THESIS

ON

INTRA-CRANIAL TUMOURS.

WITH SPECIAL REFERENCE TO THE
PITUITARY BODY.

BY

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INTRA-CRANIAL TUMOURS.

WITH SPECIAL REFERENCE TO THE
PITUITARY BODY.

ETIOLOGY: predisposing causes; heredity; constitution, mental anxiety and worry, alcoholic excesses (twice as common in males as in females, "Gowers").

Direct Causes, injury, micro-organisms are still very doubtful, age is the most important. Gowers in his book on Diseases of the Nervous System gives the following facts with regard to age. Scrofulous occur more in the young. Syphilitic in adults, most common between the ages of thirty and forty-five years. Cancers in old people. Gliomata at any age.

From one to twenty, one third of the cases of intracranial tumours occur.

Twenty to forty years, two fifths; and from forty to sixty years, one fifth.

Tubercular tumours occur at all ages, but are most common in the young.
Gliomata are most common during active adult life; Sarcomata about the same.

Parasitic tumours are the most common between the ages of ten and twenty and then between twenty and thirty, under and over these times of life they are rare. Carcinomata occur at all ages, but half the cases have been found between forty and sixty years, only two have been recorded before twenty.

PATHOLOGY. We find a greater variety of tumours of the brain than of any other part of the body.

Gowers gives the following classification:

First Diathetic; tubercular and Syphilitic.

Second; Sarcomatous; glioma, sarcoma, myoma.

Third, Carcinoma.

Fourth, Osteo-fibroid, fibroma, osteoma, osteo-fibroma.

Fifth, Miscellaneous; Cholesteroloma, lipoma, vascular or erectile tumours, psammoma, neuroma.

Sixth, Parasitic; echinococcus and cysticercus.

Tubercular tumours constitute more than
half the total, and gliomata and sarcomata together about one third, the former a little more frequent than the latter.

The relative frequency of the different parts of the brain in 718 cases was as follows:-

Cerebral Hemispheres (white substance and cortex), Two hundred and ninety-seven.
Cerebellum, One hundred and seventy-nine.
Base of Brain, Seventy-six.
Pons Varolii, Fifty-nine.
Central Ganglia, Forty-eight.
Medulla Oblongata, Thirty-one.
Corpora Quadragemina, Thirteen.
Crura Cerebri, Ten.

DIAGNOSIS, GENERAL AND LOCALISING SYMPTOMS.

General Symptoms.

Usually well-marked when there is great intra-cranial pressure, which depends upon first, size; second rapidity of growth of the tumour; third
presence or absence of dropsical distension of the ventricles and the extent thereof.

These symptoms may be well marked in the earlier stages, but in the later may become less prominent, or may altogether disappear owing to the anaemia oedema, and compression of the nervous tissue diminishing the sensibility of the brain, and therefore the feelings and perceptions become dulled and a condition of hebetude, mental apathy, semi-coma, or actual coma is produced. They also depend upon the irritation which is produced in the nervous tissues and in the cerebral membranes.

The Individual Symptoms.

Headache, the most frequent and usually the first to attract attention. It may be agonising and unbearable or only slight.

In some cases it is more or less constant, often paroxysmal or subject to paroxysmal exacerbations and worse at night, more especially in syphilitic cases. Anything which produces derangement of the cerebral circulation is apt to aggravate it or produce
a paroxysm.

Its position is variable, usually internal, sometimes localised, at other times diffused. The former is sometimes associated with tenderness on skull percussion, or gentle pressure over the affected part.

The causation of headache is probably various. The most common is probably increased intracranial tension. In some cases it is due to direct involvement of the trunk of the fifth nerve.

Dr Hilton Fagge considers it may be the result of a nerve storm.

Diagnostic value per se small.

Localising value not as a rule great, though where you have it localised and associated with tenderness on pressure it may correspond to the position of the tumour.

Pathological value not great.

In glioma of the cerebrum headache is not unfrequently absent. In a case which came under my own observation at the Bradford Infirmary, the man
continued at work till he fell from a scaffold and
was brought in suffering from concussion which passed
into coma and the patient died in about a week after
admission. At the post-mortem a large glioma was found
in each cerebral hemisphere and a smaller one in the
cerebellum.

Vomiting the next commonest symptom to
headache and optic neuritis. It is purposeless, that
is irregular and has no relationship to ingestion of
food or drink. Sometimes associated with a clean
tongue. It is often followed by marked exhaustion.
It is often paroxysmal and associated with exacerba-
tions of the headache. It often occurs in the morning.

It is in many cases due to irritation of
the sensory nerve endings in the cerebral menbrane;
in some it may be reflex from irritation in the tiss-
ues of the brain itself. In some cases due to distur-
bances of the cerebral circulation, and in others
due to the direct irritation of the vomiting centre
in the medulla.

It is also probable that where there is
severe vertigo the cause may be an overflow from the vertiginous to the vomiting centre.

The diagnostic value per se is small.

The localising value also is not great, as a rule the nearer the tumour is to the vomiting centre the worse the vomiting and vice versa.

Vertigo. This is usually slight and transitory; but sometimes it is both severe and persistent. It is usually produced or aggravated by suddenly rising from the recumbent to the erect position, stooping the head forwards, etc. In most cases the patient simply feels giddy, in some he feels as if surrounding objects were moving in a particular direction, while in others the patient feels as if he himself were being whirled through space.

Tumours of the middle lobe of the cerebellum are usually, though not always, attended with severe vertigo.

The cause may be temporary derangement of the cerebral circulation, or irritation of the cerebral membranes, or the brain tissue itself. In a
few cases where it is most distressing and severe it is due to direct irritation of some part of the mechanism concerned in the regulation of the head to the plummet lime of the body. Drs Mills & Lloyd suppose it may be due to pressure on the labyrinth on the labyrinthine fibres of the auditory nerve. In a few cases you get occular vertigo.

Diag nostic value, per se, is not great.

Optic Neuritis is present in eighty per cent at some time or other. The most important of all the general symptoms because, first, it is an objective sign and does not depend upon the mere sensations of the patient; second, it is present in the great majority of cases at some period or other; third, it is not commonly produced by other conditions or intra-cranial tumour is by far the most common condition associated with double optic neuritis. Optic Neuritis is almost always bilateral, in the few cases where it has been uni-lateral it has been found side on the opposite side to the lesion.

The acuity of the vision and the extent
of the visual field may be unaffected. It is almost always slowly developed. It is essentially a general and not a localising symptom.

Optic Atrophy. It may be primary but generally secondary to neuritis, the former is due to the pressure of the tumour or dilated cerebral ventricles upon the optic chiasma or nerve trunk.

In some cases of Atrophy the patient is completely blind, in most the acuity of the vision and the visual field are markedly impaired. Colour vision is usually impaired.

In post neuritic cases the field of vision is usually irregular.

The Causation of Double Optic Neuritis.

The following theories have been advanced.

1st. Increased pressure.

2nd. Descending Neuritis.

3rd. Vaso Motor irritation.

4th. Irritation by something formed by the tumour and carried by the cerebro-spinal fluid to the subvaginal space of the optic nerve.
10.

5th. Irritation plus increased pressure (Leber and Deutchmann).

1st. Increased pressure.

Deutchmann has shown by experiments that this of itself is not sufficient to set up optic neuritis and it has also been found in case of tumour where there has been no increase of pressure so that this, per se, is not enough to cause optic neuritis, but is an important factor in its production along with the presence of some other condition such as an irritant.

2nd. Descending Neuritis.

This is no doubt the cause in some cases, but there is a great weight of evidence against its being the sole cause, the chief of which are (1) in some cases of intra-cranial tumour when there has been well marked papillitis there have been found no indications of any meningitis. (2) in cases of tumours of the pituitary body where one would expect to find optic neuritis well marked from the irritation of the optic
tracts or chiasma we find instead optic atrophy;
(3) the auditory and other cranial nerves are not
similarly affected, this appears very important for if
optic neuritis is simply due to a descending inflam-
mation why should it pick out the optic nerve and not
affect the others?
3rd. Vaso Motor Irritation.

This theory is supported by Dr Hughlings
Jackson, but against it there are the following objec-
tions:— (1) it is doubtful whether vaso-motor changes
can produce the inflammatory changes. (2) these vaso-
motor nerves which would of necessity have to be distr-
ibuted to all parts of the cerebral tissue have never
been demonstrated, (3) other cerebral conditions, such
as haemorrhage, which would irritate these nerves do
not cause papillitis. (4) the same changes ought to
take place in the external ear and in the areas of
distribution of the other cranial nerves.
4th. Irritation by something formed by the tumour,

Such an irritant has not yet been discover-
5th. Irritation plus increased pressure.

Liber and Deutchmann have formulated this theory and it seems in the majority of cases to explain the presence of papillitis.

Localising Symptoms.

Motor Derangements:— paralysis, spasm, tremor, contractions are due generally to the destruction of the motor centres or conducting media by the tumour or to vascular changes in the motor parts, or to reflex irritation which may in some cases pass to the convulsive centre in the medulla, or directly in others by passing to the motor areas in the cortex.

These symptoms are often extremely important in localising the tumour.

Sensory Derangements:— touch, sight, hearing, taste, smell.

Touch, Anaesthesia and hyperaesthesia may occur, usually the former.

Sight, Ferrier gives the following dia-
gram of the arrangement of the optic fibres.

He considers that the right occipital lobe supplies the fibres for the supply of the right half of each eye, and the left occipital lobe for the left half of each eye, while the angular gyrus on the right side supplies fibres which partly decussate in the corpora quadragemina and partly in the optic
chiasma and supply the central vision and he also thinks it probable that there is some intermingling of fibres in the chiasma which brings the centre of vision of each eye into relation with the angular gyrus of the same side.

There may be dimness of vision to total loss of sight from the presence of optic neuritis, in this case sight is not a localising symptom.

Blindness due to primary optic atrophy is rare in intra-cranial tumour and is due to the pressure of the tumours on the optic chiasma or nerve trunks in front of the chiasma.

The field of vision may be peripherally affected, but the most interesting conditions are those which come under hemianopsia.

Hemianopsia may be lateral or homonymous that is the two right halves of the field of vision may be affected or the two left halves, this form is due to a lesion (1) in any part of the visual tract behind the optic chiasma, or (2) the visual centre itself.
A lesion on the left side in the above parts would paralyse the left halves of the retina and therefore produce right homonymous and hemianopsia and vice versa.

The fixing point is usually spared, therefore central vision is generally good.

In some cases the periphery of the field of vision on the opposite side to the hemianopsia is more or less affected and this is usually more marked on the same side as the cerebral lesion.

When the right half of the field of vision is affected on one side and the left half on the other it is called heteronymous hemianopsia.

Temporal hemianopsia is where you get the temporal halves of the field of vision on each side affected, that is, the nasal halves of each retina paralysed, this form is almost always due to pressure on the centre of the chiasma, and the commonest cause of this is a new growth in the pituitary body, it may also be due to an aneurism of one of the arteries of the anterior part of the circle of Willis, or a syph-
Nasal Hemianopsia is exceedingly rare; in it you have the two nasal halves of the visual field blind from paralysis of the outer halves of the two retinae, and it can only be caused by a lesion which involves each outer half of the chiasma, such as a symmetrical enlargement of each carotid artery or symmetrical foci of inflammation, or two symmetrically placed tumours, but the last has never been known.

Flashes of light occur in some cases and are referred to the eye on the opposite side to the lesion.

In cases of hemianopsia there is rarely any perceptible difference to be detected by means of the opthalmoscope between the affected and the sound halves of the retina.

Hearing:—Deafness is not often caused by intra-cranial tumour when it is it is usually due to involvement of the auditory nerve, either by the tumour or by the inflammatory products in its neighbour-
hood. In some cases it is associated with stupor and mental impairment.

Smell is rarely affected by intra-cranial tumour, and when it is, it is due to direct involvement of the olfactory nerves or bulbs by the tumour or the inflammatory changes in its neighbourhood.

Taste has rarely been affected in cases of intra-cranial tumour.

Mental Alterations: Apoplectic attacks; Visceral Derangements.

Mental alterations may be so slight as to almost pass unnoticed, or may be well marked.

They may be classed either under exaltation or diminution of function. They may be caused by the pressure of the tumour or inflammatory changes in its immediate neighbourhood upon special parts of the brain, or indirectly by reflex irritation or inhibition. They may also be caused by alterations in the nutrient supply to special parts.

Aphasia. Any of the forms may be present, but they are rarely associated with intra-cranial
tumours and the aphasia is usually temporary or incomplete. When present they are of special interest in localising the site of the tumour.

State of Nutrition is usually well preserved. In some cases of tumour of the pituitary body the patients have become abnormally fat.

The appetite is sometimes voracious.

The temperature is almost always normal or sub-normal in uncomplicated cases. Increase usually indicates inflammatory complications.

Mills & Lloyd assert that the average temperature of the whole head is elevated several degrees above the normal, and the elevation is usually greatest at the station nearest the new growth.

Pulse usually normal or diminished in the earlier stages, in the later may become increased.

Vaso-motor flushings are occasionally seen.

Alterations in the urinary secretion are occasionally observed.

Excess of phosphates is very common.
Polyuria, glycosuria, and albuminuria have been noted, especially in cases of tumour of the Pons Varolii, medulla oblongata, and pituitary body.

Bed sores are often present in the later stages.

Cheyne-Stokes respiration is not uncommon before death.

**Differential Diagnosis.**

Differential Diagnosis must be made from the following conditions:— (1) Bright's Disease. (2) Hypermetropia with or without anaemia. (3) Atrophy of the Brain. (4) Migraine. (5) Hysteria. (6) Some forms of insanity. (7) Meningitis. (8) Cerebral or Cerebellar abscess. (9) Extra and intracranial syphilis. (10) Cerebral Haemorrhage.

**Prognosis.**

This is, unhappily, bad. Some hope has been raised of late by increased operative interference.

**Termination**

This may be various, the patient may die
in an epileptic, appopletic, or pseudo apopletic fit, or from sudden stoppage of respiration or heart. (Sudden stoppage of respiration or heart.)

Sudden death may also be due to the violence of the patient's suffering. Exhaustion and complications may also be the immediate cause of death.

Treatment.

This might formerly be summed up in Iodide of Potassium and Mercury; but surgical interference has given hopes that at least in some cases, more may be done for the patient than has hitherto been effected by drugs, even if the new growth be malignant and cannot be removed, taking away part of the bone over the tumour has given great relief to the distressing pain. Arsenic in some cases of sarcoma appears to restrain their development.

THE PITUITARY BODY.

ANATOMY.

The pituitary body lies in the pituitary
fossa or sella turcica on the superior surface of the body of the sphenoid bone, this space is bounded anteriorly by the olivary process which has on each side of it the middle clinoid processes and in front the optic groove leading to the optic foramina and laterally in a slightly superior position are the inner smooth margins of the lesser wings of the sphenoid bone terminating in the anterior clinoid processes.

The sella turcica is bounded laterally by the cavernous groove which lodges the internal carotid artery and cavernous sinus.

Posteriorly the pituitary fossa is bounded by a quadrilateral piece of bone which articulates with the basilar process of the occipital bone, and ends superiorly in the posterior clinoid processes. On the upper surface of this part rests the pons varolii. The tuber cinereum is an eminence of grey matter, situated between the optic tracts and the corpora albicantia, it is connected with the surrounding parts of the cerebrum, forms part of the floor of the third ventricle and is continuous with the grey sub-
stance in that cavity. From the middle of its under
surface a conical tubular process of grey matter,
about two lines in length, is continued downwards and
forwards to be attached to the posterior lobe of the
pituitary body; this is the infundibulum. Its canal,
which is funnel shaped, communicates with the third
ventricle." (Gray's Anatomy, p. 489.) Posterior to the
tuber cinereum we have the corpora albicantia and
posterior perforated space. The above named parts
are all situated in the interpeduncular space, which
is bounded anteriorly by the optic commissure and at
the sides of this the roots of the olfactory nerves
and anterior perforated spaces, laterally and in front
are the optic tracts, laterally and behind the crura
cerebri, posteriorly the space is bounded by the pons
varolii, in the angles formed by the pons and crura
internally emerge the third nerves, externally the
fourth nerves.

gives the following description of the pituitary body
or hypophysis cerebri formerly called pituitary gland,
from its being erroneously supposed to discharge pituita into the nostrils. It is a small reddish grey mass, of a somewhat flattened oval shape, widest in the transverse direction and occupying the sella turcica of the sphenoid bone. The pituitary body has a special prolongation of the dura mater completely enclosing it, except above where there is a small aperture for the passage of the infundibulum. The body consists of two lobes, of which the anterior is the larger, and is concave behind, where it embraces the smaller posterior lobe. The two lobes are entirely different; and it is only in mammals that they come into close connection with one another. The posterior lobe is developed as a hollow downgrowth of the part of that cavity of the embryonic brain which afterwards becomes the third ventricle.

In the lower vertebrates, and especially in fishes, the cells which compose its walls become converted into nerve cells and fibres, and as the lobus infundibuli it becomes an integral part of the brain. But in the higher vertebrates it remains small
and almost undeveloped, its cavity is obliterated and all nervous structure becomes obscured by the ingrowth of vessels and sometimes tissue into the now solid organ. The connective tissue forms reticulating bundles, between which occur numerous spindle-shaped and branched cells, as well as a few larger corpuscles containing pigment granules in their protoplasm. Sometimes remains of the original hollow are seen in the form of a cavity lined by columnar ciliated cells. The anterior lobe, darker in colour than the posterior, is developed as a tubular prolongation of the epiblast of the buccal cavity, with which it is therefore originally in connection, although it soon becomes separated by the growth of intervening tissue.

In the adult it is constituted by a large number of slightly convoluted lobules or alvoli similar to those of a secreting gland, and in like manner lined by epithelium which in some cases fills up the tubule. The tubules are united by connective tissue which is specially abundant in the neighbourhood of the larger blood-vessels, and also forms a sort of
capsule to the organ. However portions of the tubules are frequently cut off by the connective tissue so as to form isolated vesicles. The outer layer of epithelium is columnar; and in some of the larger tubes, especially those next to the posterior lobe, cilia may be detected on the cells.

The blood vessels are numerous, and the capillaries form a close network around the walls of the tubules.

The lymphatics of the organ originate in cleft-like spaces between the tubules and pass to a network in the capsule.

In its microscopic structure the anterior lobe of the pituitary body bears a resemblance to the thyroid gland, the vesicles of which are also originally a network of anastomosing tubules, and in some animals remain through life in this condition.

Moreover a colloid substance like that in the thyroid vesicles, is found sometimes in the alveoli of the anterior lobe of the hypophysis.

The anterior end of the dorsal axial canal forms the primary cerebral vesicles which are at first three and later the first and third subdivide into two, making five in all.

The following table gives the subdivisions of the anterior primary vesicle and the parts derived from it.

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<thead>
<tr>
<th>Anterior Primary Vesicle (prosencephalon)</th>
<th>Anterior end of third ventricle.</th>
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<tbody>
<tr>
<td>Anterior</td>
<td>Foramen of Münro.</td>
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<tr>
<td>First second vesicle</td>
<td>Lateral Ventricle.</td>
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<tr>
<td>Second second vesicle (thalamencephalon)</td>
<td>Cerebral Hemisphere.</td>
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<td></td>
<td>Olfactory bulbs &amp; tracts.</td>
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<td>Corpus Callosum.</td>
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<td>Fornix.</td>
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<td>Third Ventricle.</td>
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<td>Optic Nerve &amp; Retina.</td>
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<td></td>
<td>Optic Thalamus.</td>
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<td>Pituitary &amp; Pineal.</td>
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<td></td>
<td>Glands.</td>
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The floor of the thalamencephalon becomes prolonged downwards into the infundibulum and takes part in the formation of the pituitary body.

The pituitary body, (Hypophysis Cerebri) is chiefly formed by a diverticulum of buccal epiblast (diverticulum of Rathke) which grows upwards towards the base of the second cerebral vesicle, and dilates into a flask-shaped expansion, which is at first, simple, but subsequently grows out to form a small mass of epithelial tubes, the lumen of which becomes eventually obliterated. Against the posterior wall of this flask-shaped dilatation the infundibulum grows down from the floor of the second vesicle, and its extremity becomes ultimately connected with the dilatation, but without communicating with its cavity, although bound up together by the same vascular connective tissue. In connection with this extension of the infundibulum, nerve cells and fibres become formed; in lower vertebrates they persist and retain their connection with the brain. The Notochord extends
into the basis cranii as far as the pituitary body. Just before reaching this, it bends ventral-wards towards Rathke's diverticulum, and here blends with the buccal epiblast (Bromat) Dohrn has shewn that in petromyzon the hypophysis develops as a separate median diverticulum of the external epiblast which is formed between the nasal pit in front and the buccal invagination (stomodeum) behind and grows straight backwards as a canal of some length towards the point of the noto chord, where follicles develop from it and become connected with the infundibulum. Later its orifice is found to open in common with that of the nasal pit. Vol.I. part I. page 100. The stomodeum deepens at its apex and anterior part, where it forms a pocket-like protrusion, which grows a certain distance into the angle formed by the sharp bend which the hinder part of the fore-brain now makes with the mid-brain. This pocket (Rathke) is the Hypophysis cerebri or pituitary involution of the buccal epiblast, and comes presently into connection with the infundibular protrusion of the neural epiblast, the two togeth-
er forming the pituitary body. It lies just above and in front of the pharyngeal septum.

**PHYSIOLOGY OF PITUITARY BODY.**


Functions entirely unknown.

Horsley has successfully removed gland twice in dogs, which lived five to six months. No nervous or other symptoms noticed; but when cortex of brain was exposed and stimulated a great increase in the excitability of the motor regions was induced, even slight stimulation being followed by violent tetanus and prolonged epilepsy.

Andriezen has written a most interesting account of the morphology, origin, and evolution of the function of the pituitary body, and its relation to the central nervous system in the British Medical Journal, 13th January, 1894, page 54. The specimens he used in studying the subject were larval and young amphioxus, larval and adult ascidians, young and adult balanoglossus, Ammocoetes, and adult Petromyzon, var-
ious fishes and larval and adult amphibians, also foetal and young kittens, rabbits, rats, the monkey and the man.

From his investigations he shows that the sub-neural gland in amphioxus etc., is the homologue of the pituitary body in higher animals for the following reasons:—(1) Its position corresponds to the pituitary of higher animals. (2) It presents the histological structure of a secretary gland. (3) It is developed from buccal epiblast. (4) It has anatomical connections both with the brain floor and the buccal roof. He further shows that this pituitary body in amphioxus, etc., has a threefold structure, namely:—

(a) is a subneural glandular organ, primarily median, and originating from the epithelium of the buccal roof at the orifice, (b) of a duct lined by ciliated epithelium, which affords a communication between the buccal and neural cavities, and (c) a group of nerve cells around and at the back of the upper opening, where the duct widens into the ventricular cavity. This widening part is the infundibulum, and the duct
may be called the infundibular duct."

He has demonstrated by means of a fine emulsion of carmine that a stream of water passes from the buccal cavity through the buccal infundibular duct to the ventricular cavity of the central nervous system and through the neural canal and out by the neurenteric aperture.

This water-vascular current no doubt supplies the central nervous system with oxygen and at the same time bears away the carbonic acid and other effete matters of the activity of the nerve tissue.

The group of nerve cells round the ventricular end of the buccal infundibular duct has for its function the testing of the quality of the water supplied to the nervous system. This part represents the posterior lobe of the pituitary body in the higher animals, which has become atrophied and useless owing to the blood vascular system having taken up the function of this water vascular mechanism. The sub-neural glandular portion which represents the anterior lobe of the pituitary body in higher animals and is
formed of true secretory epithelium. Andriezen suggests has for its function either "a trophic action on the nerve tissues, enabling them the more readily to take up and assimilate the oxygen of the water-vascular current, or a destructive action, serving to neutralize or render innocuous the waste products of the activity of the said nervous tissues."

He believes also that the posterior glandular portion of the pituitary body (though doubtless) in higher animals with a blood vascular system is still functionally active, having a trophic influence over the nervous system, its secretion entering the circulation by the medium of the lymphatics.

He also draws a parallel between the pituitary body and the thyroid which may explain the enlargement of the pituitary gland after thyroidectomy the latter having a similar action over the body tissues generally to that which the pituitary body has over the nervous system specially.

From the above investigation he draws the following conclusions, that the predictable effects
33.

of ablaiions of the pituitary body ought to be.

(1) Depression and apathy (the commencing failure of activity in the nerve centres) and (2) muscular weakness (the peripheral effect) (3) Loss of co-ordination and equilibration (correlated to first and second) and (4) the development of twitchings and irregular contractions (spasms) of the muscles (in relation to the further progress of nutritive failure of the nerve centres. (5) A want of sufficient heat production, and a subnormal temperature. (6) Wasting of the body tissues (in relation to the more rapid failure of nutrition of the central nervous system. (7) A probable compensatory polypnoea, or attacks of dyspnœa (the peripheral indication of the failure of the nerve centres to assimilate oxygen). (8) A rapid progress towards death.

In the provincial Medical and Surgical Journal of May 1845 George Chater writes an article in which he says the pituitary body is a sympathetic ganglion, and he traced filaments of the sympathetic plexus from the internal carotid into the gland.
In the John Hopkins Hospital Reports 1894 Vol. IV., page 117, there is an account of the nerve elements of the pituitary body in dogs.

The sympathetic filaments from the carotid plexus were traced along the vessel walls, only in the anterior lobe, to the epithelium of the follicles; some of them did not end in this way but in ball-shaped terminations.

This article also gives a detailed description of the arrangement of the nerve cells and their axis-cylinder processes in the posterior lobe, which it considers is so fully developed because of its connection with some special sense which is non-existent in man.

TUMOURS OF THE PITUITARY BODY.

ETIOLOGY.

Out of twenty-six cases of which I have been able to find more or less extensive accounts, fourteen occurred in females and twelve in males.
The case that attained the greatest age was that of Cardinal de Bousy, who died in his seventy-third year.

The youngest case was that of a girl aged ten years.

Fourteen out of the twenty two in which the age was stated were between thirty and fifty years.

The one above mentioned was the only one over fifty years; the remaining seven were under thirty years.

Cancer is certainly the most common growth of the pituitary body. Then tubercle, sarcoma, epithelioma, psammoma and adenoma.

The duration of the disease varies so much in each case that it is impossible to state any fixed time. The majority died within a year from the first symptom noted. The shortest only lived a few hours and the longest fifteen years from appearance of first symptom.

The following case came under my care for a short time when Resident Assistant House Surgeon
at the Bradford Infirmary, and was the cause of my interest in tumours of the Pituitary Body.

The patient, Clara Smith, aged twenty-five years, was a spinner.

Family History. Father died of Bronchitis, Mother, three sisters and two brothers, alive and well. Three children died in infancy.

The patient enjoyed good health before present illness. Was married when nineteen, was confined one year later, the child dying when seven months old. Six months later had a miscarriage. Menstruation ceased fifteen months before present illness.

In October 1889 she was admitted as an inpatient to the Bradford Infirmary under the care of Dr Mayor, suffering from symptoms then considered to be hysterical. She improved so much under treatment that in six weeks she was made out patient. In June of '90 she was made Home Patient and in this way came under my care, till her second admission July 18th 1890. On my first visit she lay in a semi-conscious state, body was fairly nourished, would answer ques-
tions rationally, complained of extreme pain in frontal region and loss of sight; violent vomiting and retching came on while I was there.

No paralysis, spasms, or motor derangements.

Important organs normal.

A few days later I met her walking in the street with her husband, her gait was steady but had to be guided by her husband on account of her sight, she had a marked cerebral expression. The case had been regarded as hysteria up to the present, but her appearance so struck me on this occasion that I requested her husband to bring her again to the infirmary, where I discovered double optic neuritis and she was at once admitted.

Dr. Kerr then kindly gave me the following notes of the progress of the case.

Admission July 18.'90.

She was lethargic, scarcely moving for fear of increasing pains, frequently moaning and crying out from severity of pain. Yawns frequently.

Rational and sensible to speak to. Memory good.
Has no appetite. The breath is foul and offensive. Vomits frequently and easily. Head aches almost constantly in right frontal region. Pain like needles being thrust into the back. Heavy and dull constant pains in arms from shoulders to about fore arm on both sides. No visceral pains, palpitation or loss of voice.

Reflexes, sensibility to touch, localisation pain, hot and cold normal. Motor powers, normal, except loss of power to grasp.

She was given a mixture of Chloreal and Bromide which relieved the pain in the head considerably.

25th. July Patient has been getting out of bed, is loquacious, free from pain, says she is going to Morecambe.

26th. July. Left hemianopsia with greater impairment of opposite side of field of vision in right eye, with ophthalmoscope irregular, indistinct margins of discs, with most marked swelling of the right eye. Hearing normal.

27th July. Had to be awakened to take food, during the
night rowdy and trying to get out of bed.

31st. July. Complained very little, more rational.
Urine gr. 1007, contains faint trace of albumen.

4th. Aug. Has had a good night, feels better, no vomiting. Columba mixture given.

5th. Aug. Vomited three times during night.

8th. Aug. Had Antipyrine, gr. X., at night. Slept well and felt better next morning. Eyes feel sore.

10th. Aug. Had a bad night, seemed collapsed, brandy given.


19th. Aug. Patient is getting very much thinner.

22nd. Aug. Patient chattery, was dressed and laid on couch about an hour.


26th. Aug. Moaning from hemicrania, says she can see nothing with left eye. Complains of cold.

Headache bad all over, wasting rapidly, vomits often, frequent attacks of shivering and yawning, wanders but not noisy, occasionally starts to get out of bed.

The case continued in a similar way till Setp.11th., when she passed evacuations under her and had occasional hallucinations. Wasting rapidly.

12th Sept. Patient calling out and swearing.

14th Sept. Semi Delirious.

18th Sept. Left eye scarcely opened, right pupil dilated.


27th. Sept. Has been unconscious for the last four days and is somewhat rigid.

29th. Sept. Died quietly at mid-day.

Post Mortem thirty hours after death. Permission for head only to be examined. Cerebral convolutions flattened, the ventricles contained an excess of clear fluid.
At the base of a bilobed flattened tumour was found in the interpeduncular space, the posterior surface of the optic chiasma was half buried and the right optic tract slightly displaced outwards and half buried in the tumour. To the finger it felt cystic, like a distended gall bladder with gall stones. The tumour was sessile, had not grown into the ventricles or caused absorption or marked displacement of tissues around it. The microscope showed thick fibrous trabeculae carrying large vessels and covered with flattened endothelioid cells. The alveoli filled with parenchyma, made up of large epithelial cells with granular and fatty matter. There was no atrophy of optic nerves on examining sections.

The case is interesting from its resembling hysteria at first and for the late appearance of the optic neuritis. There was also a slight trace of albumen noted.

Gowers in his book on the Diseases of the Nervous System states that tumours of the pituitary
body may run an almost latent course, and this although the size is considerable.

Diseases of the Nervous System by Ross, page 582. Tumours of the pituitary body are usually large, they produce compression of anterior perforated space, the olfactory tracts, optic commissures and roots of the optic nerves, the corpora ablicantia, the posterior perforated space, and where the tumours are large the pons and peduncles of the cerebellum may be pressed upon and flattened. They may also encroach on the cavernous sinuses and sphenoidal fissures and the nerves which pass through them, while the ventricles are not unfrequently distorted and obliterated. These tumours are also liable to cause softening of the surrounding cerebral tissues which may extend to the basal ganglia or centrum ovale. Periodical headaches, usually situated in the frontal temporal regions and extending forwards to one of the eyeballs and supra orbital region is one of the earliest symptoms of tumours in this neighbourhood. Blindness occurs early. Optic atrophy may be primary.
Anosmia unilateral or bilateral may occur. Complete or incomplete paralysis of motor nerves of eye sometimes seen.

Disorders of cutaneous sensibility rare and usually transitory.

Branches of fifth nerve may be irritated and then compressed, with pressure on the cerebral peduncles you get spasmodic contractions of muscles of extremities followed by hemiplegia or paraplegia.

Two interesting symptoms sometimes occur, an accumulation of fat in the sub-cutaneous tissue and diabetes.

In a case under Mohr the patient became very fat before death and in the case of a woman under Dr Simpson there was diabetes insipidus, sp. gr. 1004 and simple white atrophy of both discs.

The next case he notes occurred in a medical man aged thirty-four. He suffered from attacks of faintness at first with no loss of consciousness, but an increase of pulse, later accompanied with temporary loss of consciousness, white atrophy of both discs.
Temporal hemianopsia, later right eye blind. Urine abundant, pale, low sp.gr. but no albumen or sugar. About fourteen months from the beginning of the attack he was seized with vomiting followed by epileptiform seizures more marked on the left than right side, after which he lay all night in a semi-conscious state but regained consciousness next day, when left side of face was found paralysed, and paresis of left extremities; but this paralysis was recovered from and he had another epileptiform seizure about two months later, from which he recovered, being able to walk again, but ten days later he became somnolent suddenly, insensible, and then died comatose. Temperature immediately before death 106°F.

Post Mortem:—A multilobulated tumour was found, of the colour of liver, lying to the right side of the optic commissure, the right optic nerve was compressed, the left occupied its normal position and was not much altered. The body of the sphenoid was eroded by the tumour and the nervous tissues in the vicinity were somewhat softened.
"Tumours of the pituitary body when large may be attended with the general symptoms (headache, vomiting, optic neuritis, gradual and progressive) but in some cases the general symptoms are little marked. The most important localising symptom is temporal hemianopsia and in some cases after this has lasted a longer or shorter time optic atrophy and total blindness (not preceded by papillitis) may be developed. The olfactory nerves, third, fourth, and sixth may in some cases be implicated.

Large tumours may press on the crura cerebri or make their way upwards towards the ventricles. Dementia and hebitude may in some cases be very great. Paralysis of face or limbs of one or both sides, usually incomplete, may occur. Tumours of the pituitary body are in many instances attended with an excessive development of sub-cutaneous fat, and in some cases with the presence of sugar in the urine or with polyuria."
Diseases of the Nervous System by Rosenthal. 
translated by Putzel. Page 119.

"Tumours of the pituitary region usually become a large size; they may compress anterior perforated space with olfactory region, chiasma, roots of optic nerves, medullary bodies, posterior perforated space, cerebral peduncles and even pons and adjacent portions of cerebellum, cavernous sinus, sphenoidal fissure and nerves passing through it, and ventricles. Danger may arise from tumour softening adjacent parts, this may extend to cerebral ganglia and centrum orale. Effects may also pass to fourth ventricle and give rise to diabetes.

Symptoms:—headache, especially frontal and temporal and sometimes suborbital and in one or other eyeballs, even Amblyopia or amaurosis of one or more frequently both eyes. Sensory irritation symptoms are infrequent and temporary. Motor symptoms of irritation and depression are isolated (Convulsions, contractures, hemiplegia or paraplegia) and are not characteristic of this group of tumours. Disorders of
special senses are manifested and must be often regarded as symptoms of hyperoemic irritation. These symptoms are roaring in the ears, flashes of light before the eyes and hallucinations of sight. Enfeeblement of smell.

Psychical weakness of memory and apathy, no noteworthy disorders of speech.

They may be mistaken for orbital growths which cause amaurosis and exophthalmos.

In intra-cranial tumours, according to Michel, the amaurosis precedes the exophthalmos and the reverse takes place in orbital growths and the latter are generally accompanied with strabismus. Rosenthal then cites the following case occurring in a military surgeon aged thirty-four years.

In June 1859 the patient was compelled to return from the Italian Campaign on account of headache and increasing loss of sight which consisted in progressive narrowing of the field of vision, starting from the periphery first in the right, then in the left eye, finally he could only see objects placed in
front of the pupils. During the following years the sight was entirely lost.

May '61. Great loss of motor power. He was confined to room. Polyphagia and polyuria came on unexpectedly and progressive emaciation though he retained a good appetite. Urine was clear and pale, contained sugar, sp.gr. 1038-1040. Sensorium un-affected.

October '61. Confined to bed, paresis of legs, arms unaffected. Towards the end of '61 obstinate ciliary neuralgia added to symptoms, which was only relieved by Chloroform inhalations.

In '62 the emaciation greatly increased, and he died in the beginning of May '62.

Three days before death the pulse was accelerated, no trace of sugar in urine and quantity and colour altered.

At the Post Mortem a sarcoma of the pituitary body larger than a walnut was found. The sella turcica was eroded. Fatty degeneration of optic nerves Nothing abnormal could be detected by the eye in the fourth ventricle. Part of the growth had entered the
sphenoidal fissure. Kidneys and liver were much congested. The ciliary neuralgia was due to growth in sphenoidal fissure.

The loss of motor power was due in great part to the diabetic muscular weakness.

Rosenthal then suggests that the diabetes was caused by increase of pressure or irritation passing along the infundibulum to the tuber cinereum and then to the floor of the fourth ventricle.


Dr Joseph Ward reports a case in a baker, aged thirty-eight.

During last three years suffered from dimness of sight, and at intervals from severe pains in anterior part of head. Feeling of burning and fullness of orbits.

May 23rd. '23. Blind in both eyes, pains most severe, marked tendency to sleep. Pupils did not react to strong light. Pulse 96.

Ordered an emetic and purgative. Next day pains in head not so severe, slight recovery of
sight in left eye. Medicines repeated.

Next day much weaker, kept his bed, slept constantly and snored loudly. Leeches to temples blister to nape, and calomel given.

Specialist on the eye saw him, and thought it was a case of cerebral congestion.

Next day twenty ounces of blood were taken from the arm, and saline draught was given every four hours. Patient fainted when bled. Next day slept more, roused with difficulty, when awoke spoke sensibly.

Pulse 120. Debility more marked. Twenty-four more ounces of blood were taken from the arm, saline draughts continued, calomel given at night and a purgative in the morning.

Patient died next day about noon.

At the Post Mortem a tumour of the pituitary body was found pressing on the olfactory and optic nerves, the latter were expanded upon it, the right rather more than the left.

Fluid in ventricles about normal.
P. Rayer gives the following classification of the diseases of the pituitary body:


He then gives the following cases:

1st. A tumour of the pituitary body in a patient aged forty-seven. The chief symptoms were the following, Expression heavy and careless. Feeling of weight in anterior part of the head, vomiting, constipation, slow pulse, extreme drowsiness, memory bad, blind, loss of strength, incoherence, stiffness of trunk, very quiet and peaceful, coma, death.

Post Mortem:—Pituitary Body more dense and enlarged than normal and amalgamated with a soft pulpy matter of a white rose colour. Optic chiasma compressed and atrophied. Lateral ventricles contained an
ounce of fluid. Thyroid normal.

2nd. Very similar to former case occurred in a patient aged thirty-eight years. First noticed defect in vision and attacks of acute pain in front of head, with feeling of heat and weight in the orbits.

These symptoms had lasted three years. The patient became blind, drowsy, and wasted away; but was sensible when awake. Pupils did not react to light. Treated by bleeding, Calomel and saline drinks.

Post Mortem:—A large tumour of the pituitary body pressing on optic and olfactory nerves found.

3rd. The next case occurred in Cardinal de Bousy and lasted fifteen years, the patient dying in his seventy-third year.

The case exhibited the following symptoms:—Blindness of left eye, softening of brain, convulsive movements, especially of eyes, lips, and tongue,
diminution of intellectual functions, especially in the morning.

Several apoplectic attacks occurred with loss of consciousness; difficult and stertorous respiration. One of these attacks was followed by hemiplegia which was recovered from.

Post Mortem: A tumour about the size of a hen's egg of the pituitary body compressing left optic nerve was found.

4th. This case was noticed in a dressmaker aged 38 years. Lasted about fifteen months.

First noticed painful headache, anorexia, vertigo, sleep troubled with painful dreams, loss of sight followed by feeling of pricking and distension at the back of eyeballs. Sight completely lost, unable to walk, face swollen, stupor, numbness of inferior and superior extremities. Memory and intellect affected. Pulse small and feeble.

Coma, dejections, passed involuntarily respiration stertorous, death.
Post Mortem:— Suppurating fibro-carcinoma of pituitary body and destruction of sella turcica found.

5th. This case commenced with amenorrhoea and constant vomiting in a girl aged twenty years. She became perfectly blind. The pupils insensible and immovable to light.

Pain in head and orbits. The actual cautery was applied over the left side of the head.

Four days after grave symptoms appeared. The patient was bled. The next day she had slight convulsive movements of face and died.

Post Mortem:— Suppuration over all the left hemisphere in the membranes. One and a half ounces of fluid in the left lateral ventricle, none in right. Left part of brain fluid and softened. Infundibulum enlarged and filled with pultaceous and calcareous matter, compressing optic chiasma.
Dr T. P. Heslop gives the following account of a case in an engineer aged twenty-six years. On the 11th. Feb.'48 had pain in head, great tendency to sleep.

Treated for biliousness and improved for a while, then became excited, restless, and talkative, or lay in a state of semi-stupor. Pulse became quick and he lost appetite.

Treatment:—Mercury given vigorously. Leeches and blisters used.

Fell into a profound coma. Pulse intermittent and slow.

About eleven days from beginning the pulse was almost imperceptible, extremities cold, hands convulsively clutched, jaws firmly closed. Enema given and blister used. Twelve days after this patient was so well complete recovery was predicted. Two symptoms, however, remained - almost total loss of memory, and loss of power over sphincters

Later had paralysis of right obicularis.

Acute attacks of pain in the head with flushing of
face at the same time and followed by several hours of profound stupor. Severe cramp of lower extremities sometimes.

Obscure attack of pleurisy came on and he died on the fourth of September '48.

At the Post Mortem there was found a tumour of the pituitary body about the size of a walnut, surrounding the optic nerves and filling the whole of the inter-peduncular space; the crura being distinctly pressed out and it occupied nearly all the third ventricle.

The tumour was softish, and of a dark grey, and on detaching a purulent looking fluid exuded.

Twelve or fourteen drachms of fluid in lateral ventricles. In the middle fossa there were sharp angular stalactitic processes or extoses corresponding to sulci in brain. Recent lymph over left lung and diaphragm.


The following are extracts from an article by Dr Roberts Scott Orr on diseases of the pituitary
gland.

The Wenzel brothers found disease of the pituitary body in twenty cases of epilepsy.

Rotikansky divides the diseases of the pituitary body into three heads.

1st. Anomalies in size.

Increase may arise from hypertrophy but has never seen true hypertrophy. The posterior lobe is specially affected, becomes pulpy and of a rusty brown or yeast yellow colour. The anterior lobe becomes pale withered and tough.

Atrophy has also occurred in dropsy of ventricles from pressure.

Then follows an interesting case of atrophy of the pituitary body in a child seven years old, accompanied with hydrocephalus and tubercle of the brain, lungs and mesentery.

In six of the cases given by the Wenzel brothers, atrophy was found.

In one case a peculiar yellow matter was found in the gland; and in another a thick milky fluid
with patches of dazzling whiteness and cartalagnious appearance.

2nd. Diseases of Texture.

Under this Rokitansky places cases of hyperaemia and anaemia.

A number of cases of Wenzel's came under this heading and are examples of hyperaemia, inflammation, lymph formation, suppuration and abscess formation. Rokitansky says the gland is anaemic in cases of anaemia of the membranes.

3rd. Adventitious growths.

Rokitansky includes under this head tubercle, cancer, and the peculiar amber coloured exudation described by Wenzel as found in a large proportion of their cases of epilepsy.

(1) Tubercle is said by Rokitansky to be rare occurring only with tubercle elsewhere, especially in the lungs and brain. There are two forms (1) gray crude granulations and (2) a mass of yellow tubercle which softens and suppurates.

No tubercle occurs in Wenzel's cases.
Cancer Rokitansky informs us is the most common of all its morbid states. His cases were medullary cancer. One of a loose creamy structure, another brown and elastic and in a third the growth had degenerated into a brown chocolate-coloured fluid contained in a sac which projected into the pharynx, having destroyed the body and part of the greater wing of the sphenoid bone.

In several cases the pituitary gland was the only part affected by the cancer, while in others it was associated with cancer elsewhere.

The following case came under the notice of Dr Orr accidently in the post mortem room of the Glasgow Royal Infirmary.


She gradually sank, and on the 17th began
to wander and died the next day.

At post mortem found a tumour of the pituitary gland about the size of a walnut, divided into three nodules, one hard cartilaginous, others less hard and the upper surface of one dark coloured, and in some places broken down.

No cancer found in any part of the body.

Wenzels found schirrous cartilaginous tumour of the gland in several cases.

(3) The most curious adventitious production is the effusion of a matter varying from a semi-fluid consistence to a gelatiniform or flaky form or hardness of various shades of colour, varying from grey to greyish yellow, yellow and deep amber. Generally found underneath gland and between its lobes.

The Wenzels considered it to be the most common morbid condition of the gland and that it is not of inflammatory origin and is in some way connected with epilepsy.

Rokitansky says he has failed to find it in notorious epileptics and has found it in other
individuals thoroughly healthy.


The following is a case of cancer of the pituitary gland related by Dr Robert Scott Orr and occurring in Dr James Orr of Dunoon, aged about forty-five.

On the 7th March '53 he was attacked with pain and stiffness in left hip.

18th March. He became incoherent, flushed and feverish, lapsed into a state of stupor bordering on apoplexy. Cupped nape of neck, turpentine enema.

19th March. Head symptoms better.

20th March. By this time the left thigh had become very much swollen and when opened at the back two quarts of thick yellow pus were extracted. The patient at this time generally in the evening, had slight fits of wandering and incoherence, when he became flushed and feverish. Crepitations were found in right lung for which he was blistered.

Next he suffered from tympanitic distention of the abdomen, which lasted some time. He became
greatly prostrated, had hectic night sweats, and the voice was very weak. Two months after commencement the abscess was further opened. Quinine and wine were given and the abscess soon healed.

His strength now rapidly improved. A small abscess then came on the opposite thigh and was opened. Later he was pronounced out of danger, when two days after he was seized about mid-day with restlessness, was flushed in face, and fever with incoherence. Coma increased as evening advanced, gradual loss of speech, dilated pupils, incoherent ravings preceded complete coma which came on next day and continued till his death at mid-night, thirty-six hours after appearance of violent head symptoms.

At the post mortem was found a cancer of pituitary body about the size of a walnut which pressed on optic commissure. Upper surface of tumour was firm, the lower had attached several cysts containing reddish gelatinous looking serum. The lower part of the tumour looked like broken down brain of a reddish colour and creamy consistence.
The sella turcica was completely carious and reduced to soft pulp. Clinoid processes eaten away. The destruction was so great that the slightest puncture entered the nasal cavity, and there would probably have been a rupture and a discharge of a sanious fluid from the nostril had the patient lived a little longer.

This case is remarkable for the lateness of the severe head symptoms and absence of interference with vision.

Dublin Quarterly Journal of Medical Science 1855
Vol.XX. page 220.

Dr Popham relates the following case of tubercular disease of pituitary body occurring in a girl aged ten to eleven years.

On March 25/55 she suddenly lost her sight, previously had been quite well, except had suffered from impetigo of scalp.

Pupils very much dilated, insensible to light, expression vacant, pulse about 90. No pain,
giddiness or nausea.

Treated by blistering, leeching, and mercurial pill, April 9th, when violent convulsive movements of both extremities came on, insensibility with paralysis of limbs speedily succeeded and lasted thirty-six hours, when she expired, dilatations of pupils diminished considerably when convulsions took place.

At the post mortem a tubercular mass about the size of a large hazel nut in connection with the pituitary body was found, compressing the optic tracts and chiasma.

Part of the mass was in a yellow cheesy state and the rest had suppurated. Surrounding brain substance softened. Body of sphenoid carious. Rostrum and left pterygoid processes destroyed.

No tubercle in any other part found, though careful examination made. The case is interesting from its insidious commencement and fatal sudden outburst. The pituitary body only part affected.
M. Lancelaux reports following case in a female aged forty-five.

In February 1850 suffered from symptoms of dyspepsia.

March. Intense pain in left side of head, enfeeblement of sight, great tendency to sleep, altered intelligence came on. Eight days before death amaurosis came on, nearly complete paresis of muscles of both eyes.

March 14th. Convulsions and delirium, alternating with periods of coma came on suddenly and she died on the 16th.

Post Mortem:– found white tumour of pituitary body about the size of a small pigeon’s egg resembling tubercular matter. The liver was in a state of advanced cirrhosis.
Dr Michel writes a monograph in the Charleston Medical Journal on the pathology of the pituitary body in which he concludes (1) that the pituitary body is not a true encephalic ganglion, as it can be destroyed without any loss of intellect, motion or sensation. (2) Its identity with other glands, as the thyroid, thymus spleen and suprarenal capsules. (3) Diagnosis of disease of it is difficult, owing to ignorance of its function, but it is almost always accompanied with amaurosis of both eyes, with absence of symptoms of crossed paralysis. (4) Long continued disease here may propagate inflammatory action in neighbouring parts, followed by apathy, somnolency, syncope. symptoms obscuring the diagnosis.

British & Foreign Medico-chirurgical Review 1860
Vol.XXXII. page 257.

Dr Michel reports the following case in a negro aged thirty-five.
March '65. Severe intermittent pain in frontal region with sense of fulness about orbits. Amblyopia, almost complete amaurosis, eyes largely opened, pupils almost immovable. Depressed in spirits. Ptosis which gradually increased. Chemosis and febrile symptoms supervened. The head symptoms increased and patient became delirious, at same time a swelling came in right temporal region, first soft and painful after harder and less sensitive. Pressure upon it neither produced coma nor convulsions. Strange sounds in right ear, loss of smell and snuffling respiration. Impairment of memory. Pulse weak, varying from 90-115. Varying exacerbations of symptoms continued till September /55, when he died from diarrhoea.

At Post mortem tumour of pituitary body resembling in size, form, colour and consistence of a ripe blue fig found. From this a pedunculated mass of much larger size extended into the right temporal fossa, this had forced its way through base and right side of skull. The tumour contained dark offensive grumous substance. Entire centre of sphenoid except
lesser wings, a portion of ethmoid and floor of orbits, much destroyed. Optic nerves pressed flat and converted into nerve threads.

Medical Times & Gazette 1862. Vol.II page 283

Dr E Wagner gives the post mortem on a girl aged thirteen years, born of healthy parents, not exhibiting extreme scrofula. Tubercle about half size of a cherry growing in pituitary body.

No tubercle in lungs or brain.


Dr Habershorn reports the following case in a female aged twenty-five, single. Had never menstruated, no uterus probable.

July 27th /64 Last six years suffered from headache and dimness of sight with distorted vision. During next twelve months sight was entirely gone. Patient was stout, had slight general anasarca, could hear well, spoke rationally, eyeballs prominent, pupils dilated and almost fixed, could scarcely move
eyeballs. Right side of face occasionally spasmodically contracted accompanied with pain. Sometimes had diminished power of left arm and leg with pain but no persistent hemiplagia. Albuminuria. Pain in head, especially vertex with nausea and thirst. Smell lost, bowels constipated.

Treated with Iodide and Bromide of Potassium.


Sept. 23rd. Rather more sensible and no fits for several days, still prostrate. Wine given.

Sept. 28th. Less pain in head, but prostrate, helpless, eyes were closed but made rational replies, no local paralysis of face or extremities, motions involuntary.

Sept. 30th. Pulse scarcely perceptible, difficult to find.

Oct. 1st. After one or two deep sighs died unexpectedly.
Post Mortem:—Well developed, rather inordinately fat. Cancer with oval nuclei in various shaped cells, half soft, half cyst, latter containing reddish serum, grew from pituitary body, and extended into right lateral ventricle, comprising optic thalamus corpus striatum, optic and olfactory nerves. The tumour was about the size of a goose's egg.

Professor Cunningham met with the following case in the dissecting room.

The patient had been for two months under the care of Dr Muirhead in the Royal Infirmary, Edinburgh. He was a fireman, aged thirty-six, with gorilla like appearance, strong, deep, hoarse voice, expression heavy, dull, and stupid, easily irritated.

He passed 900 oz. of urine per diem, reduced by treatment to 300 oz. At first eat enormously, later only took liquids, grew weaker, complained of severe pain in right parietal region, which sometimes prevented him from sleeping. He had the usual symptoms of diabetes marked.
71.

Post Mortem:— Head and thorax peculiarly large, limbs spare, though hands and feet enormous. Abdominal organs greatly enlarged. Bones of skull extremely thick, thinnest on right side over a large cyst growing from dura mater over right cerebral hemisphere. Pituitary body soft and pulpy, and four or five times its normal size. Optic tracts, chiasma, and commencement of nerves flattened from pressure.

Professor Cunningham was of opinion that the patient suffered from general progressive hypertrophy which was kept in check by the diabetes.

This is the second case of general progressive hypertrophy associated with enlargement of the pituitary body recorded.

Dr Henri Henrot in Vol.XII of this journal publishes a case of general progressive hypertrophy with enlargement of pituitary and pineal bodies and great hypertrophy of the sympathetic nervous system.
Dr Hall White exhibited a tumour of the pituitary body before the Pathological Society, London, containing abundant nerve cells and striped muscular fibres.

Dr Boully exhibited a tumour of the pituitary body from a man aged twenty-two, who had suffered from fits ten years and died in a semi-comatose state. Part of the tumour was bony, and the other part was formed of cysts filled with soft sabulous matter.

Dr Sibly reports before London Pathological Society an interesting case of abscess of brain and adenoma of pituitary body occurring in an ewe.

Dr C. G. Battiscombe reports the following case of abscess of the pituitary body and sella turcica.

Female, married, aged thirty-three.

August 5th 1887. Unable to stand by herself, nausea,
pain in head, on vertex occiput and on both temples, and round eyeballs, tenderness on pressure over these parts, especially eyeballs, sensation of itching in scalp, noises in both ears, photophobia, thirst and loss of appetite, occasionally bad attacks of facial neuralgia, otherwise in good health. Vision good. Expression heavy and disinclination to talk; bowels confined, tongue coated with creamy fur. Temperature 100°F. Pulse 98.

6th. August. Conjunctiva reddened. Temperature 101°F.

7th. August. Temp. 103.6°. Pulse 90, steady and regular. Takes nourishment fairly well, less nausea. Pain in orbits and temples severe, not so bad vertex and occiput, the itching worst in the latter. Conjunctiva good deal congested. Photophobia very severe. Temp. 100.4° pulse 92. Menstruating normally.


Temp. 98.6° Pulse 80.

August 10th. Spasmodic contraction of orbicularis. Temp. 103° pulse 96.

5 p.m. Upper eyelids oedematous, chemosis and inflammation of conjunctiva greater, sight not affected.

12th. August, 7 a.m. Patient low, pains very bad in both eyeballs, upper lids very oedematous and inflamed, the inflammation extending to eyebrows and upper and outer margins of orbits.

Conjunctiva very chemosed and protruding between lids in long folds.

On opening lid can see indistinctly.

Temp. 102.4°. Pulse 120, irregular, dicrotic, small.

11 p.m. Inflammation extended to both temples and forehead, quite conscious; but very unwilling to speak. Can distinguish bright light from semi-darkness.

13th August. 3.30 a.m. Semi-conscious, only took any notice when eyes touched, skin cold and clammy, respiration quick and shallow. Pulse small, irregular and fluttering. Upper and lower lids very inflamed, and oedematous; folds of conjunctiva between lids

Post mortem:— Abscess of body of sphenoid bone and pituitary body, causing some pressure on optic chiasma, some matter had probably escaped through optic fissures as dura was extremely thinned at this part.


Dr Saunby reports the following case of epithelial cancer of the pituitary body.

Man aged forty-eight.

Has had headache and failing vision for eight weeks. Right eye, complete paralysis of right third nerve, total loss of perception of light, fundus normal, retinal artery contracted. The above was noted by Dr Wood White at the Eye Hospital.

At the General Hospital fourteen days later the following was noted, patient very cachetic, glairy yellow discharge from right nostril with no definite morphological structure under microscope.
Mental condition, sluggish, was drowsy with occasional outbursts of delirium. Right eye conjunctivital, sensibility nearly gone, vision very imperfect, pupil small, reaction to light and accommodation absent. Fundus normal, paralysis of all the external ocular muscles, except inferior and superior recti, no ptosis.

Left eye, conjunctiva normal, vision nil, pupil dilated, no reaction to light or accommodation, fundus normal. Complete paralysis of all the external ocular muscles. Ptosis nearly complete.

Five days after admission the ptosis disappeared for twenty-four hours and then returned.

Seventeen days after admission left eye ophthalmia, numerous black floating bodies in vitreous, disc, pale.

Right eye. Redness and dimness of conjunctiva. Optic disc seen very hazily from turbidity of media, but so far as could be seen, no swelling.

Twenty-two days after admission ptosis of left eyelid again disappeared for twenty-four hours.

Patient died two months after admission;
his illness having lasted altogether about eighteen months.

Post Mortem:— Epithelial cancer of Pituitary body growing forward into both orbits and involving all the nerves, arteries, etc, in the neighbourhood.

Bulletins de la Societe Anatomique de Paris 1893.
Tome LXVII. Page 539.

H. Reymond gives the following case in a female aged thirty-nine.

Presented no symptoms six days prior to death. Temperature 101° F and Hebetude.

Tubercular Meningitis diagnosed.

Fourth day, pupils dilated.

Sixth day, Temperature 104° F. Died comatose.

Post Mortem:— A soft tumour of the pituitary body about the size of a nut. There was also a small haemorrhage under the pia mater which inundated the inferior part of the fissure of Sylvinsand appeared to come from ulceration of the anterior cerebral artery due to the pressure of the tumour.
Dr Walter Woolcombe reports the following case.

Female, aged eleven, very bright and intelligent till within five months of her death, at which time she complained of vertical headache and dimness of vision. Three weeks later nearly blind, pupils unequal, left larger than right, both act to light, but very sluggishly, no reaction to accommodation, right eye failed first, and now has only perception of light, no optic neuritis.

One week later, great depression and apathy; expression vacant, had to be roused to make her speak, emaciated, complete loss of appetite. Knee-jerks lost, no paralysis or anaesthesia. Later developed optic atrophy, complete loss of sight, ptosis of right lid. Temperature sub-normal throughout case. Emaciation was extremely rapid.

Post Mortem:—discovered a Virchow's Psammona of the pituitary body about the size of a hen's egg, and which had entirely destroyed the optic
commissure.

This case bears out in a striking manner the deductions made by Dr Andriezen from the physiology of the pituitary body. It also resembles myxoedema in sub-normal temperature and loss of knee-jerk.

Archiv. für Pathologische, Anatomie, und Physiologie und für Klinische Medicin; Band XXIV. page 551.

An interesting account of a case of sarcoma of the pituitary body in a woman, the symptoms coming on during labour and terminating in death two days later.

In Band III 1848. Page 532.

Seven cases of tumours of the pituitary body are given. In several the third nerve was compressed and convulsive movements also occurred, the other symptoms were those usually associated with tumours of this part.

Dr Affleck had under his care a woman with carcimona growing from sphenoid and passing into
orbits and yet the only marked symptom shortly before death was polyuria.

Another case of tumour of the pituitary body accompanied with diabetes will be found in Vol. I of the Lancet for '93, page 921.

Dr Marie and others have formulated a theoretical connection between the disease of the pituitary body necromgaly. A number of cases have now been published where either hypertrophy or tumour of the gland was associated with this condition.

British Medical Journal 1895, 1st June page 1198.

A very interesting case of acromegaly with symptoms pointing to enlargement of the pituitary body is reported by Dr Lynn Thomas.

Girl aged eighteen, bright, healthy till six years ago, when she had an attack of Bright's disease. About four years before she came under treatment she had violent pains in both temples, lost
self-control, sang and whistled at odd times and afterwards her parents noticed her to be dull and forgetful and to have lost power over her sphincters. She has suffered a great deal at times from temporal and occipital headache, lassitude, and toedium vitae. Her eyesight began to fail three years and a half before she came under treatment, and the large size of her hands attracted the mother's attention, about the same time she exhibited the classical symptoms of acromegaly.

Last January she had an excruciating pain along both inferior dental nerves, and she could not smell iodoform and eau de cologne, but ammonia and other olfactory stimulants of the fifth nerve she could smell. She had a slight alternating internal strabismus. The palpebral fissures were equal and their movements harmonious in sun and shade.

The movements of the eyes were normal in all directions. Her right eye was totally blind, and when the left eye was shaded the pupil dilated, and its reaction to light reflected on the retina was nil.
The left eye was hemianopic on the left or temporal side and the optic atrophy was not so marked as in the right eye. By throwing a pencil of light obliquely on the functionless half of the left retina, there was no contraction of the pupil therein indicating lesion of the tract. By throwing a pencil of light on the functional half of the left retina both pupils contracted considerably, indicating in my opinion that the lesion is in great probability anterior to the anterior quadrigeminal bodies, as the connecting fibres of the centre, for consensual movements of the pupils are located presumably immediately underneath this region.

On April 29th the left eye was the same, the right eye exhibited temporal hemianopsia.

She has been treated with arsenic, antipyrine and iodide of potassium, the latter has given the best results, but owing to the intense headaches it was proposed to remove a parallelogram of the skull.

On June 11th a parallelogram was removed
from the skull, four inches antero-posteriorly and three inches transversely.

This was followed by a most marked improvement in the mental condition. The patient recovered the power of the sphincters, became intelligent and able to look after her household duties and to go shopping. The bitemporal hemianopsia still remained and there was no noticeable alteration in the enlarged parts.

The latter part of this case is reported in the British Medical Journal for April 11th, 1896.

In the above case it was supposed the symptoms were due to an increased intra-cranial tension rather than the condition of the pituitary body and the treatment based on this supposition proved most highly beneficial. It seems probable to me that operation may yet prove of great service in the treatment of tumours, etc, of the pituitary body, for in my opinion many of the symptoms are due to the fact that the pituitary body is diseased, but to the changes in the intra-cranial vascular condition, and the re-
suits of this.

It is possible also that some of the conditions which have been found associated with pituitary body are merely accidental concomitants and not dependant upon the loss of the physiological action of the pituitary body, but were due to some overlooked or undiscovered disease.