma. The subsequent course was an early metastases into both lungs in spite of very active X-ray treatment, from which death ensued.

Case 18.—Male, age 47 years. Well advanced carcinoma of the larynx. A laryngofissure was performed and the growth thoroughly removed by the Percy cautery, allowing the fissure to remain open for after-treatment. (Fig. 41.) Within two weeks the fissure healed (Fig. 42). The interior of the larynx shows no evidence of any growth (Fig. 42). He left for his home in Wyoming. One month later he returned with an enormous recurrence, both in the neck as well as within the larynx, requiring tracheotomy. The neck tumor had broken down so as to appear like an abscess and this was opened and drained. Shortly after I removed a part of the mass from the neck, including the skin, which was involved in the process (Fig. 44). There remained, however, quite a bit of growth in situ (Fig. 45). This was now treated by
means of the surgical diathermia, as described by Nagelschmidt. At first it appeared as though this line of treatment would be effective, because the growth was shrinking and appeared healthy (Fig. 46). However, suddenly there occurred a marked change, and in spite of the treatment the growth spread very rapidly (Fig. 47) and caused great difficulty in breathing and swallowing. Suddenly one day he had a severe arterial bleeding that exsanguinated him and he died within an hour. Fig. 48 shows a microscopic section of a carcinoma.

Case 19.—Male. Was referred to me with a diagnosis of laryngeal carcinoma confined to the right cord. A microscopic section accompanied the patient. The physician as well as the

![Fig. 49.](image1)

![Fig. 50.](image2)

patient pleaded for intralaryngeal operation and nonsurgical measures should be given a trial. Consequently I performed a suspension laryngoscopy and removed what I thought to be the entire growth by that method. Subsequent to this operation the patient was given intense deep X-ray treatment over the thyroid region. The laryngeal condition appeared to heal very rapidly and his voice became quite clear. After the second erythema dose he developed marked symptoms of myxedema, which no doubt were due to the action of the X-rays on his thyroid gland. Therefore this line of treatment was discontinued, and he was put on large doses of thyroid extract, which corrected the myxedematous state. He then returned to his home in Vancouver, where he was observed by his physician (otolaryngologist). After nearly one year he was again sent back to me with a suspected recurrence.
within his larynx. As he still insisted that he did not wish any operation upon the larynx externally, and was willing to take his chance on the former line of treatment, I removed all that I thought was diseased and had his larynx region X-rayed but not as intensively as the first time, as I feared to cause the myxedematous symptoms. This time, however, he did not improve; on the contrary, the growth took on a rapid development. At this time the patient agreed to an operation, and I found that laryngectomy alone could be of any value. This was performed under local anesthesia with very little difficulty. The usual technic differed in that I placed a dermal lined fistula (Fig. 49) subhyoidally to accommodate a tube which communicated with his trachea, making a sort of an artificial larynx (Fig. 50). Whenever he bent his head forward so as partially to kink this tube he could produce sounds that were quite audible and understood as speech. Fig. 51 shows the larynx, in which the growth extends anteriorly, but is confined within the larynx. Fig. 52 shows the microscopic section of a carcinoma. The patient again returning to the coast to be observed by his otolaryngologist, who reported about eight months later that the patient developed abdominal symptoms that proved to be due to cancer, from which he soon died. The larynx did not show any recurrence.

Case 20.—Male. Well developed neoplasm confined to the larynx. Microscopic examination (Fig. 56) proved it to be a carcinoma. A laryngeal fissure was performed and the growth removed wide of its development (Fig. 53). As soon as prac-
ticable an intubation tube carrying one hundred mg. of radium element, screened by a filter of 1.10 mm. of aluminum was inserted by way of the mouth and held in place by two threads (Fig. 54). These are tied over a piece of gauze, as suggested by Iglauer. The radium was removed after six hours, but the intubation tube was allowed to remain. These radium applications were repeated twice more within the next two weeks. The intubation tube was now left out and the fissure permitted to close (Fig. 55). Weekly inspection showed no recurrence for over two months, but at the end of that time a small growth appeared on one side which, however, was not at all influenced by either radium, X-rays or operation, and the usual termination of a metastasis and cachexia followed.

Case 21.—Male. Advanced carcinoma of the larynx, base of tongue and esophagus, upper part. Under local anesthesia I performed a tracheotomy. By means of pharyngotomy I removed a tumor mass, including the larynx, in the obliteration of the upper end of the trachea (purse string closure), base of tongue and the esophagus contiguous to the posterior portion of the larynx. A permanent esophageal intubation by way of the nostril was instituted, through which the patient was fed (Fig. 57). I wish to state that that was the most comfortable way of alimentation in such an extreme case under my observation. The remaining portion of the wound was closed by primary intention. The secretions that accumulated within the esophageal cavity were removed by the aid of suction. There were no X-ray, radium or other electrical measures employed. The patient made a splendid recovery.
from the operation. Three weeks after the operation I re­
moved the esophageal tube and allowed the patient to swallow
liquids. On the third day, following this natural mode of
feeding, the patient experienced while swallowing a glass of
milk a sudden sharp pain in the middle of his back and into
the neck. Within a few hours he developed classical symp­
toms of a septic mediastinum and died. Most probably the
permanent esophageal tube caused a decubitus, followed by
rupture during efforts of deglutition. It must be remembered
that the base of his tongue had been removed, therefore swal­
lowing was not normal. Fig. 58 shows the microscopic section
of the carcinoma.

Case 22.—Male, age 60 years, had posttyphoidal laryngeal

abscess when a young man requiring tracheotomy and incision
of abscess. Twenty-six years later, after all the symptoms
of the abscess had entirely disappeared, he developed a most
rapidly growing tumor, both within the larynx and on both
sides of the neck. It was somewhat indurated, and I thought
that I had a case of Reclus’ disease or woody phlegmon. A
hurried tracheotomy had to be performed (Fig. 59), and at
the same time I obtained a piece of tissue for microscopic
examination, which proved to be a very active carcinoma (Fig.
60). I began the use of autolytic solution, obtained from
fetal tissue, as recommended by Fichera and published by me
(Annals of Otolaryngology, March, 1912). The result was most gratifying, and for some time it
appeared as if the growth was going to melt away, but liver
metastasis appeared, with the usual ending.
Case 23.—Man, age 53, a public speaker for many years, with a hoarse voice for the past ten years, noticed in the last two months that this hoarseness was increasing. Examination showed a unilateral swelling along the entire cord. Removal of a small portion and microscopic examination revealed a typical epithelioma (Fig. 62). An operation was performed under local anesthesia in the form of a laryngeal fissure, removal of the entire cord and considerable normal neighboring tissue. An immediate closure without tracheotomy or intubation was undertaken. There developed considerable edema within the larynx, causing embarrassment in respiration; however, this lasted only a day, when he began to breathe with comfort. Fourteen years later he still was free from recurrence. He is an insurance man and requires a good voice, which he still has. He has some little difficulty when he swallows, characterized by a sort of pull on his thyroid cartilage, which is due to marked cicatricial bands developed in the healing (Fig. 61).

Case 24.—Man, for about six months has considerable difficulty in speaking and for the past month some slight embarrassment in breathing when walking fast. Examination shows a unilateral growth of one cord which appears to dip under into the subglottic region. Under suspension laryngoscopy a small piece of tissue from the tumor was removed; microscopic examination showed it to be a typical quite rapidly growing carcinoma (Fig. 64). The physician referring the patient requested that if an operation was to be performed a preliminary application of a lethal dose of
radium, say 200 mg. of the element, be placed over the region of the larynx and allowed to remain for about ten hours. The term lethal had reference to the local destruction of the activity of the cancer cells so that in operating implantation carcinoma would be avoided. This is the advice of Wood and P——, New York, based upon experiments, and the physician mentioned above had more than five years’ experience in cases where radium was employed.

Operation under local anesthesia. A thyrotomy was performed, and the growth was removed with considerable healthy neighboring tissue. A preliminary tracheotomy having been made, it was deemed advisable to allow the tube to remain for a day or two, especially so since two radium needles, each $12\frac{1}{2}$ m., were introduced into the wound caused by the excision of the growth. The patient exhibited unusual symptoms on the operating table, having several attacks of projectile vomiting, also being extremely nervous, although never complaining of pain. On being returned to his bed he showed symptoms of shock, from which he never rallied. He had very unusual toxic symptoms, which I could not quite understand, consequently called in an expert internist (physiological chemistry), who was of the opinion, as was I, that the patient was suffering from a toxemia due to the massive dose of radium employed just before the operation. In less than thirty-six hours’ time from the time of the operation the patient was dead in spite of all efforts. An immediate postmortem examination revealed locally an absolutely reactionless
area about the thyroid region (Fig. 63). No other post-mortem examination was performed.

Statistical: I have treated fifty-nine cases of cancer of the larynx, surgically alone or in combination with X-ray, radium, fulguration or surgical diathermia, Percy's cautery, galvano-cauteries, autolytic and colloidal solution. Also a limited number of cases in which only radium or X-rays were employed. Operative measures were intralaryngeal, both by indirect and by means of suspension laryngoscopy, laryngofissure, hemilaryngectomy, laryngectomy and extensive resec-

Nine cases are alive, the longest since the operation, fourteen years. One case twelve years, one seven and one-half years, one six years and one five years and two months. The remaining four cases are between four years, and, the most re-
cent one, three months ago. These last four cases will not be considered cured until at least five years have passed without recurrence, either locally or metastatic. Strange to say, the oldest case which I have alive since operation was operated upon by the indirect laryngoscopic method. I see the man once or twice a year in order to keep him under control, and each time I review his microscopic section. The next oldest case, now twelve years, had a laryngofissure with immediate closure. The next two were laryngectomies, and the fifth a hemilaryngectomy and partial resection of esophagus, but no glands. The four cases not yet considered cured because of the short duration were treated by laryngofissure or radium alone.

Case 25.—Epithelioma of auricle. Man, age 53 years. Two years before he was referred to me he noted a small swelling within his ear, which he had removed by a surgeon, who had
it examined microscopically and pronounced cancer. He recom-
mended thorough surgical removal, to which the patient
objected and consulted a "paste cancer cure specialist" in
Iowa. He was treated just once. The ear became sore, then

![Fig. 69.](image1)

![Fig. 70.](image2)

healed and deformity resulted. (Fig. 65.) He was free from
pain or recurrence for over two years. Now (1914) he no-
tices a swelling in his neck and some pain in his arm. I found
a recurrence within the external auditory canal and a mass on
the side of the neck. I removed a piece from the canal
which showed a true epithelioma (Fig. 66). I had him X-

![Fig. 71.](image3)

![Fig. 72.](image4)

rayed for a period of six weeks without any special benefit,
except perhaps the control of the pains. He finally con-
sented to a more radical operation, which was performed by
the excision of the growth within the canal and radical re-
moval of the mass in the neck. He was subsequently rayed,
but recurrence appeared almost immediately. The pains be-
came excruciating, even after the use of opiates. He went back to his home town, where he lived about six weeks longer and his physician reported his death from a gradual exhaustion with symptoms of esophageal involvement.

Case 26.—Man, age 51 years. A year ago had a small growth curetted from his external ear, followed by X-ray and radium treatment. There was a rapid recurrence and a marked swelling developed in his neck, as far as the clavicle. With this history, he was referred to me (Fig. 67) by Dr. Emil Beck, to whom he was recommended owing to the fact that he described a method of treatment of epithelioma and carcinoma for which this case was suitable. This method consists of the removal of all or as much of the growth as possible, including the overlying skin, fat and muscle, and subsequent X-ray and radium treatment. As many secondary removals of the growth as necessary are undertaken, so that the rays act
directly on the cancer without any screening or absorption of the beta rays by skin, muscle, fat or destroyed tumor. The work of Dr. Emil Beck is described in detail, including experimental work by G. W. Arner of the Ryerson Laboratory, University of Chicago, in surgery, gynecology and obstetrics. In October, 1919, I performed this extensive resection of skin, muscles and as much of the tumor as was safe, and left the area exposed for subsequent X-ray and radium treatment. Part of the pinna was sewed in for possible subsequent reconstruction. (Fig. 68.) The excised tumor mass is shown in Fig. 69, and Fig. 72 shows the microscopic section. It is a true carcinoma. He received seven erythema doses of X-rays within a period of nine weeks, also 40 mg. of radium, screened by only 1/10 mm. of aluminum and often the needles were unscrewed within the tumor. This combined treatment appeared to be of some benefit about the margins of the exposed area (Fig. 71), but the growth deeper down continued to develop so that more of the mass was removed, including the lower half of the auricle (Fig. 72). Shortly after this the patient developed difficulty in swallowing and hoarseness, also great pains in his arms and hand. Three months later, after a miserable existence on large doses of morphin, with but little relief from pain, he succumbed from exhaustion.

Statistics: I have had seven cases of epithelioma of the external auditory canal and auricle, of which three are living, one now eight years since operation, one three and one-half, and one seven months since he was discharged as cured. The
first one was operated upon and subsequently treated with X-rays. The second one was treated by carbon dioxide (snow) and radium, employing six seances of the snow and four applications of radium 10 mg., screened by 1/4 mm. of brass, for one hour at each application. The third was treated by radium alone, 50 mg., screened by 1/10 mm. of aluminum, for six sittings, each half an hour.

Case 27.—Man, age 27 years. Sarcoma of orbit. Received a slight trauma about one year before, which left a swelling above the left eye. About two months ago this swelling started to grow, and the last two weeks it grew so rapidly as to close his eye and cause considerable headache and pain. (Fig. 73.) A small section was removed and the microscopic exam-

Fig. 79.  
Fig. 80.

ination proved it to be a large spindle celled sarcoma. (Fig. 76.) He was immediately operated upon, and Figs. 74 and 75 show the condition just after operation. It was necessary to resect part of the orbit and temporofrontal bone, but the dura was not involved. It was not more than two weeks when he developed a recurrence. He was immediately put upon intensive X-ray treatment. In spite of everything that was done, Cooley's toxins, salvarsan, etc., he went from bad to worse and very soon developed an intracranial growth from which he died.

Case 28.—Woman, age 30. Melanosarcoma about the orbit. Referred to me with a growth on the inner canthus of eye close to the tear sac, also complaining of nasal obstruction, for more than three months. The growth has been rapidly developing for the past month (Fig. 77). It appeared very
dark in color, as though it was a very vascular neoplasm fixed to the bone. The eyeball was absolutely free from any involvement. Under local anesthesia the neoplasm was easily removed, including the periosteum, and left open for subsequent radium treatment (Fig. 78). Fig. 79 shows the size of the growth, and Fig. 82 its microscopic appearance—a small spindle and round celled sarcoma, numerous blood lakes and many masses of pigment. Immediately after operation 50 mg. of radium pure, screened by 1/10 mm. of aluminum and rubber tissue, was placed into the wound for six hours. Two weeks later two radium needles, each 12½ mg., were thrust into a mass which filled the greater portion of the left side of the nose and pushed the cartilaginous septum over to the other side, and these needles were allowed to remain for four hours. Fig. 80 shows them in place. The area of the excised tumor practically healed and an ectropion of the lower lid developed. I now noted a small swelling in the upper inner corner of the orbit which felt elastic. Into this I thrust two radium needles of the same dosage as before, but only left them in place three hours. There now developed two radium scorches on the cheek from the first application which was kept from irritation by a gutta percha dressing (Fig. 81). At the end of six weeks the patient markedly improved in every way. She could breathe through the nose, the wound healed, the small mass in the upper inner corner of the orbit disappeared, and the radium scorch cleared up. She returned to her home for observation by her physician. One month later she returned with a swelling in her neck, and on
examination I found what appeared to be a gland, also some increase in the size of her alveolar process of the left superior maxilla. I removed the suspected gland and found it to be a very fleshy appearing mass, but I was able to remove it in toto without very much difficulty. The microscopic examination proved it to be a pigmented sarcomatous degeneration of the gland. I immediately placed her on deep X-ray treatment; March 21, 1920, two weeks after treatment, shows the swelling of her jaw and neck to be diminished rather than increased.

Case 29.—Male, age 37. Nasal sarcoma. Referred to me eleven years ago as an inoperable case, on account of rapidity of growth and profound anemia resulting from continuous hemorrhages. The growth was protruding through the external nostril, apparently pushing the eyeball laterally, while the bridge of the nose was spread out and the hard and soft palate were depressed into the mouth. X-ray examination showed the both antra filled. Under local anesthesia I severed the nose, by a sublabial incision, from its attachment to the apertura pyriformis and the nasal septum, thus exposing both antra and both nasal cavities, which were filled up by the tumor mass. Bleeding was quite profuse. Retracting the face upwards, so to speak, made it possible to work fast. By means of an electric burr, the anterior wall of the antra was removed, and then a greater portion of the tumor mass was removed from the nasal cavity and the antrum on both sides. It was impossible to completely clear the nose on account of the loss of blood. The bleeding was stopped by packing and
the face brought down again and sutured by two stitches below the upper lip. This operation stopped the constant hemorrhages and patient rapidly gained so that six weeks later a second operation was performed under local anesthesia. This time the nose was turned down by making a transverse incision across the root of the nose and severing the nasal bones and nasal process of the superior maxillæ. More tumor mass was removed, but again the operation could not be completed on account of hemorrhage. Figs. 83 and 84 still show the spread nose and depressed palate. Two months later I finally removed the remaining parts of the tumor (Fig. 85) by way of the natural nasal passage, which resulted in very free nasal breathing. The remaining tags of the growth were now treated by the aid of two radium needles each 12½ mg., once a week for six weeks, when the patient was considered cured. It is now eleven years since treatment was begun, and over
a year since any recurrence has been observed. Figs. 86 and 87 show the appearance much improved. Fig. 88 proves the growth to have been a small spindle cell sarcoma.

Case 30.—Male, age 33. Sarcoma of palate and postnasal space. For about three months this patient noticed a small growth on the inner surface of the alveolar process of the superior maxilla at the first molar tooth. (Figs. 89 and 90.) A piece of tissue was removed for microscopic examination and it proved to be a small round celled sarcoma. (Fig. 92.) Fifty mg. of radium, screened by 1/6 mm. of silver and covered by rubber tissue, were properly applied by the radium expert and permitted to remain for six hours. I have never seen anything disappear as rapidly and the surface looked absolutely normal. Keeping the patient in Chicago for a few days in order to observe the condition, I noticed on the third day a very bright red colored spot to the side of his tongue.
and cheek. The patient complained of a burning sensation which soon increased to pain, so that it pained him to eat anything. It was necessary to cocainize the tongue and cheek each time before eating. Fig. 91 shows an area of burn from the radium, and the radium expert (Dr. Wolpert) declared that the rubber covering of the radium capsule must have been defective and that we had a radium burn from secondary rays. He returned to his home city, where his physician reported to me that he had a great difficulty in eating. It was necessary to use cocain sprays and morphin.

This pain or fear of taking food caused great emaciation. The surface of the previously existing neoplasm was fairly normal. One morning the doctor called in a hurry to the patient's home, and when he arrived found the patient had died. The family declared that he gave a sudden moan out of his sleep, breathed very laboriously and was blue in the face. No
post-mortem was permitted and cause of death is unexplained.

Case 31.—Young man, age 19. (Fig. 93.) When a small boy had tonsil and adenoid operation performed. The adenoids were said to have returned and he was operated on a second time. The same complaint of nasal obstruction was noted very soon after the second operation. Patient consulted another specialist, who thought he had a tumor back of his nose. Microscopic examination of a piece removed showed fibrosarcoma. When he was referred to me he had a mass very firm to the touch in the vault of the pharynx.

A piece removed for microscopic examination verified the previous examination. (Fig. 94.) A slight positive Wassermann reaction was reported. Antiluetic treatment had no effect, and in order not to lose much time it was considered best to reexamine by the aid of the microscope. (Fig. 95.) Two needles, each 12½ mg., were thrust into the mass with
the soft palate retracted and a capsule containing 10 mg.,
screened by \(\frac{1}{4}\) m. of brass and covered by rubber, was
placed for three hours into the posterior portion of the left
nasal cavity which was obstructed by the tumor. An exudate
appeared the next day, and I made a microscopic section that
showed it to be a very pronounced fibromatous meshwork
with many leucocytes. One month later, patient returned to
me and I found that more than one-half of the growth had
disappeared and left a deep, sloughy surface. No treatment
was applied; when he returned one month later the surface
was clean. The remainder of the growth was now treated by
thrusting two needles of 12½ mg. each into it directly through
the soft palate and allowed to remain for four hours. Fol-

![Fig. 101.](image)

![Fig. 102.](image)

owing their removal there resulted a very brisk bleeding
which required a postnasal tampon. This bleeding did not
stop entirely after twelve hours of tamponade and another
tampon was necessary. Patient again left the city for his
home town, and his physician reported by letter that the boy
was losing a little blood right along. The last inspection
showed the growth to have practically disappeared, allowing
nasal breathing and clearing the nasal tone to his speech.
The surface, however, still bleeds when touched.

Case 32.—Man, age 62, came to see me with symptoms of
a radium burn of his tongue, cheek and soft palate (Fig. 95).
The history showed that he had a peritonsillar abscess, evac­
uation of which had been several times attempted. It finally
ruptured spontaneously. Dr. Sonnenschein, who saw him
after the rupture, suspected malignancy and removed a piece
of tissue which the laboratory reported as sarcoma. He had the radium expert put in two needles, each 12½ mg., for six hours. Following this, the patient experienced great pain in swallowing, for which difficulty he consulted me. I found a whitish membrane on the inner surface of the cheek, anterior pillar of the tonsil and posterior lateral surface of the tongue on the right side (Fig. 96). Inserting an esophageal tube and allowing it to remain all day, he was fed through it, thus giving his strength which he lost from not taking any nourishment for several days owing to pain. The surfaces of the burn were covered with emulsion of scarlet red, which appeared to assist in the healing very much. In two weeks he was cured. There is no evidence of any neoplasm, and the tonsillar area appears as though he had had a Pynchon cautery dissection of the tonsil.

Case 33.—Man, age 49, for the past six weeks had difficulty in breathing and speaking, but in the past week had two severe choking spells. Examination showed a firm tumor, apparently pedunculated, and attached to one side of the larynx, covering both vocal cords. Placing the patient in a recumbent position, head over the edge of the table, immediately relieved his obstructive breathing. Consequently I suspended him, and under local anesthetic (spray) removed the growth. A most distressing accident occurred which came near to causing the patient's sudden death during this suspension operation. While grasping the growth the Killian forceps cut through the pedicle, and in that moment the patient inspired and sucked the growth into the trachea. Fortunately, having
his lungs sufficiently filled with air, he made a violent effort to clear the trachea and the tumor hit me in the face. It certainly was a great relief to both the patient and myself.

The surface from which the growth was removed healed very rapidly, and the patient returned to his home city in less than a week very much encouraged. I was sure there would be a recurrence, because the microscopic examination of the growth proved it to be a large celled sarcoma. Less than a month later the patient returned with his larynx filled up so that he required an immediate tracheotomy. I decided to do a laryngotomy at the same time and remove as much of the growth as possible and anticipated subsequent radium treatment by way of the mouth (Fig. 97). This operation proved to be of little value, consequently I reopened the larynx and treated the process through the external route both by radium and X-ray. Fig. 98 shows 100 mg. of radium properly screened, 1/6 mm. of silver and rubber. This was continued for six hours, every other day. Alternating with this treatment the patient received X-ray treatment. After two weeks he developed a marked erythema, so that all treatment was stopped. There was now no evidence of any growth, and the area that had been rayed showed marked effect like a burn (Fig. 99). The noticeable thing was the marked symptoms of absorption of that toxemia that I suspect is due to the destruction of radium and X-rays. He went back to his home and his physician reported that he lived only for about one month, dying apparently of absorption of poison and weakness.
Case 34.—Sarcoma of the neck. Female, age 51, noticed a small lump below her right jaw which was growing very rapidly (Fig. 101). I had her placed under the deep X-ray treatment, which had the opposite effect—it made the tumor grow (Figs. 102 and 103). I decided to try and stop this growth by operation, and by means of local anesthesia removed two large masses of characteristic sarcomatous tissue (Fig. 104) which proved to be microscopically a large spindle cell sarcoma (Fig. 108). The result from the operation was gratifying (Fig. 105). This result, however, did not remain very long; in fact, in less than two weeks there was a rapid reformation of the growth (Fig. 106), and in another month the patient was so weakened that she could not sit up, and the growth was enormous (Fig. 107). Other means, as Coley’s toxins, were also employed, without the slightest benefit, the patient dying of exhaustion.

Case 35.—Sarcoma of the parotid. Female, age 23, a month previously noted difficulty in opening the mouth, with a tight feeling on the left side of her face. Suddenly the swelling appeared, which increased her pain (Fig. 109). A tentative diagnosis of retention in the parotid gland was made, but this had to be changed, as the swelling extended to the back of the neck. She was directed to use deep X-ray for six erythema doses, which was followed by disappearance of the swelling with all the symptoms. This, however, lasted only for about a month when the tumor returned with greater rapidity. It was now decided to operate, and so an incision was made retroauricularly (Fig. 110) and a fair amount of
the tumor removed, but not radically, on account of the large vessels and facial nerve. (Fig. 111.) She was again put on X-ray treatment, but the growth continued to develop until after four months the patient succumbed to a general toxemia without any temperature. The microscopic diagnosis was that of a mixed cell sarcoma (Fig. 112).

Case 36.—Chloroma of the face. Boy, age 4. Mother noted a number of swellings about the face which made the skin overlying them look pale blue or green (Fig. 114). Routine blood examination gave me a picture that was most surpris-

![Fig. 109](image1.png) ![Fig. 110](image2.png)

![Fig. 111](image3.png) ![Fig. 112](image4.png)

ing and led to the diagnosis. It was the following:

1. Leucocyte count, 210,000.
   (a) Neutrophilic myelocytes, 38 per cent;
   (b) Polymorphonuclear leucocytes, 40 per cent;
   (c) Lymphocytes, 16 per cent;
   (d) Eosinophiles, 20 per cent;
(e) Large mononuclears, 10 per cent;
(f) Eosinophilic myelocytes, 3 per cent.

2. Red count, 2,900,000.
3. Color index, .8.

He was immediately put on deep X-ray treatment and Fowler's solution, but the disease progressed uninterruptedly, and in less than three weeks he had the appearance shown in Fig. 113. It was very difficult to rouse him and there resulted a great emaciation and anemic appearance of the rest of the body. Terminal state was associated with subcutaneous bleeding about the abdominal wall and the extremities. One large hematoma occurred in the quadriceps exterior on the right side. The child succumbed seven weeks from the time the mother noted the swellings about the face.

This is the only case of chloroma I ever saw. It is unfortunate that a microscopic section could not have been ob-
tained. The literature on this point shows the tumor to be a fibroblastic structure resembling a sarcoma, but instead of blood lakes there are actual blood vessels.

Case 37.—Papilloma of the larynx. Male, age 23, when seven years of age developed hoarseness, which persisted. The laryngologist of his home town diagnosed it papilloma and in conjunction with a general surgeon performed a thyr­

Fig. 117. rotomy and removed a mass of papillomatous material. He kept the larynx open for a long time, also a tracheotomy tube in place. When the larynx finally closed, he removed the tracheotomy tube and permitted its opening to close. It became, however, necessary to reinsert the tracheotomy tube in a day or two, the larynx having again filled up with papil­

Fig. 118. loma. For the next three years there was nothing done for the boy. At that time another laryngofissure was performed, the growths removed and the larynx again left open for some time for after treatment. When finally the larynx closed the tracheotomy tube was not removed. When he was presented to me, sixteen years from the time of his first operation, I found his larynx filled completely with a mass, and when the tracheotomy tube was removed it was found that the trachea had collapsed and patient could get no air. This was no doubt due to the low grade infection of the cartilage rings and subsequent absorption. It was decided, after a suspension laryn­
goscopy and removal of some of the tissue for microscopic confirmation, again to open the larynx, remove all the papil­loma and then give him a massive dose of radium. Under local anesthesia the laryngofissure was performed, and it was
discovered that most of the thyroid cartilage was replaced by scar tissue. The growth was also much firmer than ordinary papilloma. Into the cavity created by the removal of all of the growth 100 mg. of radium element, screened by 1/10 mm. of silver, was placed and allowed to remain for eight hours. There resulted almost immediately a most profound toxemia, with marked symptoms of mental depression which never had been observed in the patient before. He refused food and talked of suicide. The wound itself was of fairly healthy appearance, although a great deal of discharge was present. (Fig. 115.) As soon as this diminished and the wound permitted, I inserted an up and down Jackson's laryngostomy tube which he wore for three weeks, when the trachea ap-

[Image]

peared firm enough not to collapse. (Fig. 116.) The fissure will be kept open for some time to be sure there is no recurrence. He will finally have a plastic closure of the laryngostomy. Fig. 117 shows a typical papilloma with considerable round cell infiltration.

Note.—Six months later. His physician writes that the patient has regained his normal state of general health, and locally there appears no recurrence.

Case 38.—Boy age 7, when two years old had the first symptoms of laryngeal obstruction and hoarseness, which soon developed into severe choking spells, so that his laryngologist had to do a tracheotomy. This tracheotomy tube could never be removed or left out but for a minute, and at his presentation to me it had not been removed for over two years.

Examination. About the tracheal canula there was seen
a typical papilloma of considerable size. (Fig. 118.) I performed suspension laryngoscopy under vapor anesthesia and found the entire larynx filled with papillomatous masses. I removed as much as I deemed advisable and immediately inserted a hard rubber intubation tube which carried 25 mg. of radium screened by 1/10 mm. of silver. This intubation tube was held in position at the tracheal wound by means of a ligature as first suggested by Iglauer. The radium was permitted to remain for twelve hours, when he was reintubated without the radium. The following day 25 mg. of radium element screened by 1/10 mm. of silver was applied over the papillary excrescences about the tracheal opening and allowed to remain six hours. In less than a week the trachea was closed and

Fig. 121.  Fig. 122.

the intubation tube removed. (Fig. 119.) It appeared to be a striking result; however, the patient had some difficulty in breathing in the next day or two, especially when sleeping, so that I decided to reinsert a small tracheotomy tube and allowed him to return to his home city. The larynx remained free from papilloma and reports from his laryngologist are that he recovered completely, now over three years ago.

I have the records of thirty-nine cases of papilloma, principally of the larynx, of which sixteen cases received either X-ray or radium treatment in conjunction with operative interference. I am convinced that the best way is to treat the cases early, by intubation, the tube carrying the radium as described. When once the papilloma is of greater size and has lasted a longer time or perhaps has been previously operated upon, I think that operative interference, preferably by
Further Report on the Use of Radium, Etc. suspension laryngoscopy, followed by radiation of radium, is best. The X-ray treatment of papilloma of the larynx has been anything but satisfactory to me, especially when the larynx is not opened. I have made several attempts with fulguration or surgical diathermia in cases but without satisfaction. I have the records of three cases of papilloma of the adult diagnosed by microscope, which were treated as such, but the subsequent course proved them to be malignant. Of course it is possible that a papilloma may become a malignant growth.

Case 39.—Lupus of the tongue. Male, age 25. For the past six or eight months noticed a hardening of his tongue, with nodular formations, especially towards the left side. Examination showed swelling and several hard nodules can be made out in different parts of the tongue. (Fig. 120.) After one course of X-ray treatments there was noticed a marked change in that the whole tongue softened. (Fig. 121.) After a rest of two weeks from treatment, I noted a very soft spot near the dorsum (Fig. 122), which finally broke down, discharging a yellowish material but containing nothing but contamination organisms. Following the healing of this abscess he was again subjected to a course of X-ray treatments. (The radiologist stated he was using a medium tube for fifteen minutes at each seance.) The tongue had a much healthier appearance, following this treatment. (Fig. 123.) Treatment was then discontinued because I noted a sort of a shrinking of the whole tongue. (Fig. 124.) Six months later he presented himself and the tongue looked smooth and more like normal. (Fig.
The microscopic examination of a particle of tissue removed at the time of the ruptured abscess showed a granulation with no typical giant cells present. (Fig. 126.) I have treated three cases of this nature, although one of the cases no doubt was true primary tuberculosis of the tongue. In that case I had excellent results from the use of radium. It required two years to determine that the condition was cured. The end result was a tongue much deformed and restricted in motion. The third case is practically the same as Case 39, only that radium instead of the X-ray was employed. I employed from 10 to 20 mg. screened by 1/10 mm. of silver, leaving it in place one to two hours. These applications were made every three days. The case is still under treatment but progressing favorably.

Case 40.—Tuberculosis of external nose. Male, age 33. For two years noted a swelling about the tip of his nose, which
finally opened up and discharged. Examination showed a granulating mass in the columnella of the septum and extending to the floor, where it was severed by the ulcerative process. (Figs. 127 and 128.) A piece of tissue was removed for microscopic examination and found to be indicative of true tuberculosis.

He was put on X-ray treatment (daily), medium tube, ten minutes. It did very little good—in fact, the process continued to ulceration. I finally applied 30 mg. of radium element screened by 1/10 mm. of aluminum, and allowed it to remain for six hours. Following this treatment there was a rapid improvement, so that in three weeks the nose was healed in scar formation as seen in Fig. 129. To correct the defect Dr. Carl Beck during my absence in France performed an Indian plastic operation which partially restored the cosmetic part of his nose. (Fig. 130.) I am now performing secondary
operations to help him to breathe through his nose as well as further to improve its appearance.

Case 41.—Male, age 29 years, presented himself to me with a swelling on the side of his nose and face, which finally broke down at the alar region. (Fig. 131.) The interior of the right side of his nose was entirely blocked, and had the appearance of a luetic condition. A Wassermann was found strongly three plus, but the tissue removed was distinctly tuberculous and had a striking similarity to that removed from the nose of Case 40. (Fig. 133.) He was given several intravenous injections of salvarsan and a thorough mercury and iodid medication, but with only partial benefit. Not until he received intensive X-ray treatment did the process finally heal. (Fig. 132.)

There are five true tuberculosis cases of nose which have come under my observation, all living, the longest fifteen years.
This case is recorded in Ballenger's textbook. It is interesting to note in connection with this case that the ultimate cure or nonrecurrence followed direct sunlight treatment brought in concentrated rays into the nasal cavity by the aid of a series of magnifying loops catching sunlight and bringing it into concentrated form on the lesion.

The other two cases were subsequently operated on with actual cautery with the result of marked cicatricial contractions.

Case 42.—Blastomycosis of face. Rhinoscleroma of nose.

Tuberculosis of glands of the neck. Boy, age 14, for several months had an eruption about his face, especially the margins of his eyelids; all efforts of treatment by various physicians, including dermatologists and ophthalmologists, failed and the process was getting worse. Examination showed small ulcerations covered by dirty scabs. (Fig. 134.) When these crusts
were removed and slight scraping made from the ulcer, smeared and cultured (special media prepared) it was found to be practically pure blastomyces.

He was immediately put on X-ray treatment. He received six ten-minute applications of the light tube when the face was healed and remained so. (Fig. 135.)

Case 43.—Male, age 46, suffered with nasal obstruction for nearly a year, during which period he has had several intra-nasal operations. He suffers considerable pain and headache. His general health has been very much affected by this condition and he appears anemic. Examination shows the external nose very much broader, especially at the root of the nose. (Fig. 136.) The entire nasal cavity on both sides is firmly packed with the neoplastic structure. Looking into the throat, the postnasal space was found filled out with a mass which is verified by palpation. A piece of tissue was removed for microscopic examination, which bled very freely. The examination of this specimen justified, the diagnosis of large spindle celled sarcoma, with a very peculiar type of cells throughout the section. (Fig. 137.) It was decided to do a radical operation. and consequently I severed the external nose sublabially from the margins of the apertura pyriformis, and thus was enabled to remove all the growth from both sides of the nose very rapidly. Bleeding was considerable and hard to control. As a result of the operation there recurred a marked discharge. Examination showed the presence of a capsulated organism, the bacillus of Frish, and those peculiar cells seen in the section not previously recognized, the so-called Mikulicz...
cells. The patient was immediately put on X-ray treatment and no recurrence followed. He went back to his home city, and I was subsequently notified that he succumbed probably to his secondary general condition rather than from the rhinoscleroma.

This was the first case of rhinoscleroma confined to the nose I have ever seen. I have treated four other cases of rhinoscleroma, all confined to the larynx, and aside from the dilation, intubation, tracheotomy and laryngostomy, they were also treated by X-ray and radium. I have observed that these treatments had a very decidedly beneficial effect on the local condition. Yet in all the cases it was necessary to use mechanicosurgical treatments as described above.

Case 44.—Young man, age 23, has had a unilateral swelling on the side of his neck for several months, recently becoming larger and giving him some pain. Examination showed a number of glands enlarged and matted together, extending from the lower jaw to the clavicle and almost the entire half of the neck. (Fig. 5.) The interior examination was negative, both tonsils and adenoids having been thoroughly removed. Removal of one gland revealed a true tuberculous change in it. (Fig. 140.) He was treated with deep X-rays, receiving three erythema doses within a period of four months. All but one of the glands disappeared. This one broke down and I had to open and drain it. Following this treatment the patient was and is cured. Fig. 139.)

I have treated many such cases just this way, except that in most of them the work within the nose, mouth and throat
was of great importance to remove the original focus to pre-
vent secondary infection of the tuberculous glands with pyo-
genic organisms. Very satisfactory results followed this line
of treatment, and the radical resection of glands of the neck
is practically unheard of in the large clinics in this country.

Case 45.—Neuroma of postauricular region. Man, age 52,
for six months previous to his consulting a physician, noted a
gradually increasing swelling below and behind his left ear.
The surgeon who first saw him diagnosed the case as probable
malignant growth of the parotid gland and operated for this.
Two months following that operation the patient presented
himself to me, with a recurrence of a semielastic growth at the
angle of the lower jaw, which was associated with excruciat-
ing pains, locally as well as deep in the head and radiating to
the vertex. I excised the growth down to the deep fascia.
(Fig. 141.) The cavity thus created was left open for subse-
quent X-ray treatment, believing it to be malignant. A pecu-
liar fact brought out by the operation was that the growth ap-
parently had a capsule and the muscles were not infiltrated.
Microscopic examination proved it be a true neuroma. (Fig.
146.) The wound healed very rapidly by the aid of a plastic,
and the patient was apparently well (Fig. 142), but this only
lasted three weeks, when another recurrence was noted with
all the symptoms, only more severe. (Fig. 143.) Several
separate nodules now appeared in the old operated field. (Fig.
144.) He was now put on intensive X-ray treatment, with
the result that the growth increased, but the pain was affected
somewhat, especially right after each treatment. (Fig. 145.)
I finally decided to do a Gasserian ganglion operation, having failed with injections of alcohol into the foramen uvale. The operation consisted in the resection of the posterior root of the ganglion. Two years later the tumors were much larger, but there was no pain present.

I have had a number of these and allied forms of neoplasms, some of which were treated in conjunction with X-rays, and I have never observed any marked beneficial changes from X-ray treatment alone. The control of the pain was about the best that could be said for it.

Case 46.—Paraffinoma of external nose. Female, age 23, being displeased with the shape of her nose, which from a photograph appears not to have been deformed (Fig. 147),

consulted an advertising quack (beauty parlor), who injected the bridge of her nose with paraffin. Two or three months later her nose began to pain her and showed a tendency to a bluish red discoloration. Shortly after that she noted that the mass injected was growing. She went back to him and he made an incision into it without any benefit. With this condition she presented herself to me, and I found that the mass was not confined to the place injected, but extended to the tip and side of her nose, with a small mass near the center of the forehead. Large blood vessels traversed the overlying skin. (Fig. 148.) Wishing to determine the histologic nature of the growth, I excised a small mass from the center (Fig. 149), which I allowed to remain open. I made a very interesting observation while dressing the wound, namely, an oozing out of paraffin proven microscopically. The swelling in
the center became much smaller and less red, whereas the sides were growing and extending into the orbital cavities and side of the face. (Fig. 150.) She had a great deal of pain in the infiltrated parts, as well as radiating pain. The later conditions were not at all influenced by X-ray, radium or any other applications, consequently I determined to operate—that is, radically to resect all the paraffinoma possible. Under general anesthesia, because it was impossible, either by local infiltration or ethyl chlorid spray, to anesthetize the parts, I dissected the apparently healthy overlying skin to either side, as well as over the forehead (Fig. 151), and with considerable difficulty dissected out a number of fibrous masses. (Fig. 15.) These microscopically examined showed atypical paraffinoma in the proliferation stage—that is, many new blood vessels forming throughout the tumor, rapidly obliterated by active growth of connective tissue about these vessels. This connective tissue acted differently from the usual inflammation. (Fig. 153.) Readapting the dissected flaps of skin, they were held together by two or three horse hair stitches. They healed very promptly, as shown in Fig. 154. There remained a central defect which healed by cicatrization. The subsequent course is very interesting in that a slow regrowth may be observed which, however, is not associated with pain. I am employing 10 mg. of radium element, screened by $\frac{1}{4}$ mm. of aluminum for one hour every day, over different areas involved, and can see some effect from the treatment. The final result will be most interesting.

I have had one other case that approached anything like the...
one described. It is illustrated in my chapter in Loeb's Operative Surgery of the Nose, Throat and Ear. That case terminated in suicide. I have seen a number of ugly paraffin masses injected for cosmetic purposes, but not that grew like the two reported.

Case 47.—1. Leucoplakia of the tongue. 2. Lymphoma of the tongue. Female, age 41, had observed a white spot on the side of her tongue for about a year, which came shortly after she had some teeth drawn on that side. (Fig. 155.) Recently this white spot increased, consequently she consulted a physician, who diagnosed the condition. Fearing the possibility of a carcinoma developing, he referred her to me for radium treatment. I found that the healed alveolar process of the lower jaw had a very sharp edge, and when the mouth was closed the affected portion of her tongue came directly over this sharp edge. (Fig. 156.) Therefore I concluded that this was a case of decubital necrosis. I correspondingly advised her dentist to make a hard rubber plate (Fig. 157), which would prevent the tongue from coming in contact with this sharp edge of the jaw. At the same time I applied 10 mg. radium element, screened by 1/10 mm. of silver for one hour, every three days. This was held against the tongue by the dental plate. After two weeks there was nothing seen on the tongue.

Case 48.—Man, age 33, presented himself on account of a swelling of his tongue, which had been present for about two months. There was a great deal of itching in his tongue, causing him to consult a physician a week previous, who in-
serted a red hot electric needle into the tip. Examination revealed a triangular area of ischemic tissue at the tip, with a central dark spot; within twenty-four hours there was a line of demarcation of a slough. (Fig. 158.) At this time he com-

![Fig. 153.](image153.png) ![Fig. 154.](image154.png)

plained more of inability to swallow, and the whole of the tongue felt boardlike and his tonsils like two tumors, almost shutting off the breathing. There was no evidence of pus or even inflammation. The patient was very pale, and the blood examination showed a picture of a secondary anemia. There was a leucocytosis present. The process of necrosis of the tongue rapidly progressed and completely sloughed off at the tip. (Fig. 159.) I have had his tongue X-rayed, and to my astonishment there was a marked effect on the healing of the tongue ulcer, as well as a reduction in size of the tongue as a whole. (Fig. 160.) The swelling of the tonsils was also markedly reduced. He was given a general X-ray treatment,
arsenic internally and blood transfusion. For a day or two it looked as if he would recover. However, there was a sudden change for the worse, marked cerebral symptoms of anemia developed and he died. A section taken of the tongue immediately after death showed microscopically a marked lymphocytic infiltration throughout the substance of the tongue. (Fig. 161.)

This is the only case of this type that I have seen, but I have had eleven cases of Hodgkin's disease, in which the tonsils were markedly enlarged, with symptoms to some extent referable to the tongue. All these cases received X-ray treatment and also the other customary general treatment. The tonsils, like the glands in the neck, were beneficially influenced, but all the cases finally died.

My records show that I have seen and treated eighteen cases of marked leucoplakia of the tongue alone, and seven addi-
tional cases of tongue and cheeks. Nothing has ever affected them better than radium applications. Antiluetic treatment was absolutely of no value. X-ray was of some value, but I do not recall a single case that was permanently cured. I have seen four cases develop into an epithelioma, and one case very rapidly destroyed a patient's life by metastasis of a jaw cancer. Discontinuance of smoking had some effect on the denseness of the patches.

Case 49.—1. Chronic deep neck abscess, or woody phlegmon. Suspected malignant disease. 2. Perichondritis of the larynx. 3. Scleroderma involving larynx. Male, age 53, was referred with a swelling of the left side of the neck, located below the lower jaw and extending backwards to the occiput. It was hard, not painful, and had a somewhat inflamed skin surface which was adherent to the underlying mass. He gave a history that he had a mastoid operation three years before
this swelling appeared. There was no evidence of any focus of invasion in the nose, mouth or throat. Removing a piece of the mass for microscopic examination, the wound was left open for X-ray treatment. (Fig. 162.) The mass was then X-rayed by deep penetrations for one erythema dose, but no appreciable difference was noted following this. The microscope revealed the growth to be inflammatory. Patient being a physician, was anxious to return to his western home, and urged me to remove the mass by radical surgical procedure. To this I acquiesced, and under a general anesthesia removed all I was able of the mass (Fig. 164), being compelled to liberate the vital structures of the neck, as the carotid artery, internal jugular vein and pneumogastric nerve. In the dissection there were areas that appeared suspicious, consequently I permitted the wound to remain open for subsequent X-ray treatment. I prepared a flap of the overlying skin,
which I hoped to use in covering the wound, after being certain that there remained no cancerous tissue. (Fig. 163.) Examination of the resected mass at various points showed nowhere any microscopic evidences of malignant disease, only chronic inflammation with areas of necrosis. (Fig. 165.) The day following the operation, the wound discharged unusually much, and the discharge escaping over the healthy skin of the chest and shoulder caused a marked pustular formation. Examination of the pus showed a pure culture of a diplococcus. On the third day after operation there appeared a most dis-

agreeable complication, namely, a softening of the internal carotid artery, threatening rupture. I immediately ligated low down near the sternoclavicular articulation. However, I did not shut off all the blood at once, not wishing to produce cerebral anemia. The same day the softened arterial wall ruptured with a very free bleeding, but the nurse stopped it by
hard pressure until I was able completely to ligate the artery. Following immediately this ligation he developed a hemiplegia on the right side. He lived for two more days, dying, I believe, from weakness due to the shock and hemorrhage.

Fig. 173. Fig. 174.

I believe this patient had originally a Bezold’s mastoiditis with a sinking abscess of the neck. This remained chronic, the organism being inactive during all that time, but becoming very active under the influence of the X-ray and operative intervention. The extreme lytic action of these bacteria

Fig. 175. Fig. 176.

I believe was responsible for the softening of the arterial wall and other complications. The lesson to be learned from this case is that the so-called woody phlegmon or chronic cellulitis should never be subject to radical operation. I have observed several cases of this woody phlegmon and have treated them with X-rays. Two of these became malignant, the
patient succumbing to the disease, however, more slowly than in the usual secondary neck carcinoma.

Case 50.—Male, age 62 years, was referred to me as a case of cancer of the larynx for radium treatment. He had considerable difficulty in breathing and his voice was much affected. Clinically it had the appearance of a carcinoma of the larynx.

Desiring to remove a piece of tissue from the larynx for microscopic examination as well as to introduce an intubation tube loaded with radium, I attempted to do a suspension laryngoscopy, but this was impossible on account of his struggles for air. Consequently a tracheotomy was performed. The examination of the microscopic examination was negative as

to cancer, and all it showed was an inflammation. (Fig. 167.) Patient received, on general principles, a crossfire application of radium element 25 mg. on the intubation tube and 100 mg. on the outside of the thyroid cartilage on the left side where the suspected malignant growth was located. The screening at the intubation tube was 1/10 mm. of aluminum, whereas outside there was a screen of silver 1/4 mm. The radium was left in position for six hours. The immediate result on the breathing was good, but I considered it due to the mechanical effect of the intubation tube. Patient went back to his home town and his otolaryngologist reported to me that there appeared to be a steady progress for the worse. Three weeks later he returned and there appeared to be a marked increase both within the larynx and externally. Another piece of tissue was removed from the larynx and examination was again re-

Fig. 177.  
Fig. 178.
ported negative as to cancer. It was inflammatory; nevertheless, I advised a thyrotomy. On dissecting down on the swelling, my associate, Dr. Pollock, noted a sort of a fluctuation of the mass. Incision permitted the escape of a large quantity of thick pus, which contained very few microorganisms. This abscess was drained and the thyrotomy postponed. (Fig. 166.) The result now was striking in that the intralaryngeal growth entirely disappeared, and the patient began to gain in strength and voice. However, there recurred a most distressing and wholly unexpected complication. About two weeks after operation the patient had a chill, followed by high temperature (105°), evidences of swelling about the abscess cavity and a very septic appearance. From that time on for about six weeks he had repeated chills and rises of temperature with a gradual loss of vitality, so that he finally succumbed to that complication. The wound itself did not demand any surgical interference and there was no doubt that the infection got into the system through the internal jugular vein. Ligation would have been the proper thing, but the patient was not a good risk for any operation.

I have seen not less than twenty-five cases of similar character that had all the clinical appearance of carcinoma, but later showed abscess; most of these cases are syphilitic perichondritis in the old. At present I have two cases of this form that are tuberculous in nature. The microscopic examination, however, reveals simply an inflammatory process not characteristic of either lues or tuberculosis, nor is there any other characteristic, physical or blood finding.
Case 57.—Male, age 43, for more than two years noted a scar formation in his skin all over the body, especially about the face, hands and feet. These scars contracted and produced a crippled condition of his hands and fingers, toes and eyelids. (Fig. 168.) He also noted that his voice and breathing became difficult. Examination of the larynx showed contraction and thinning of the mucous membrane. It became necessary to open the larynx to relieve these symptoms. A piece of tissue from within the larynx showed under the microscope it was purely connective tissue of chronic variety. (Fig. 169.) The thyrotomy was kept open for a long period (several weeks), during which time the patient received X-ray and radium treatment. The result was very satisfactory and he recovered a fair voice and good breathing. The body as a whole received X-ray treatment with benefit. It must be added that large doses of thyroid extract was given during his stay at the hospital and after he left.

Case 52.—Keloid about the face. Man, age 26, while crossing an elevated railroad, tripped and fell on the third rail, which was highly charged with electricity. The accident caused a severe burn about the face and arm, necessitating the amputation of the arm. The resultant deformities from the loss of the alae nasi, part of the upper lip and lid are shown in Fig. 170. The scars were distinctly keloid in character, and their removal was always followed by recurrent keloid. Fig. 172 shows a typical section of such scar formation, with the unusual hypertrophy of the epithelium covering the scars. I finally had applied X-ray and radium over these keloid areas,
using always a screen of aluminum and leaving it in situ for two hours. Subsequent to this sort of treatment, I noted a softening of the scars, but the best thing noted was the non or slight reformation of the keloid after plastic operations of correcting the ala, lip and lid. (Fig. 171.)

I have treated a fair number of keloids about the face and have found nothing approaching the value of radium applications. From the X-ray I have not seen very much benefit and surgically there is usually a failure, no matter how carefully one approximates the skin incisions. The internal administration of thyroamin is perhaps one value. I make use of it in every case.

Case 53.—Thyroid gland. A. Hyperthyroidism and exophthalmus. B. Lipoma. C. Malignant disease. Man, age 27, for more than a year has been suffering with nervousness, headaches and weakness and for the past month can scarcely walk. Also noted a swelling about his neck and a bulging of his eyeballs.

Examination shows a typical extreme thyrotoxic state with all the signs of a markedly progressed case. (Fig. 173.) He was immediately placed on appropriate X-ray treatment, with the result that within six weeks I could remove his tonsils, devitalized teeth and ligate the superior thyroid arteries. He recovered completely without any further thyroid operation.

Case 54.—Woman, age 48, has had for more than a year all the classical symptoms of hyperthyroidism, but no glands enlarged. The most marked symptom was the exophthalmos. (Fig. 180.) After seven erythema X-ray doses, it was noted
that we could attempt to remove the various points of chronic infection. Consequently her tonsils and teeth were removed, and practically all her thyrotoxic symptoms disappeared, but the exophthalmos remained the longest—in fact, they never went back to normal. It was, however, noticed that whenever she received a diathermic treatment to the neck (over the region of the sympathetic ganglion) there was a temporary recession of the eyeball, as proven by the exophthalmometer.

I have treated many cases of thyroid gland disease not thyrotoxic, adenomatous and colloidal degeneration, and have observed but very transient benefit. However, the toxic symptoms were always favorably influenced.

Case 55.—Female, age 8. Mother noticed that the daughter developed a swelling in the center of her neck, which for the past two months was growing. It caused no other symptoms. Examination revealed a soft nonpulsating tumor that extended from the thyroid cartilage below the sternal notch and quite a ways laterally. (Fig. 174.) Believing it to be a thyroid gland enlargement, she had received adequate X-ray treatment for three erythema doses without the least particle of effect. Consequently I operated and found a lobulated tumor indicative of lipoma. (Fig. 175.) The microscopic examination showed it be a lipoma. (Fig. 176.)

Case 56.—Female, age 59, had a neck swelling for several years, but recently it began to grow quite rapidly. She consulted a physician, who attempted to remove the growth, but the patient stated the doctor said he had to desist on account of uncontrollable hemorrhage. When she presented herself to
me there was a hard nodular swelling extending the whole anterior part of her neck, causing considerable difficulty of swallowing. An old scar bisected the swelling. (Fig. 177.) Suspecting a malignant growth, either sarcoma or carcinoma, I had her given treatments, but after five erythema doses there was not only no benefit, but she became worse, especially in her breathing, so that I had to perform a tracheotomy. This was accomplished with considerable difficulty, because I had to plough through a very bloody tumor. I performed practically the whole operation with the Percy electric cautery, thus minimizing the bleeding. The patient lived fairly comfortably, so far as breathing was concerned, for about one month, but she lost rapidly in weight because she could not swallow. She refused a gastrostomy. The microscope demonstrated a highly vascular epithelial growth.

Case 57.—Female, age 61, had a large neck for many years, but noticed that during the past six months it grew more rapidly and became hard and nodular. She also had difficulty in breathing. (Fig. 6.) Suspecting malignant change, I had her treated by intensive X-ray for three erythema doses, but with no appreciable result. Desiring to relieve the pressure upon the trachea by lifting the gland away, I placed the patient on the table for a local operation. I had barely injected two drachms of apothesin and made the incision when the patient developed marked nervous symptoms, a very rapid heart beat, general tremors and vomiting, which I could not control. There developed a marked acetone breath, and in
spite of all my efforts she died in less than twenty-four hours from symptoms of exhaustion.

Case 58.—Female, age 63, always had a swelling of her neck but quite recently it began to grow very rapidly, so that when she presented herself for examination she could scarcely breathe or swallow. She had been for several weeks under the treatment of a competent physician, who said she received ray treatments without any benefit.

There was a very hard nodular mass practically surrounding the neck. (Fig. 179.) Attempts to intubate her with a stiff rubber catheter were futile, and since there was no time to lose I attempted to cut down to her trachea. In the attempt of going through a mass of soft, excessively bleeding tissue to the trachea, I found myself embarrassed by inability to stop the bleeding except by pressure, and when doing this I shut off her breathing entirely. In a frantic effort to reach the trachea I finally did open it, but the patient was exsanguinated and died on the table. I made an immediate post-mortem and found that the growth had extended into the mediastinum.

Case 59.—Female, age 9. (a) Lymphangioma of lip. (b) Hemangioma of face and tongue. (c) Varices of the tongue. Ever since she was a little baby the parents noticed a swelling of her right upper lip, which had periods of enlargement and recession. Figs. 181 and 182 show the patient when she presented herself to me. It had a fairly firm doughy feeling and was not painful. Puncture revealed nothing. Suspecting a lymph vessel growth, I had her placed under X-ray treatment, which had absolutely no effect. I then put on 50 mg. of radium element, screened by \( \frac{3}{4} \) mm. of silver, for four, five and six hours, respectively, within two months. After a month of waiting I noted but very little change for the better, consequently I excised an encapsulated growth, following which I had a very good cosmetic effect. (Fig. 183.) The microscope verified my clinical diagnosis of lymphangioma. (Fig. 184.) There were many changes of an inflammatory character, which probably were due to the X-ray and radium treatment.

Case 60.—Child, age 1½. A few days after the baby was born the mother noted a small red spot about the right upper
eyelid and this grew so rapidly that within a month the entire eyelid was involved. Various treatments were tried by the family physician, but nothing appeared to stem the progress. When I saw it, the appearance was as in Fig. 185. I decided to try out various modes of treatment, selecting the different portions involved and confining the particular treatment to that part. I applied the carbon dioxid snow over the area of the forehead. The eyelid I treated with 10 mg. of radium element, screened by ¼ mm. of aluminum. The cheek I injected with boiling hot water, the upper lip with X-ray, and the outer part of the cheek, ear and neck with minute ligations subcutaneously placed. The result, after very uphill and persevering treatment for nearly one year, was the complete disappearance of the growth, leaving a healthy but much scarified face. (Fig. 186.) The eyelids which received the radium treatment gave the best cosmetic and physiologic result. She had more than twenty applications of radium, always an hour duration, and there remained a perfectly transparent cornea. It is my intention when I am sure there will be no recurrence to do a facial plastic operation on her.

Case 61.—Male, age 64, complains of thickening of his tongue, especially on the sides. This condition has been in existence for the past two years, gradually getting worse. Examination shows a marked dilatation of the veins from the tip to the base, extending towards the floor, on either side. (Fig. 187.)

The base of the tongue veins were equally dilated. I could find neither a local nor general condition explaining this condition. Application of 25 mg. of radium, screened by 1/10 mm. of aluminum, and well covered by rubber tissue, placed between the tongue and floor of the mouth for six one-hour periods caused a marked diminution in the size of the veins.

The base of the tongue showed no particular change.

Case 62.—Baby, age 2 years, was born with a blue tongue, which gradually grew until there was not room enough within the mouth, and it protruded. (Fig. 158.) There were no great difficulties in breathing, but some trouble in feeding. Following one application of X-ray for 15 minutes by a medium tube, the tongue grew so rapidly that it became necessary to retract the cheek to allow air to pass for breathing.
The nasal breathing appeared to be shut off by pressure against the soft palate. The child weakened so rapidly and nothing could be done to stem the tide. It died in less than a week from the time the X-ray treatment was given.

I have treated eighteen cases of angiomata about the head and neck with very satisfactory results by various methods as indicated in the case. There is no question that the radium is the best means of treating it, especially if one has the larger plaques to apply over greater areas.

CONCLUSIONS.

1. Comparing cases treated before radium and the X-ray were in vogue, I find my records show a higher percentage of cures of malignant disease when these were not employed. This is contrary to the general belief.

2. There appears to be a toxemia develop in cases of malignant disease wherein large doses of radium and X-ray are employed which differs from the ordinary toxemia found in cancer or toxemia from X-ray and radium in nonmalignant disease. I am trying to determine if in the chemistry of the blood there could be isolated a substance and possibly prevented or neutralized. I have asked Dr. Gradwohl to assist me in determining this fact, and he has already shown me that one substance appears to be increased in the blood following treatment of malignant disease by means of massive dosage of radium and X-ray.

3. The earliest possible diagnosis of malignant disease with as thorough early operation without X-ray or radium treatment, either before or after operation, would be, in my judgment at the present, to the best interest of the patient.

4. I fully realize the greatness of X-ray and radium as to the possibilities of curing malignant disease, but thus far in my experience of nearly sixteen years, it has not demonstrated this value.

5. Realizing the great possibilities, I shall continue to experiment with them as well as any other substance or mode of treatment that promises at all any possibility of a cure of cancer.
6. As stated in the beginning of the paper, following up the cases and re-reporting on them is of the utmost importance.

7. In nonmalignant conditions there should be every effort made to determine the value of X-ray and radium, because there is everything to be gained and nothing lost but time. There are exceptions, as, for instance, thyroid gland enlargements without toxic states have been often treated by X-ray, procrastinating until these symptoms appeared.

8. The proper technic of applying X-ray and radium is essential; furthermore, the technic employed should be reported.

Note.—Since the presentation of this paper, more than a year ago, a number of cases here reported have undergone marked changes, and many new cases have been observed, upon whom the radium treatment associated with operation was employed. It would be well if I were able to amplify this article by reporting these cases, but there is neither time nor space at the present for such a publication; it will, therefore, be reserved for a future occasion. I have learned one or two very important facts which do not appear in the paper in regard to the mode of application of the radium needles. I refer to the danger of causing marked destruction in the close proximity to the radium needle applied within the center of the growth, and if at the same time there is a stimulating action of the radiation from the center to the periphery of the growth. Therefore in the employment of radium needles or, for that matter, any other applicators, it is best to treat from the periphery to the center. Another observation that is important is that while one may demonstrate microscopically true cancer cells in cancer areas treated by radium, I have noted in a number of instances that no regrowth occurred from these for a period of nearly a year. Are we to assume that such cancer cells are innocuous? Time only will tell.

I have treated a number of cases of malignant diseases of the upper respiratory tract with radium only, and without operation, and in several instances most remarkable results were noted. How permanent these will be again only time will tell.
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