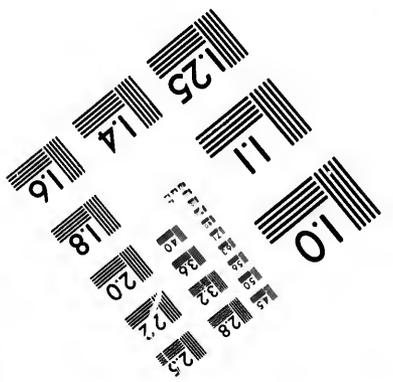
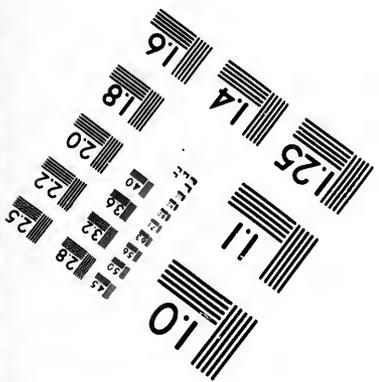
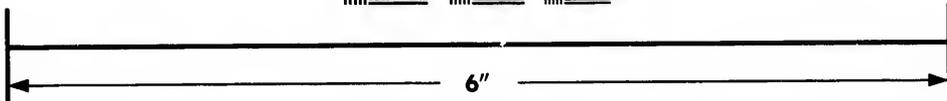
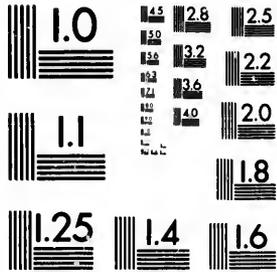


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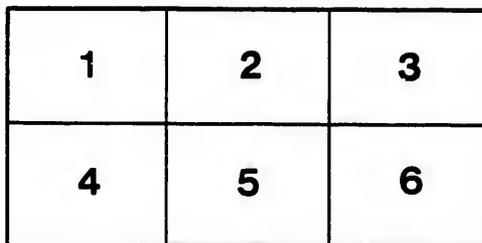
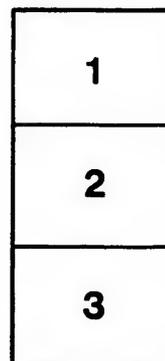
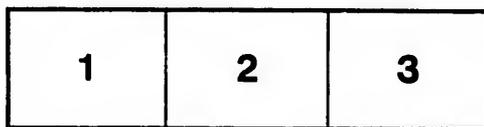
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QUARTERLY REPORT OF THE EYE AND EAR CLINIC OF THE
ROYAL VICTORIA HOSPITAL, MONTREAL.

BY

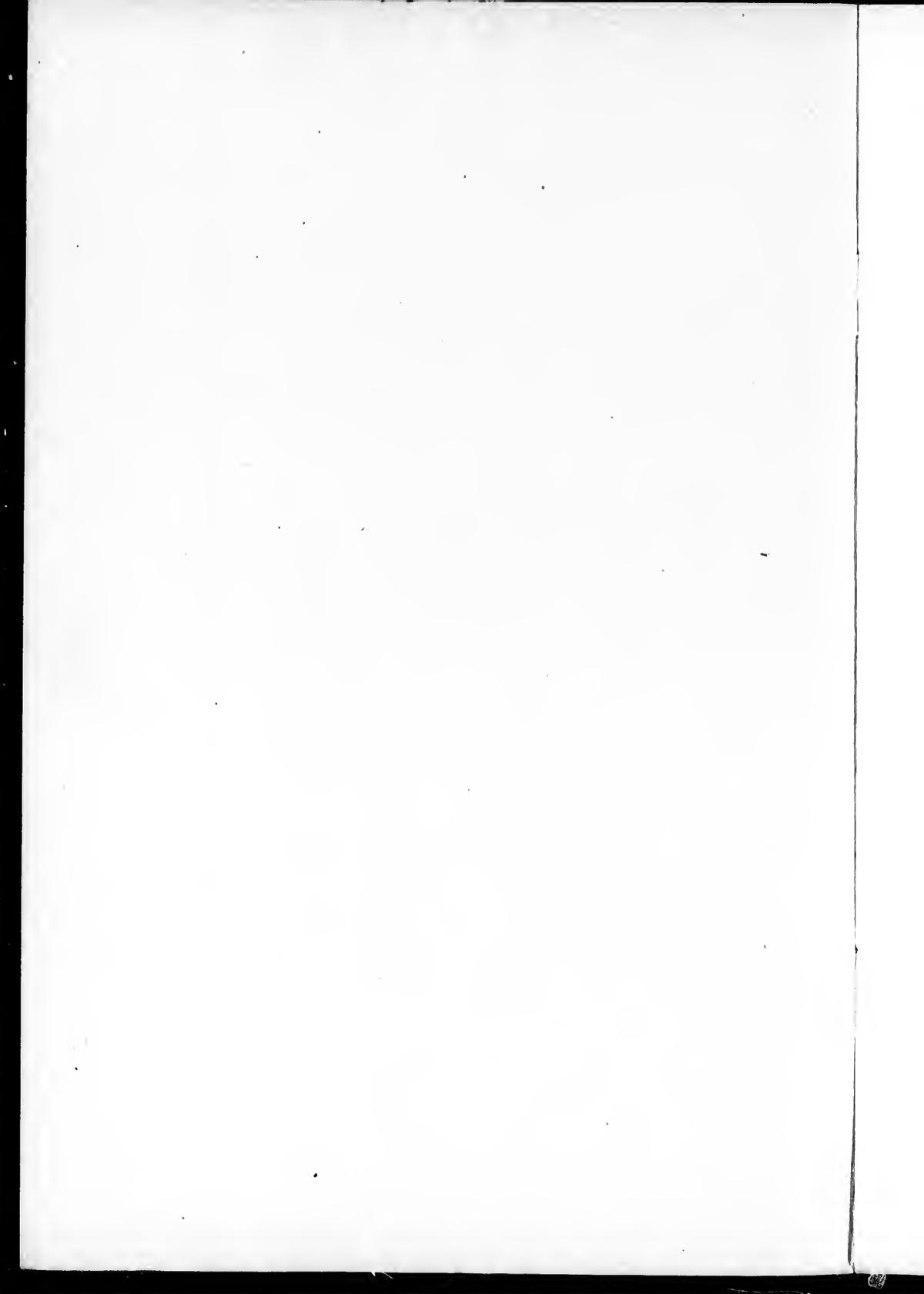
FRANK BULLER, M.D.,
Surgeon to the Department,

AND

W. GORDON M. BYERS, M.D.,
Assistant-Oculist and Aurist.

Reprinted from the Montreal Medical Journal, October, 1900.





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**A Case of Primary Carcinoma of the Lachrymal Gland—Ex-
tirpation of the Growth by Kronlein's Operation.**

James W., æt. 31, English-speaking native of Canada, came to the out-patient department of the hospital complaining of a bulging of the left eye.

For the past year the patient had felt indefinite "stitches" in the outer and upper part of the orbit, and during a period of ten weeks prior to his coming to the clinic he noticed a gradually increasing prominence of the left eye accompanied by failure of vision of that side. During the last mentioned period the patient said that the parts to the outer and upper side of the eye had become slightly tender to the touch, but he had never experienced any definite pain in connection with the growth. He had been living a generally intemperate life for some years past, and on two occasions during drinking bouts had received blows upon the left eye. There was ^{no} specific history.

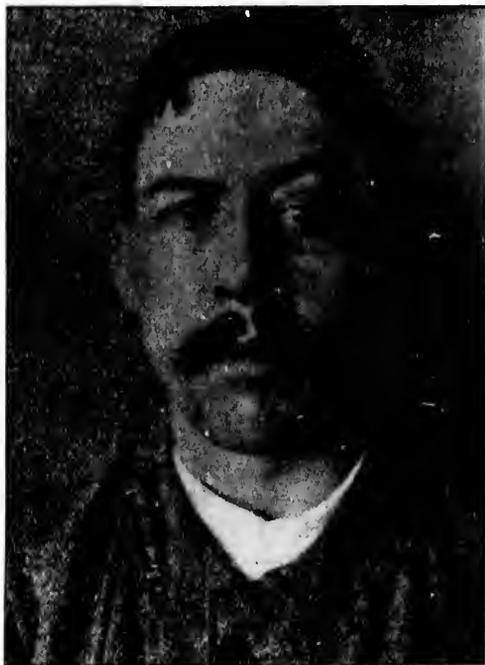
The patient was a fairly well nourished man of medium height, exhibiting a considerable degree of anæmia as shown by pallor of the face as well as lips and conjunctivæ. The right eye was normal in every respect, R.V. = $\frac{1}{6} + 0.5 \frac{1}{6}$.

The changes in the left eye, as will be seen in the photograph, were very marked. There was increased fulness of both the upper and lower lids with obliteration of the palpebral folds. The left upper lid was on a lower level than the right but the palpebral fissure was fully 3 mm. wider on the left than the right side; the movements of the lids were normal. The veins of the conjunctiva were full and tortuous along the upper fornix, but this condition could only be seen when the lid was everted.

The most striking feature of the case was the very apparent exophthalmos. There was forward displacement of the globe to the extent of 15 mm. with little or no lateral deviation and the eyeball was at the same time pressed downwards about 5 mm. below its opposite fellow. The

movements of the globe were normal in every direction except outwards, where the excursion was 8-10 mm. less than on the right side.

On palpation one could feel below the outer third of the superior margin of the orbit, between it and the upper surface of the eyeball, a dense elastic mass with a rounded, slightly nodular margin. The tumour could be traced into the orbit for a short distance on either side. With the ophthalmoscope, increased fulness of the retinal veins was made out, but the fundus was otherwise normal. L.V. = $\frac{0}{30}$, not improved. The field of vision for white, red, and green, showed only



slight constriction for the first mentioned colour on the temporal side of the chart. T. n.

May 3rd, 1899. Tumour removed by Krönlein's method. As the details of this operation are still not generally known, we insert a translation of the author's own words regarding the steps to be followed in its performance, as was closely done in this instance.

1. *Skin Incision:* The incision begins in the temporal region at the point where the *linea semicircularis* of the frontal bone is distinctly felt through the skin, *i.e.* about 1 cm. above the *margo supraorbitalis*, and

extends downward along the outer orbital margin as a slight groove, with the convexity forwards, to the level of the upper margin of the zygomatic process of the malar bone, where it turns backwards and ends in the middle of this structure.

The skin incision is then carried down to the bone along the outer orbital margin, and through this periosteal incision the whole of the periosteum is separated from the lateral orbital wall by means of a raspator, a proceeding easy of accomplishment. The point of the raspator is then passed downwards to the inferior orbital fissure in order to fix the spot which forms the point of convergence of the presently described bony sections.

II. *Bony Incisions* : The osteoplastic resection shall include the whole of the outer orbital margin (process. zygomaticus oss. front. and process. frontalis oss. zygomatic) and that part of the outer orbital wall which lies between this limit and the inferior orbital fissure (pars orbitalis oss. zygomatici and anterior part of the ala temporalis oss. sphenoid.). The piece of bone to be temporarily removed has therefore the shape of a wedge whose base is formed by the outer orbital margin (process. zygom. oss. front. and process. front. oss. zyg.), and whose apex ends in the anterior part of the inferior orbital fissure.

The bony incisions are best made with a sharp chisel without any further preparation and especially without loosening the natural connections to which, together with the skin flaps, falls the work of nourishing the separated piece of bone during the early period of healing. First of all the external angular process of the frontal bone is chiselled transversely through somewhat above the distinctly visible and palpable *sutura zygomatico-frontalis* and the bony incision continued forward in a direct oblique line through the lateral orbital wall to the raspator in the inferior orbital foramen. Then follows the horizontal chiselling through of the *processus frontalis* of the malar bone close to its base and likewise carried down to the fissure.

When this has been done the bony piece thus made free, together with the skin fasciæ and muscle flaps of the temporal region, can be so far turned outwards that the entrance to the orbit in its lateral part appears free. The operation is usually simply and quickly performed ; after successful removal of the tumour the skin and soft parts are replaced and held in position by sutures and healing follows without difficulties or disfigurement."

The operation in the present instance varied little from the above description and was performed without any serious difficulty. On turning back the bony wedge the tumour presented beautifully in the wound and was removed with ease.

The patient made an uninterrupted recovery and was discharged May 17th, *i.e.* two weeks after the operation. Although diligent search was made for the patient recently, we were unable to find his whereabouts and cannot consequently state his present condition. The last note on his out-patient card, dated May 26th, 1899, was as follows:—
 "Wound entirely healed leaving a thin V-shaped cicatrix at the outer angle of the orbit; proptosis now very trifling but there remains slight convergent strabismus (40°) and on movement outwards the left eye approaches only to within 1 cm. of the outer canthus and the patient sees double to the left. Fundus normal, L.V. = $\frac{0}{24}$ (2), not improved. Some loose œdema of the conjunctiva downwards and outwards."

The extirpated growth represented the enlarged lachrymal gland and was everywhere covered by a thin but firm capsule. The mass measured 35 mm. antero-posteriorly, by 25 mm. from above downwards, and was thicker at the anterior end (20 mm.) than at the posterior end (5.8 mm.), as the tumour tapered off from before backwards. The anterior surface was slightly concave, the external decidedly convex. The tumour had an uneven, in places almost nodular, surface and was of moderately dense consistence.

Microscopical examination showed that the normal appearance of the gland was everywhere obliterated by an overgrowth of typical epithelial cells which tended especially to mass together in certain areas. The septa of the gland were little changed and there was no tendency to any alveolar arrangement.

The growth consisted of a marked atypical development of characteristic epithelial cells and was therefore regarded as *carcinomatous* in character. Dr. Nicholls, Assistant Pathologist to the hospital, kindly examined the growth and arrived independently at the same conclusion.

Systematic Examination of the Excised Eyeball.

(From the Pathological Laboratory of the Royal Victoria Hospital.)

Case IV.—Glaucoma Absolutum—Extensive Subchoroidal Hemorrhage Following Iridectomy.

The patient, a female æt. 55, had an attack of glaucoma in the right eye in September and November of 1898, and again in January, 1899. The last seizure robbed the patient completely of the sight of that eye.

On examination, the media were found to be entirely clear and the optic disc of a peculiar reddish color and seemed to be moderately cupped, T. + 3.

June 24th, 1899, iridectomy was performed in the forlorn hope of preserving the globe *in situ*. Immediately after the iris tissue had been snipped off the corneal wound gaped and the lens presented through the

coloboma. The wound was now enlarged and the lens removed with a vectis, vitreus escaping during the procedure. A quarter of an hour after the application of the pad and bandage the patient complained of severe pain, and intraocular hæmorrhage having been diagnosed, the globe was excised.

Examination of the eyeball showed the cornea flattened and wrinkled and a large mass of dark blood-clot protruding from the gaping wound at the upper corneo-scleral junction. On section, one sees again the gaping scleral wound and through this protrudes a rounded knuckle of choroid pushed forward by a large hæmorrhage, which everywhere extensively separates the vascular from the sclerotic coat of the eye. Within the choroid the retina, shrunken and thrown into numerous folds, is attached only at the optic disc and forwards in part at the ora serrata. In the anterior part of the subretinal space is a small amount of extravasated blood which has apparently come from the ciliary process.

Case V.—Longstanding Wound of the Cornea, Iris and Lens—Chronic Uveo-Retinitis—Secondary Glaucoma.

Edward B., æt. 32, cut his left eye with a jack knife when he was 9 years old. The organ was inflamed and painful for two or three months but eventually quieted down and caused no inconvenience whatever until one month previous to his admission, when it became for a second time terribly and persistently painful.

Examination showed very marked pericorneal and conjunctival injection, and a distinct corneal cicatrix about $\frac{1}{2}$ mm. broad, which runs in a vertical direction through the inner third of the cornea and extends from the junction of the upper and middle thirds of this structure at least 1 mm. beyond the corneo-scleral margin. The pupil is almost obliterated, but the iris, the tissue of which is visibly atrophied, is drawn inwards towards the middle of the cicatrix where it adheres. The anterior chamber has become obliterated. V. = no pl., T. + 2.

Section shows the cornea of normal thickness but marked by a prism-shaped cicatrix corresponding to the scar noted. The iris is most firmly applied to the whole of the posterior surface of the cornea, but a portion of it, stroma or pigment epithelium, stretches between the cicatrix and the inner anterior surface of the lens. The ciliary body and ciliary processes are visibly atrophied but hold in a loose manner the opaque and irregularly shrunken lens. The retina as a whole is greatly thickened and marked by the presence of irregular masses of organized tissue, greyish-white in color. This is especially laid down along the retinal vessels at the *equator bulbi* in the upper outer quadrant of the globe and along the whole extent of the terminations of the ciliary processes in the upper half of the eye.

From the last mentioned deposit of tissue a filmy vascularised curtain descends close behind the posterior surface of the lens, to which it sends fine processes, and is loosely attached in the lower half of its extent. The retina is very extensively detached, especially in the lower half of the globe, where it is adherent only at the optic disc and *orra serrata*. The subretinal space is completely filled with a gelatin-like substance of a reddish amber color.

Microscopical examination : The corpuscular elements of the cornea are everywhere greatly increased except at the position of the cicatrix, where the stroma is paler and clearer from the presence of scar-tissue. Very little of the iris proper is seen, because the retinal pigment layer is so greatly developed that the thin and atrophic stroma is almost completely hidden from view.

The newly formed curtain behind the lens has the appearance and staining properties of connective tissue ; it is continuous with and has been apparently derived from the mesoblastic elements of the retina, which it has caused to be detached from cicatricial contraction upon its peripheral limits. On either side the retina is folded upon itself for a short distance and the apices of the folds are the points of attachment of the post lental curtain.

The retina otherwise shows changes of long standing atrophy, but is also the seat of numerous interstitial hæmorrhages of varying size. The subretinal exudate is composed of extravasated blood in which numerous leucocytes are undergoing metamorphosis into pigment cells. From the membrane of Bruch are developed numerous and particularly large hyaline exerescences (Drusen.).

Case VI.—Chronic Irido-Cyclitis—Secondary Glaucoma—Sarcoma of the Choroid.

The patient, a female, æt. 44, had noticed failure of vision of the left eye for the past three years, with pain and redness in the organ for the last six months ; at first the pain was severe, but during the last two months her suffering has been less acute.

The left eye showed slight divergence and intense pericorneal injection with large tortuous conjunctival vessels running in at intervals to the limbus. The cornea is hazy and stippled and Descemet's membrane studded with old cyclitic deposits of a reddish brown color. A few deep, interstitial vessels are seen running in from the periphery of the cornea. The anterior chamber is shallow ; the pupil irregular and totally bound down to the apparently opaque lens there is marked ectropion of the retinal pigment layer.

Along the periphery of the inner half of the iris and corresponding to

the greater circular artery, is an elevated ridge of iris tissue which almost touches the posterior surface of the cornea. The ascent of this prominence from the direction angle of the anterior chamber is gradual, but on the side towards the pupil it terminates precipitously. Its summit is covered for some distance by a fine vascular mesh work. V. = no pl., T. n., no fundus reflex.

Microscopical examination shows the conditions as above, but one sees also thinning, discoloration and moderate bulging of the sclerotic in the equatorial region outwards and upwards.

Section shows the anterior chamber filled with whitish lens-like substance which made its appearance during the hardening in formalin. Immediately in front of the iris is a thin rubbery layer of tissue continuous through the pupil, with an exudate of a similar consistence between the posterior surface of the iris and the anterior lens capsule, and in and about the posterior chamber.

Immediately in front of the entrance of the optic nerve and occupying about a third of the vitreous chamber is a large pigmented growth, springing apparently from the choroid coat. The retina on either side is extensively detached and pushed towards the posterior surface of the lens. The large, subretinal space on either side of the tumour is occupied by a reddish, jelly-like exudate. The optic nerve almost in its entirety had been left behind in the orbit. The sclerotic is much attenuated in the position of the staphyloma.

Microscopically, the picture is that of a sarcomatous growth of the choroid complicated by a most intense inflammation of the iris and ciliary body. The tumour is seen to spring clearly from the choroid, which is thickened and infiltrated by the sarcomatous cells for some distance on either side of the growth.

The sarcoma is composed for the most part of spindle-shaped cells which have a distinct fascicular, in places almost alveolar, arrangement. Numerous pigment accumulations are seen here and there throughout the tumour, especially in its peripheral parts, and the growth is rich in large, irregular blood vessels.

The whole anterior segment of the eye, but especially the iris and ciliary body, show a most intense small-round-celled infiltration. The anterior chamber is filled by a yellowish, clear exudate in which are seen everywhere fine, delicate, interlacing fibrils. Dense masses of leucocytes have been thrown out along the anterior and posterior surfaces of the iris into the posterior chamber and around the whole of the periphery of the lens. Elsewhere along the anterior margin of the retina and between it and the processes of the ciliary body, a fine fibrin-

ous exudate is present, in which are seen numerous, branching cells of the type of embryonic connective tissue.

The lens has undergone extensive cataractous changes. The wandering cells of the cornea are moderately increased in number; while numerous clear vacuoles are seen in the deeper layers of the corneal epithelium, resting for the most part upon Bowman's membrane. The angle of the anterior chamber is blocked on both sides by the periphery of the iris and inflammatory exudate. A most intense small-round-celled infiltration of the subconjunctival and episcleral tissues is also seen.

