The Brain in Eight Hundred Cases of Insanity.

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Thesis for Degree of
M. D.
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M.D. C.M. (1889)
- Introduction -

The Pathological Records of Montrose Asylum for the last thirty years contain the results of a vast amount of laborious investigation, and, during the last three years, while acting as Assistant Physician and Pathologist, it has often occurred to me that an analysis of the post-mortem appearances associated with references to clinical symptoms could hardly fail to throw some additional light on the Pathology of Mind.

Eight hundred cases - 400 Males and 400 females - recorded in sequence, have been carefully analysed and compared as shewn in the following pages.

Some of the more interesting cases which have been under my own care are reported in extenso and are illustrated by photographs, drawings or executed by myself.
Naturally our attention is first directed to the bony case which encloses and protects the brain.

**Skull**

Calvarium abnormally thickened

The skull-cap was found to be thickened excessively, in whole or in part, in the cases of 60 males (15 per cent), and 36 females (9 per cent). In the males by far the greater proportion was accounted for by Epilepsy and General Paralysis: the average weight of the brain being 14½ ounces. In the females by far the largest number of cases were examples of Chronic Disorganization of the Brain with great excess of cerebro-spinal fluid: the average brain-weight being 14½ oz.

**Calvarium Abnormally Thin**

Excessive tenuity of the skull-cap, in whole or in part, was found in the cases of 36 males (or 9 per cent) and 28 females (or 7 per cent). The conditions most commonly associated with thin calvarium were Phtisis & intra-cranial tumours, and the average weight of brain in males was 14½ ounces; in the females 14½ ounces.
Irregular Thickness of Calvarium

This condition occurred in a marked degree in 8 males (2 per cent) and 6 females (1½ per cent).

In the case of a female the right half of the skull cap was very much thicker than the left and the right hemisphere of the cerebrum was found to be much smaller than its fellow and crammed all over with small bullae of fluid.

Considering the whole series of cases where the calvarium was abnormal in its thickness it was especially noteworthy that in very few of the cases where the skull cap was thin was there any marked excess of cerebro-spinal fluid; while in many instances where there was undoubted increase of intra-cranial pressure (as in Brain tumour) the calvarium was greatly thinned. In cases of General Paresis the skull was found thickened very frequently not bulged out and thinned as is seen where the intra-cranial pressure is increased. Hence:

1. There may be great increase of fluid without evidence of intra-cranial pressure.
2. The skull-cap probably tends to thicken in cases where the brain-pressure from within is decreased - as in renal dementia (and General Paralysis?)

**Asymmetry of calvarium**

This condition was found in a notable degree in only 15 per cent of the cases examined and was accounted for in one of them by the pressure of an intra-cranial tumour.

**Calvarium abnormally brittle**

The skull-cap was found in one case - that of an adult male, aged 56, dying from meningitis after one year's illness - so brittle that it broke into several small pieces on removing it. There was no abnormality in other bones.

**Caries of calvarium** occurred in three cases. In one case there was an abscess of the brain: the others were cases of tubercular caries with perforations.

**Spongy calvarium** a common
Condition where the skull cap is greatly thickened. Oburnated calvarium occurred in three cases but only in a slight degree; two of the patients were epileptics.

Abnormal Injection of Diploe
This occurred in 13 males (3.2 per cent) and in 18 females (4.5 per cent). In all cases except five it was associated with General Paralysis or other organic brain disease and in the exceptions there was great congestion of brain membranes.

Projecting Spicules of Bone from Inner Table of Skull: occurred in 3 cases:-

Case 1. A small spiculum of bone projects inwards about an inch above the frontal sinus a little to the left of the median line. No abnormality observed in brain substance. Patient was a male aged 40 who died of tuberculosis.

Case 2. A small bony spiculum bridged over almost completely the course of the middle meningeal artery. There was also general disintegration of brain from effusion of blood and a large cavity. Patient a female, aged 51.
Case 3. Here was a pointed bony projection
putting out from the centre of the middle cranial
fossa on right side. Here is roughness of the
shores forming the middle cranial fossa - more
especially towards the middle line. The calvarium
was thickened and diploe congested. Patient
was a male, aged 41, who died from cerebral
Disease with Epilepsy.

Membranes

a. Dura Mater

Sinuses, Rupture of. In only
one case was there found rupture of a
venous sinus; and this occurred in a
male with fractured skull. The lateral
sinus being ruptured on the right side.

Thrombosis in Sinuses - Ante-mortem
clots were found in the superior - longitudinal
and lateral sinuses. The cases of 9 males
and 2 females. They occurred where the
illness was lingering and death very slow.
As in Phthisis & Organic Dementia; also in
acute inflammatory states as in Cerebral
and Acute Pneumonia.
Marked enlargement of Pacchionian Bodies was noted in 5 males and 2 females - all far advanced in years - ever soathing on the calvarium, and indenting it.

Extravasation of Blood between calvarium and Dura Mater. This was found in two cases, both due to traumatism.

Case 1. Fracture of skull.

Case 2. A quantity of dark blood clot was found between the dura mater and bone in the middle cranial fossa on right side. Patient an Epileptic who died in Status Epilepticus. Here was a bruise on temple.

Dura firmly adherent to Calvarium. The dura mater firmly adhered—i.e., to a pathological degree—in the cases of 56 males (or 14 per cent) and 31 females (or 8.5 per cent).

By far the majority of the cases occurred in those dying at advanced age. A remarkable and unexpected association was found between adherent dura and degenerative disease of the heart and circulatory system. Of the total
Number of cases - 90 - no fewer than 65 showed undoubted evidence of circulatory disease in 15 of the latter however there was only atheroma of the aorta, while in the remaining 50 there was active or old endo-carditis with valvular degeneration. The form of heart disease in almost every case was of the nature of degeneration, either of the muscular substance or more frequently of the valves.

Looking for an explanation of this coincidence one cannot help being struck with the resemblance of structure in the normal state between the endocardium and the pericardium:

Pericardium - a tough fibrous structure containing numerous elastic fibres; its inner surface covered with a layer of squamous endothelial cells. (Turner's Anatomy)

Endocardium consists of connective tissue and elastic fibres with a layer of endothelium on the free surface. The valves being parts of the endocardium. (Turner)
the cases of morbidly adherent dura there existed marked degenerative change of the cardiac valves and aorta it may perhaps be assumed that the two conditions may be brought about by the same causes.

Dura abnormally thickened. This condition in an extreme degree occurred in 25 cases (18 male + 7 female) and in 20 of them there was gross disease of the brain.

General Paralysis or General disorganization in all the cases along with thickened dura there was great excess of fluid in the subdural space. In eight of the cases the calvarium was also thickened; in three cases it was described as thinner than normal. In six of the cases there was a false membrane in the sac of the arachnoid.

Ossification of Dura. In nine cases (17 per cent) there was a bony deposit in the dura mater. In one of these there were numerous bony plates & speckles in the dura near the superior longitudinal sinus and about the level of the Parieto-occipital fissure. In the remaining
Juice the falx cerebri was ossified - in 2 cases ossification was complete; in 3 only partial. One patient was an epileptic; two laboured under chronic mania and died of phthisis; two had organic dementia.

Congestion of Dura Mater. This condition in a slight degree was a most common occurrence. Extreme congestion however was only noted in about one per cent of cases examined and in all of them there was associated prostatic disease.

Rusty staining of Dura occurred in eight cases - one per cent. In two of them a very thin Pelleile could be separated off the inner surface; in two cases there was forming a false membrane; and in two cases there was a recent haemorrhage into the subdural space.

Tumours involving Dura Mater were found in nine cases - 1.1 per cent.

Carcinos - 3 cases
Tubercular - 2 cases
Fibros - 2 cases
Fatty - 1 case
Syphilisic (Lumma) - 1 case.
Yanmosio involving Dura

Case 1. Robert Mclean, seaman, age 29.

Married was admitted to asylum after
having been 5 weeks insane. First attack.
Had labored under Diabetes Insipidus for
several years. Medical certificate to the effect
that he was violent, excited & dangerous;
talking in a rambling manner; beyond the
control of friends.

Phyiscal Condition - Small stature. Last week
Dilated mediae rise and equal. Features are

Progress. On admission wet spitting vomiting
the bed; making mistakes as to identity of
persons. Temper crabbed. Urine acid; ep.
pr. 1010; no sugar or albumen.

Three weeks after admission had two
epileptiform attacks. Fell & was convulsed
on left side wholly or chiefly. Paroxysms
did not last 5 minutes and were not followed
by coma. Three months after admission
Died suddenly while sitting on seat there
being no convulsion.

Post-Mortem Report (abridged)

Head on cutting the scalp the Temporal
muscle of r. side was found to be adherent.
The dura mater adhered to calvarium on the r.
side but not on the l. Dura mater adherent
to the anterior lobe on right side and on
breaking up this adhesion a small quantity
of fluid of the colour and consistence of pus
exuded. The superior surface of both hemi-
ospheres was flattened and the whole superior
surface of the right frontal lobe was of a
yellow colour and on section was found to
be quite hard and solid; this hardness
extending into the white matter. The
anterior terminations of the frontal lobes
were softened. R. hemisphere weighed 22 g.;
the l. hemisphere 18 1/4 g. On placing the
altered structure under the microscope
it was seen to consist of cells of various
sizes - some round, some oblong, and
some angular. While parts of the abnormally
altered brain were very soft, others were
very hard.

[Diagram of tissue with label: x 250 diameters]
Tumours involving Dura

Case II. Andrew Fourley, Age 87, Male

Lameness. Has been eight days insane.

Certificate: 1. Childish manner, keeps when spoken to, conversation that of an imbecile. Has numerous delusions. 2. Childish delusions condition, would not converse, but repeats referring a few names - Bob, George.

Has lost his memory, is quite imbecile. Janies his children and his brothers and sisters.

On admission. Gaits unsteady, trails left leg, cannot stand blindfolded. Pupils normal. Special senses come as he properly talked owing to his mental state. Seems to have sensation in limbs. Artery acid. 8p. 10a. Urates deposit. Answers questions in a drawing manner as if at a loss for words and his answers were foreign to the questions asked.

Progress every day after admission became more feeble; his left side was quite paralyzed at the end of 14th day. On the 6th day could not swallow food; on the 4th day could not stand; on the 6th day found to have asthmatic breathing
and became convulsed in his right arm and leg his pupils being much dilated and dark after 5 hours coma.

P.M. Report (abridged)


From the dura males over the right temporal bone a cartilaginous-like tumour was firmly attached by a peduncle. The tumour protruded into the fissure of Sylvius. It was the size of a large walnut and seemed to involve the ansa lenticularis peduncles, to project into the brain substance and come into immediate contact with the softened white matter of the hemisphere. On section of the tumour it was hard, homogeneous and a greyish colour.

Under microscope tumour contained many round golgi cells. The minute vessels of membranes were found coated with elastic tissue. The softened white matter showed numerous compound granular bodies. The cells of grey substance were coated with brownish-yellow granules.
Tumours involving Dura

Case III - Jane Murphy - widow, aged 59.

Said to have been gradually growing
c�leferticyelet in able to take care of herself

On admission: Echin physiique: hair pale
brown: thyroid enlarged. Urine 24 g. 10.08

Pupils normal: left side of face contracted

Speech normal. Was conscious

Progress: Became more and more
demented, having occasional periods

Post-Necropsy Report (abridged)

Arachnoid space normal except at the
outer part of the fissure of Sylvius on the

left side where there was a discoloured

patch about the size of a shilling. On cutting into this it

was found to be a small tumour
Connected with the membranes and involving the grey substance through its whole thickness. The outer part of the tumour was white and nearly but the base next to the white substance was of a pearly-like or cheesy consistence. Microscopic examination showed numerous compound granular-cell masses, besides lymphoid and spindle-shaped cells.

Case 4. Magdalene Green, aged 50
A patient 10 years in the asylum labouring under chronic melancholia with delusions of suspicion, dying eventually of tuberculosis.

P.M. Report — A small tumour was found on the P. side about the middle of ascending parietal convolution (with perforation of calvarium and a small sinus). The growth was only the size of a large swan's foot and was embedded in the brain substance. Evidently of tuberculous nature.

Case 5. Jane Johnson, aged 28. Was an inmate of the asylum for three years, labouring under melancholia with delusions of suspicion. She had no symptoms during her residence.
Post-Mortem Report (abridged)

Convolutions flattened. On attempting to remove the brain a tumour was found attached to the dura mater in the left occipital fossa. The brain substance was in no way connected with the tumour but seemed pushed aside and in part absorbed. The grey matter of the convolutions over the tumour could barely be detected and the white matter into which the tumour projected was soft and broken up. The pia-mater could not be traced at the seat of the tumour but seemed to have been absorbed. The tumour, which had a fungoid appearance, was about 1 3/4 inch in diameter. It was firmly attached to the dura mater the arachnoid covering of which it seemed to have pushed before it and ruptured at various points giving it a knotted fungoid appearance. The left temporal fossa was much more pronounced than the right, the line between the two fossae being more on the right side. The whole
left side of the back part of the skull seemed larger than the right. The tumour had no connection with the bone. Weight of tumour with attached membrane 13/4 oz. On section the tumour was found to be of a cheesy consistence throughout. Microscope showed characteristic giant cells of tubercle. White matter in the vicinity completely broken up and showed quantities of compound granular bodies.

Tubercular Tumour

(Jane Ganson)

Case 6  Mr. McKibison, married, age 65.

An epileptic. Duration of insanity 6 months was subject to attacks of an epileptiform character accompanied
with slight incoherence of talk and great mental confusion. In the interval between the attacks was simply weak minded. Was a patient in the Asylum for three years and had epileptic attacks on an average about once a week.

Post Mortem Report (abridged)

Brain: normal with the exception of a small fibrous tumour about the size of a small bean or its mates purpose on the left side and giving rise to a corresponding depression on the surface of the hemisphere just at the junction of the superior, middle, and ascending frontal convolutions on the left side.

There was a considerable quantity of fluid in the head making two large bullae over the occipital lobe on the left side. The arteries at the base were atheromatous.

Case VII. Mrs Robbie, widow, aged 64. Some years an inmate colonising under organic dementia. Died of extensive softening of brain.

Extract from P.M. Report: On left side over posterior lobe there were found three small growths.
firmly attached to inner surface of dura mater-like, and of the consistence of fat.
Further examination of brain showed the presence of numerous areas of softening.

Case VIII: Elizabeth MacKay single, age 40.
Admitted August 25th 1886: not known as epileptic: a few days insane.
History: Patient is an orphan, employed at spinning fishery. Has an illegitimate daughter who was working up to a few days ago.

Medical Certificate: 1. She appears to have been severely beaten before her with an open bible in her hand constantly repeating the phrase "Lord have mercy upon me." 2. Restless, excited manner, nearly constant ejaculatory prayer. Has delusions e.g. that she was prevented from going to the spinning fishery today by the devil.

Mental Condition: Can talk rationally enough for a time but soon wanders off. Began to talk spontaneously - saying that a wili wicked man was standing at a corner of the street - this was not the devil but

Progress: Was very quiet during the first month after admission and gave no special trouble. On Sept 27th had two severe epileptic fits. Continued well until Sept 30th when she had a severe epileptic fit. Was not long in coming out of it but her breathing was very rapid, her face of a dark blue colour and her heart action weak. Râbles audible all over the chest and heart sounds not heard in consequence. This condition continued for a couple of hours when it ameliorated; relief being afforded by whisky and 2 p. am. At once some five hours afterwards stimulants were again administered, mustard poultices applied to chest and patient gradually rallied. December 19th patient remained pretty well until this morning when she appeared dullest and lethargic.
Seemed as if she had had a fit during the night. She answered questions very slowly or not at all. Her breathing was not hurried and her heart showed no signs of failure. In the evening however her breathing became embarrassed and she died suddenly.

Extract from Port-Helen Report.

Head - on anterior part of right frontal bone adherent to pericranium but stripping easily from bone and on its outer surface was a small flattened fibrous humour about an inch long (apparently a gumma). Calvarium thickened. On anterior surface of left frontal bone there was a small flattened circular humour - about 2 inches in diameter. It adhered to the arachnoid. Its outer part could be separated from the cortex but its more central portion could not; they seemed to pass into and infiltrate the cortex. The structure of the tumour was that of a penetrative gumma. The underlying white matter was yellowish and distinctly softer than the rest of the white matter of the brain. Elsewhere the arachnoid was non-adherent on both sides.
The convolutions were thinned here and there but there was little cerebrospinal fluid either in the ventricles or elsewhere. The arteries were atheromatous generally— especially the cerebellopontine arteries on the frontal lobe of the right hemisphere. There was a small gumma attached to arachnoid it did not affect the cortex cerebri.

Sites of Gummata - Eliz. Mackay

Case IX Magnus Mowat, aged 47
Was an inmate of the Asylum for 15 years suffering under chronic mania with delusions of suspicion, dying
eventually of Pthirius Pulmonalis.

Extract from P.M. Report. Mace caps and membranes normal. Attached to the palse cerebi and lying between the hemispheres was a small pear-shaped bulge of a dark reddish-blue colour; it was connected to the palse by a narrow band of connective tissue and in stripping off the membranes came along with them. Numerous cavernous plates tending to coalesce were on the palse itself. Brain substance showed nothing abnormal.

**Arachnoid**

Effusion of blood into Sac of (= sub-dural space). This condition was found in the case of nine males and nine females. In four of the cases the haemorrhage was large and recent and was the immediate cause of death. In the remaining cases the extravasation was slight forming a thin coating of blood over the hemispheres or in the fissure of the base assuming in places the appearance of
A false membrane: Two of the patients treated under General Paralysis, were cases of organic dementia. There were examples of senile decay; in one case there existed a fracture of the skull, the remaining cases died of chest affections with in two cases very large false membranes in the base of the arachnoid.

Excess of cerebro-spinal fluid: This condition was found in the case of 18 per cent of males and 14 per cent of females. Commonly found in chronic cases of mania and more particularly in chronic disorganization of the brain, General Paralysis. In many cases the calvarium was considerably thickened where the fluid was excessive.

Tub in arachnoid sac: This was found in three cases. In one case the condition was extremely slight and confined to a limited region at the vertex, the patient being a general Paralytic. In the other two there was general meningitis and was originated in one at least of the cases by ear disease.
False Membranes in the Arachnoid Sac

Of the 800 brains examined false membranous productions were found in 42 cases - about 5 per cent. This agrees with the statistics of other observers - e.g. Pearse Lewis found 91 cases recorded in a series of 1565 autopsies ("Text-Book of Mental Diseases" p. 438).

As regards sex, however, the cases of Arachnoid Cyst occurring in Montrose Asylum during the past thirty years differ widely from other published results.

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases</td>
<td>18</td>
<td>24</td>
<td>42</td>
</tr>
<tr>
<td>or 4 1/2 per cent</td>
<td>or 6 per cent</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Taking the age of patients with this condition Sir Brichon-Browne long ago pointed out that the most frequent occurrence of arachnoid cyst was between 35 and 45 years. In the series of cases now before us the greatest frequency was found at a much
later date.

Statistics of Arachnoid Cyst as regards Age of Persons dying.

<table>
<thead>
<tr>
<th>Age</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>below 30</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>30 to 40</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>40 to 50</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>50 to 60</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>60 to 70</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>above 70</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>18</td>
<td>24</td>
</tr>
</tbody>
</table>

From the above table it is seen at a glance that the most common age in the persons under consideration was between 60 and 70.

As regards the form of insanity found in association with Arachnoid Cyst, Dr. Wash Lewis (op. cit.) gives the following statistics:

<table>
<thead>
<tr>
<th>Form</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Paralysis</td>
<td>63</td>
</tr>
<tr>
<td>Chronic degeneration of Brain</td>
<td>35</td>
</tr>
<tr>
<td>Senile Atrophy</td>
<td>12</td>
</tr>
<tr>
<td>Epilepsy</td>
<td>7</td>
</tr>
<tr>
<td>Other forms</td>
<td>163</td>
</tr>
</tbody>
</table>

The following table shows the form of
Insanity associated with Montrose Asylum cases of Arachnoid Cysts:

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Paralya</td>
<td>6</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>Senile Atrophy</td>
<td>2</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Chronic Disorganisation of Brain</td>
<td>3</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>Epilepsy</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>(Organic Dementia)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cerebral Haemorrhage</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Mania</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Chronic Melancholia</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>24</td>
<td>42</td>
</tr>
</tbody>
</table>

The site of the haemorrhage was almost always confined to the vertex, and in most instances, on both sides:

<table>
<thead>
<tr>
<th>Site of Arachnoid Haemorrhage in 42 Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both hemispheres generally</td>
</tr>
<tr>
<td>Covered above</td>
</tr>
<tr>
<td>Right Hemisphere do. do.</td>
</tr>
<tr>
<td>Left Hemisphere do. do.</td>
</tr>
<tr>
<td>Anterior &amp; Middle Juxta</td>
</tr>
<tr>
<td>R. Pariesi sacral region</td>
</tr>
<tr>
<td>L. Pariesi sacral region</td>
</tr>
<tr>
<td>Right Juxta pelvis region</td>
</tr>
<tr>
<td>Anterior Juxta or base</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

I shall now describe in detail some of the
More interesting of the cases of Arachnoid Cyst or False Membrane.

Case I. Alexander Gray: aged 51; formerly an innkeeper; squandered most of his money in dissipation. Was always a queer eccentric character & much addicted to rubbing the posterior part of right side of head. Was admitted to asylum in July 1859 & was then labouring under dementia of General Paralysis. Became more and more demented and died from choking with food.

Post Mortem Report (abridged)

A soft jelly-like membrane covers both hemispheres, on the adjoining portions of the middle and posterior lobes of the right side this membrane presented a dark purplish colour which was found to be caused by an extravasation between the layers of the membrane. Arachnoid milky in colour; it was stripped readily from convolutions. About 8 oz. of fluid escaped from the
Arachnoid space and about 1 ounce from lateral ventricles. Translucence observed on the lining membrane of lateral and fourth ventricles. Brain substance much softened at the base. Weight of encephalon 49 3/4 ounces.

**Falcæ Membranes.**  Case II

Charles Copeland, an epileptic who was an inmate of the Asylum for eight years and died at the age of 59. A short man of ordinary education and intelligence, usually quiet and of a religious turn. Was a very intemperate man all his days.

Had epileptic fits every 2 or 3 days. Loss of consciousness was the chief symptom of the fits—sometimes the only symptom. No convulsions at all. Often merely attacks of piddiness, and he used often to walk about while unconscious. Had frequent attacks of excitement and was then very troublesome. Died rather suddenly.

Extract from S.M. Report. Dura adherent to calvarium. On removing dura its inner surface over the right hemisphere
was found covered with a soft pink membrane. This membrane covered the whole of the upper aspect of the hemisphere but did not extend to the base. It was adherent to the dura and came away with it. On removing the adventitious membrane the inner layer of the dura was found to be congested and thickened so as to be removable with a little care from the outer layer. This condition extended to the falx but not to the base and was only present on the right side. The basilar artery was distended over the tons into a sort of black-like palour, and internal carotids were otherwise. Periventricular spaces boggy with fluid. Lateral ventricles distended with fluid (6 ounces). Crystalline granulations on tela lateralis periventricularis and velum interpositum. No granulations on the floor of 4th ventricle. On the inferior aspect of the right hemisphere over the middle lobe a distinct brownish flush was diffused & anteriorly it passed into a purplish red flush in the neighbourhood
of the branch of internal carotid distributed to the middle lobe. Arteries at base are atheromasous.

**Weight**: Right Hemisphere 17 oz.
Left Hemisphere 19 1/4 oz.
Total Cerebrum 36 1/2 oz.
Cerebellum Pons Medulla 6 1/2 oz.

**False Membranes. Case III**

**William Sandison, Cooper, Aged 68.**
This was patient's first attack and had lasted two months when admitted. No known cause.

**Certificate.** Numerous delusions of suspicion: menacing and dangerous at times violent. Delusion that his wife was married again.

In listless condition, thin and feeble of low stature, scanty humour on neck. Mental condition leaves mania passing into dementia.

**Progress.** Admitted April 1868. Increasing dementia, noisy, destructive, incoherent in conversation, dirty and degraded in habits. During last three
months of his life had numerous epileptic
 seizures, convulsions being general and
equal on the two sides. After the first of
these fits was much more stupid and
became quite helpless and unable to walk.
Died in September 1868 after gradually
increasing Paralysis.

Extract from P.M. Report. Calvarium
normal. Dura normal. On removing
the dura the arachnoid looked dry and
had a shrivelled appearance & this
was found to be a membranous deposit
over the hemispheres. Pen. arachnoid ad-
herent in some places to the brain substance,
convolutions much flattened. Lateral
ventricles much dilated with clear
fluid which measured 3½. Lining
membrane of lateral and fourth ven-
tricles presented a granular appear-
cance. Weight of brain 63 oz.

False Membranes - Case IV

Robert Offies - was town's papers in
Montrose many years. Was admitted
to Montrose Asylum Nov 26th, 1868, with
the history of having had a fall on the head two months before and since that time had shown symptoms of mental aberration. When admitted his bodily condition was described as good; his special senses being normal. Mentally he is described as suffering from loss of memory, incoherent and confused in speech, becomes excited on slight provocation. There was a history of intemperate habits.

Progress. Gradually increasing dementia. In July 1850 had a convulsive attack and was comatose for two days. Recovered from that but was left profoundly demented. Died in April 1870.

Extract from P.M. Report: Galvani's thin. On removing the calvarium a portion of the dura mater was perforated and a quantity of greenish-brown fluid spouted out from over the left frontal lobe. It was then found that a cyst had been opened into which contained about 2 oz of a thick pseu-
Sanguinolent fluid and a quantity of fibrinous clot. The walls of the cyst were of considerable thickness and consisted of ordinary fibrous tissue of a deep purple red colour. Upon the right side a similar cyst was found but not so large as upon the left. On microscopic examination of the fluid it was found to be crowded with red blood corpuscles and with crystals of cholesterol.

The cysts were broad flattened bags lying in the anterior and middle lobes of the cerebrum, the widest and deepest part being the middle; posteriorly they tapered away in a semi-transparent membrane.

Left hemisphere compressed and flattened by the cyst and forced over to right side. The right hemisphere also was slightly flattened. Lateral ventricles distended, the right more so than the left and contained 20 or clear fluid but from the large surface of the walls it was evident that, at
One time they must have been distended with a much larger quantity of fluid. The Pia mater with the membranes displaced 3 6 ounces of water; a correct mould of the interior of the cranium displaced 5 4 ounces, showing a difference of 1 8 ounces.

Right Hemisphere weighs 15 1/2 oz.
Left Hemisphere 14 1/2
Cerebellum 5 1/2
Total 35 1/4

Cyst on right side and fluid 2 1/4 oz.
Cyst on left side and fluid 2 1/2 oz.

Photograph - Arachnoid cysts 1/2 natural size.
False Membranes - Case V

John Moodie was admitted to Montrose Asylum in March 1869 having been insane two years. A widower.

Cause of Insanity Said to be Penetrating Mental Condition - General Paralysis

Body Condition: Pupils have an irregular outline, left larger than right. Angle of mouth a shade lower on the right side than the left and the cheek appears fuller and less firm on the left side. Tongue when protruded drawn to left side; left half of tongue smoother than right. slight paralysis of left arm.

Sensation Normal. When walking he trails the left foot slightly and when his eyes are shut he walks unsteadily.

Mental Condition: Vexed, restless, noisy. Thinks constantly that he is in a pinching ship and that he killed many people while quelling a riot in Aberdeen.

Progress - At first improved a little but soon began to deteriorate and died after 18 months residence.

Extract from M. Report Salvinium
thick and deeply indented on inner surface. Dura mater (norma) on removing it from the surface of the right hemisphere a reddish false membrane was found extending over the vertex. It was more universally attached to the inner surface of the dura mater though no vascular connection between it and the inner surface of that membrane could be discovered. On removing it from the arachnoid some firm adhesions were observed and at one point about the anterior third of the hemisphere a blood vessel was distinctly observed passing through the arachnoid and connecting it with the false membrane. Surface of arachnoid on both sides had the appearance as if dusted over with fine grains of sand. On the left side there was no false membrane in the par. The sulci in front of the ascending fissure were convolution on the left side were obscured by a bulba of fluid. The membranes were adherent to cortex. Lateral ventricles contained of clear fluid
At the base on the dura mater there was a false membrane which with care could be stripped off. On the left side the dura had a rusty appearance. Granulations on the lining membrane of the lateral to ventricles. Membranes adherent to the cortex of cerebellum.

Microscopic examination of the more delicate portions of the false membrane were seen to be highly vascular and to be plumper over with an immense number of small brown bodies which in many cases were congregated in clusters. Examination with a higher power showed the granular bodies to be yellowish, of a roundish form and of various dimensions but with no definite configuration.

× 350 diameter

× 60 diameter

Showing vascular network in false membrane plumped with yellow granules.
False Membrane Case VII

Robert L. Luthard, aged 33; married. Was admitted to asylum in 1868 having been one year insane. On admission was certified as suffering from mania of suspicion.

On admission was a tall, robust man, in good health. Pupils dilated & equal. Mental condition extravaganat delusions about practical talents: thinking he was inspired by the Holy Ghost. Progress gradually passed into a state of dementia after period of excitement and died three years after admission of general paralysis. Extract from P.M. Report. Calvarium thick and dense. Dura mater thick & tough. On reflecting dura its inner surface presented a purplish appearance; this was found to be due to a delicate false membrane. Excess of cerebro-spinal fluid in arachnoid cell. Granulations on arachnoid. On the right side of the cerebrum two reddish plaques were observed.
The largest of these patches was over the temporal region and the arachnoid over it was adherent to the arachnoid of the dura mater by very delicate fibres. Labial ventricles contained 3/10 of serous fluid and their lining membrane was very granular. Weight of Encephalon 15 1/4 ounces.

False Membrane  Case VII

William Cipps  aged 56  married.  A carpenter. Was admitted to Asylum in March 1865 having been eight months insane.

On admission his bodily health was feeble but no special signs of disease noted.

Mentality Melancholia with delusions of suspicion. Describes his children, thinks his son has cast an evil spell over him.

Progress at first melancholic, restless wandering about moaning and murmuring. Continued melancholic in constant suspicion of people around him. Often thought he was dying when in good health.
In 1871 patient died of apoplexy—aged 65. Contrast from P.R. Report. Calvarium and dura mater normal. In the arachnoid space over the right hemisphere there was an extensive extravasation of blood in the form of a false membrane. Microscope showed traces of organization in the membrane. The ascending parietal convolution near the longitudinal fissure on right side showed a patch of softening. Weight of brain 49 3/4 ounces.

**False Membrane Case VIII**

Dundel Campbells—aged 65. A shoemaker; married; 2nd attack. Was admitted in April 1876 and was then emaciated and suffered from valvar heart disease. Mentally—manniacal: violent noisy and sleepless: delusions of suspicion. Thinks he is commissioned to rule the devils. Progress continued in a state of chronic mania with delusions of
suspicion. Three weeks before his death had an epileptic seizure: remaining insensible for many hours. Was slowly recovering from this attack when one week before death got pneumonia with delirium and gradually succumbed.

**Report from P.M. Report.** On removing dura it was found to be lined with a thin false membrane. There was a quantity of muddy serous fluid in the arachnoid pax. Vessels of pia mater injected. The lateral ventricles contained 3/4 of turbid serous fluid. Brain substance apparently normal. Brain weighs 14 9/4 ounces.

**False Membranes**

**Case IX**

Eliezer Watson, married aged 66 working mechanic. Insane a few weeks. Cause a fall on the head.

Admitted December 1869. Was then in fairly good bodily condition. Mentally troublesome. Dangerous with extravagant ideas. Was violent to wife and family tried to shame them.
Progress - became slowly demented. In September 1849 had an attack of paralytic palsy, right eye irritable. Right side of face and right arm and leg affected. Died December 1849.

Report from Dr. M. Report on removing the dura a quantity of cerebrospinal fluid escaped from a delicate membranous cyst in the arachnoid plex on left side and there was compression or shrinking of the convolutions on that side. Later ventricles contain 3½ coss of fluid. A patch of softening was found at the base involving the temporo-sphenoidal lobe. Membranes adherent to grey matter in the region of the softening. Arteries at base atheromatous.

**Weight**
- Encephalon 137 3/4 ounces
- Right Hemisphere 27 ounces
- Left Hemisphere 13 1/2 ounces

**False Membranes**

**Case X**

*William Wood*: aged 70. Congenital imbecile. Admitted to Asylum in 1866 and was in a condition of
Simple Fatsickness for some years with occasional outbursts of temper. In August 1840 had what is described as a congestive attack. Became gradually feeble and helpless after that and died in 1842.

# Extract from O.M. Report

Dura matter very firmly adherent. On opening into the arachnoid a false membrane was found over left hemisphere; which was thickest posteriorly and gradually faded away over anterior lobe. The membrane was adherent to dura and the inner surface smooth and glistening, non-adherent to arachnoid. Membrane readily separated into two halves; the outer being much thicker than the inner, in ratio of 3 to 1. Arachnoid appears normal. Ventricles are dilated and contain about 3/4 oz. clear fluid. Brain substance generally appears normal.

- Encephalon weighs 6 3/4 ounces.

**False Membrane Case XI**

Robert Miller, aged 52, mariner.
Admitted to Montrose Asylum in Nov. 1844. This was patient's first attack and was only of 6 days duration but he had an apoplectic seizure in August 1843. In bodily condition he is described as bad: having complete left hemiplegia; heart sounds feeble, a gurgling in the throat when he attempts to speak. Papils both dilated. Mentally - weak-minded, suicidal, irritable, often violent and uncontrollable. Days he is lined up life & sleeps almost none and hypnagogic clams to make him more restless at night and inclined to lose all the day. So conscious why he is in Asylum is miserable because he can't sleep at night. Has hallucinations of hearing. Progress did not improve: slept little and hypnagogic clams caused excitement at night. Very depressed in spirits: became weaker with more impairment of speech and died Feb 1846.

Extract from P.M. Report on removing the dura mater a thick, leathery, pale
Membrane was observed in the base of the Arachnoid. It covered the whole left side of the cerebrum and was thickest at vertex and thinnest at the base. On the right side there was a very thin false membrane, mostly like patches of blood clot. On both sides the membrane was attached to the dura mater and lay loosely on the arachnoid. No false membrane found on the tentorium cerebelli. Ventricles brain substance appeared normal. Weight of encephalon 52 ounces.

**False Membrane of Arachnoid**

**Case XII** Alexander Scott: age 46, married, shipper. Patient quiet, attacks, and has been gradually coming on for the last 2 or 3 years. Always a steady temperate man. First symptoms were loss of memory, indistinctness of speech, alternate attacks of excitement and depression, difficulty of walking and finally complete break down bodily and mentally.
Bodily condition of patient described as being bad: pupils unequal, left larger than right, marked tremor of facial muscles, staggering uncertain gait: loss of coordination: tongue protruded with a jerk: very shaky and tremulous, increase of deep and superficial reflexes: loss of power over bladder & rectum.

Mental condition: Mild delirium at grandeur. General Paralysis.

Progress was very restless, destructive, dirty, noisy at night; became more destructive, and more paralyzed: towards the end and died May 1885.

Extract from P.M. Report: Calvarium thick, excess of fluid: Dura mater thick and opaque. On removing dura a pale membrane was found on the left side, thickest anteriorly, thinning away posteriorly and below. Membrane is thin & allows tests: there brown patches the result of old haemorrhages. In the arachnoid bag there is anteriorly a semi-gelatinous fluid. Pia mater is
adherent in places chiefly on the left side
and in the middle line over the frontal lobe. Arachnoid opaque, non-adherent on right side. Shrinking of anterior lobes: convolutions thin and walled lobar. Lateral ventricles not distended.

Brain weighs 53 oz.

False Membrane Case XIII

Alexander Watson, aged 53: Mason.

Married. This is patient's first attack
and its duration is about four months.

Not suicidal, or epileptic. Was working
until 2 years ago, but lately has been
in his cottage and has become troublesome.

Bodily condition: arteries thickened:
right parotid larger than left, neither
reacts well. Speech a little thick or
stentio.

Mental State: Severe Alzheimia with turns
of excitement: can answer simple
questions.

Progress: Had frequent restless fits
became more stupid and dotted, muttering
to himself. In the course of a month his
Speech was so thick as to be barely intelligible.
In the course of 6 weeks he was much worse. Became unconscious and very gradually paralysed and died - 4 weeks after admission.

Extract from P.M. Report: Dura mater is partially adherent to calvarium. Under dura, on right side especially, lent to some looening on left side. There was a thin layer of clotted blood. On the right side there was a delicate false membrane with here and there patches of clotted blood in it. The thin layer of blood was most marked at the base where it occupied both sides and was found on the tentorium but not under it. Blood fluid in places as if mixed with serum. Arachnoid opaque, non-adherent. Convolutions are numeorous, rather thin, looking and wasted. Arteries not atheromatous.

False Membranes

Case XIV

William Lavendale, aged 68, a weaver; Epileptic; Married; Two
Years duration, was admitted to the
Montrose Asylum in November 1886; two
years before had first shown signs of
mental weakness and six weeks before
had a fit apparently of an epileptic
nature. Since then was restless &
especially at night and had loss of
memory
In admission his bodily health was
feeble; arteries thickened, lateral
spinal curvature, left pupil larger
than right
Mentally in state of dementia, with
restlessness, loss of memory &
Progress increasing dementia. On Dec
20th had a fit and had another con-
sciousness a week later - Petit mal.
On June 24th had a fit and were a
long time unconscious. On July 3rd
no fit was observed during the night
but she was found very stupified
blebly in the morning. Was drowsy but
not exactly somnolent. Died in the
evening without any decided change
simply slept away.
Extract from P.M. Report: Dura & calvarium normal, not adherent in places. Removed moving the dura a large quantity of thin blood and bloody serum escaped. In the arachnoid plexus, lying on arachnoid of both hemispheres was a thin false membrane bathed in blood and with numerous bloody extravasations attached on it. In addition to membrane on the arachnoid a thin gelatinous layer of membrane could be perceived from inner surface of dura. The most noticeable thing in this case was the large and recent haemorrhage. Membranes non-adherent. Cortex blanched brown. In the pons was a small haemorrhage the size of a pea - in the middle line. Section of dura showed haemorrhage in middle line at base of tegmentum.

Weight of Brain: 26 ounces.

False Membranes

Case XV

Dorah Wares aged 62; married Labourer. 5th admission cause drink. 8 on each occasion acute mania.
Boody condition indifferent: Cheyne's pallor
Catarh left pupil slightly larger than right.
Admitted December 1st 1875: on 22nd
22nd 1876 was well enough to be sent
home & then relapsed: on April 21st
was again well and relapsed. On
August 20th 1887 began to show signs
of breaking down: speech thick and
difficultly intelligible; restless and
excited. On 31st August it was
noticed that he had little power in
his legs: became drowsy and semi-
comatose: no special signs of any
localized paralysis. Pupils reacted
to light left conjunctival reflex
not so ready as the right. Coma
deepened & patient died next day.

Extract from P. M. Report
Calvarium thick: on removing it a
hoggish fluid swelling was observed
all over right hemisphere. On cutting
into it 5 ounces of blood escaped
further examination showed it was
in arachnoid space. A thin false
Membrane injected generally and here and there blunted with red points lay over Arachnoid and another thin membrane could be stripped off inner surface of dura leaving its glistening surface untouched. The brain on this side had a slightly compressed look. Arachnoid opaque in places: it and pia stripped readily from carotids but were injected. Section shewed softness of white matter bounding the lateral ventricles.

Left Hemisphere Arachnoid not opaque thin and stripping readily

Brain weighs 57 ounces

False Membranes Case XVI

William Peter - a labourer: aged 50

was admitted to asylum March 25th 1846: labouring under Mania Contiument Chronic mania with very numerous delusions: very excitable described as the dullest man in the house.

Progress - In Sept 1st 1847 was noted to have loss of power in lower limb, "bladders
October 19th 1887 was quite paraplegic with loss of power over bladder. No loss of sensation. tendon reflexes abolished. January 15th 1888 was developing bedsores. mentally no change. Died February 4th 1888.

Extracts from P.M. report. Calvarium thin, dura mater normal. In the par of arachnoid on left side over the occipital convolutions was a thin soft false membrane scarcely organised. Arachnoid injected, it and pia non-adherent. Some loose atrophy in convolutions.

Some lateral curvature to the left in upper dorsal region. In lumbar region a thin, clear, fibrous membrane adherent to one side of cord as if an organised clot. On section in lumbar region evident disease of grey matter on both sides - there is hollowing and softening of grey matter with softened margins. The weight of the brain in this case was 5 1/2 ounces.
False Membranes  Case XVII

Stephen Runcie : aged 36 : married, weaver, 1st attack : not epileptic, threatens suicide : dangerous. Was a soldier many years : always temperate three years before admission first showed signs of mental weakness and has done nothing for the last 2 years. His bodily condition was bad - General Paralysis - tongue tremulous, speech thick, gait Feeble. Pupils don't react well to light and the left pupil is larger than the right. Progress continued quiet and easily managed with great mental enfeeblement and increasing weakness became more enfeebled and in May 1881 much worse, Comatose with rigidity of muscles & occasional twitchings and died May 31st 1881.

Extracts from Dr. Report At present patch seen on upper part of right Parietal bone but nothing seen on union table. Calvarium thick and congested. Between dura &
and arachnoid on both sides was a bulging liquid swelling. On opening it a large quantity of bloody serum escaped and the space was filled with thin soft membranes of coagulated blood containing in their meshes bloody serum. Hemispheres much flattened, especially at the sides. Arachnoid and pia injected but strip readily except over a portion of the left temporosphenoidal convolution which is softened. White matter diminished. No arterial disease. Brain weighs 39 ounces.

Photograph - Inner surface of Dura with Haemorrhagic cysts.
False Membranes - Case XVIII

David K., aged 58; married; farmer; 1st attack; not-epileptic. Suicide & danger to: 4 weeks insane on admission - Sept. 29th 1843. In good bodily condition. Mentally in a state of extreme melancholia: thinking he would be damned or...

Progress continued in a state of melancholia: frequently excited; full of delusions of a hypochondriacal nature - such as that he had a structure of the bowel and urethra. At times was very excited, refusing food. In Sept. 1845 his attacks of excitement are noted as being more frequent - he was very noisy at night. On 19th August 1847 had two epileptic fits, one of them a slight one: was very excited before them jumping about and roaring: and was insensible for an hour afterwards. Was very lethargic for a few days afterwards. Aprile 9th 1849. Today had a general convolution. For a few days after
was very lethargic in a state of torpor most of the time. There is paralysis of the left arm and the left leg never seems to move. A week afterward regained some power in the left arm. Face not distorted. April 22nd, 1899, worse during last two days. He became more lethargic and died today.

P.M. Report (Extract from) "Salvinium Normal: dura mater non-adherent on its inner surface on right side in anterior fossa was a very delicate pia mater. Miliary aneurisms of the vessels of the arachnoid and dura mater with minute apoplexies surrounding them. White matter soft especially that surrounding lateral ventricles. Posterior half left lateral ventricle. Brain weight 55 ounces.

Micro-photograph x 50 shewing vessels of dura mater with miliary aneurisms (14-16)
False Membranes in Arachnoid Sac

Case XIX

Sophia Alexandum, aged 50: widow;

had been addicted to intemperance. This is patient's first attack and has last 6 weeks. On admission was in feeble health: pupils equal. Mentally there was loss of memory and general incoherence; delusions of identity.

Patient died 10 days after her admission having had a fit of general convulsions with coma the day before her death.

Excerpt from P. M. Report

Calvarium thick and dense. Granulations on arachnoid. Dura mater normal but a thin layer of blood deposited forms a lining to its inner surface. Fist marked on the right side and covering nearly the whole hemisphere. Small bloody points observed in the surface of arachnoid. The membrane being opaque in course of vessels. Longitudinal sinus filled with firm white clots. Membranes stripped readily from convolutions. Brain substance kept & anaemic cerephalon weighs 39 ounces.
Case XX

**Julia Webster**, a patient in Morningside Asylum for 10 years and after a few hours illness aged 68.

*Extract from J.M. Report on inner surface of dura mater on left side there is a purty appearance (false membrane) due to numerous extravasations of blood. Left side in the same condition but to a less degree. Lateral and third ventricles contain thick turbid serum. A few granulations on arachnoid. Brain weighs 1.5 lb.*

Case XXI

**Isabella Ritchie or Smith**, a widow, aged 62: A case of recurrent mania. Had numerous of these attacks during her residence being a patient seven years. Died April 1867.

*Extract from J.M. Report—Salvarnium Syrupy; dura mater normal. Layer of arachnoid contained a good deal of fluid. At the base of the brain there was a thin coating of coagulated blood over the middle fossa of right side and the anterior fossa on both sides. In the fossae is assumed the*

Case XXII  False Membranes

Jane Milne admitted to asylum in February 1866, aged 38, single, factory worker, having been insane 18 months. Had a slight paralytic stroke two years ago. In feeble health. Paralyzed on the right side of body. Incoherent in conversation, with numerous delusions. Died in June 1869.

Excerpt from P.M. Report: Pia mater coated on its inner surface on the left side with patches of subarachnoidal effusion - forming a false membrane. Excess of fluid in arachnoid plex. Pia mater is universally adherent to cortex. In lateral ventricle about 1 ounce of turbid serum found. Brain weighs 38 ounces.

Case XXIII  Mary Wallace of Hamilton
Case of Reine Dementia, was eight years an inmate and died of phthisis aged 80.

Extract from P.M. Report: On removing the dura mater its inner surface presented on both sides a rusty appearance due to presence of delicate false membrane. Excess of cerebro-spinal fluid. Brain weighs 34 oz.

Case XXIV

Betty Wanton: aged 60 admitted June 1869. Was subject to delirium, delusions, & was at times maniacal; sleepless and noisy. Died of diarrhoea Jan 1870.


Case XXV

Amelia Ratcliff or Kidd aged 64: a widow. Dementia present when admitted was in good health. In mental condition a chronic mania with numerous delusions. Died from
Atrochoea in August 1870.

Excerpt from P.M. Report: Calvarium thick. On removing dura mater a layer of thin, red-coloured membrane was found covering its arachnoid surface; thicker at the posterior half. Much clear serous fluid in the arachnoid sac. Sub-arachnoid fluid considerable; especially at vermis forming blebs. Arachnoid covered with minute crystalline granulations. Two ounces of fluid in the lateral ventricle.

On removing the brain the surface of the dura at the base presented a protuberant aspect from the presence of a thin reddish-brown membrane on its surface. Brain substance appears normal. Brain weighs 41 ounces.

Case XXVI. Mrs. Lindsay, aged 47.

Cabinet from P.M. Report: Calvarium is thick and spongy. Bony plates found the palate. Rusty appearance due to the presence of a false membrane over the whole inner surface of dura. Dehiscence of lateral ventricles - they contain H2O fluid. Correlations on the ponsyma. Pia-arachnoid is adherent to the cortex. Brain weighs 23 1/4 ounces.


Cabinet from P.M. Report:
In removing dura makes from surface of brain a distinct false membrane found in the Arachnoid Pia on both sides. Numerous bullae of fluid. Membranes adherent to cortex: almost 3/10.
of serous fluid in the ventricles. Membranes adherent to cortex.

Microscopic. 1. Membranes. The vessels are coated with a granular deposit. There is also noticed an excessive quantity of amyloid bodies with which the field of the microscope in some places is entirely filled. Small isolated deposits of granules are also found scattered over the membranes which in some places resemble sand-paper. Numerous coral-like bodies also observed which have the appearance of atrophied and diseased blood vessels.

2. Brain substance. The field presents a granular aspect from the deposit of small granules of haematoxylin. Brain cells atrophied; nuclei irregular. Outer layers of grey matter thickened with numerous amyloid bodies and the minute vessels are also plumped with granules.
False Membranes  Case XXVIII


Progress — appeared to have grandiose ideas but gradually lost them and continued a chronic maniac. In Feb 1870 described as very noisy, crying and screaming in a peculiar manner. In 1872 still noisy. Dreams as in pain: "Let enics can be heard all over the house. Health feeble, unable to work. Gradually became demented and died in December 1872.

Extract from P.M. Report: Vessels of dipleus congested so that urine passed of salvarum had a dark purple colour. Rusty discoloration of the aura noted in all the passages was most marked in the Middle and part of the right side. This dis-
Colostrum was caused by the presence of a delicate reddish-brown membrane easily detachable from dura mater. This membrane was seen to extend though in a less marked degree over the posterior and lateral aspects of the brain. Membranes adherent to grey matter universally and very firmly in many packs as in the region of the pancreatic glands and the ascending mesenteric convoluted pia-arachnoid presented a dense, leathery aspect. Along the course of the larger vessels of the pia mater there was also marked opacity. General slight opacity except over frontal lobe. Vascular surface of arachnoid presented a delicate granular aspect. Brain had a shrivelled appearance and occupied loosely the case of the dura mater. This shrinking more particularly observed in the frontal lobe in which the pulse were much wider than normal. The convolutions having a wrinkled appearance. Frontal convolutions on both sides did not
Present the appearance of normal grey matter but had an opalescent, gelatinous appearance with a greyish yellow hue.
On opening the lateral ventricles they were found to contain a quantity of clear serum fluid, specific gravity 1010: almost 3.5.

Granulations on ependyma.

Microscopic appearances - 
Pia mater from inferior. Numerous small clusters of haematoidal granules. Patches of granular deposit in sheaths of vessels.
Amyloid bodies - crystals of calcium and numerous colourless globules and nodules having a highly refractive power and consisting probably of carbonate of lime. In patches here and there were observed brownish aequoid bodies which appear as if they were obliterated blood vessels.

Diagram
False Membranes  case XXIX

Mary Christie or Craig  widow, a 49
was admitted in peculiar bodily health
and labouring under pereile mania.
Was extremely restless, noisy and
violent. Died 16 months after
admission - disease decay.

Postscript from P.M. Report: Calvarium
very much thickened especially anteriorly
and had in its inner surface a number
of small calcaneous plates. Dura thick
and leathery and with removal two
large arachnoid cysts were ob-
erved - as follows: They were
elliptical in shape and occupy
the whole upper surface of both
cerebral hemispheres. The one on the
left side did not extend so far
anteriorly as the one on the right.
It is also more adherent to the
dura mater on the left side. These
cysts are of a dark greenish-brown
colour and about 1/4 inch thick at
the centre. Also thicker anteriorly
than posteriorly: Shading off.
towards the edges in a thin transparent membrane, which membrane can be divided into three layers: the upper and lower layers appearing to be the approximated ropy walls; the intermediate portion appears to consist of the more highly organized portion of the clot. This clot with central portion has a leathery appearance. Under the ropy the arachnoid is quite distinct and can be stripped readily from cortex. Convolution slightly flattened.

Microscopic appearance of ropy:

The upper and outer covering of ropy was of a fibrinous character with pear-shaped granular nucleated cells which lay diagonally to the direction of the fibers.

Outer wall of

Arachnoid ropy

The inner wall of the ropy was of a fibrinous character but no cells were seen in it.
The clot and purulent fluid were limited to narrow-like spaces. When these spaces were opened the upper and lower walls of the cyst were very distinctly seen and the clot and fluid exhibited blood corpuscles and haematin deposits; also some granular corpuscles. No vascular membrane could be detected in any part of the cyst but on the edges where the covering thinned away to a delicate transparent membrane a firm vascular-like net-work was seen. Whether this depended on a true vascularity or on a mere arrangement of the red blood corpuscles could not be determined in the fresh state.

**False Membranes Case XXX**

**Martha Lindsay or Smith**  Aged 46: Married: House-wife: 1st attack Admitted August 11 75 Suffering from Quinsy Maria in bad bodily health Memory much impaired: often excited
Numerous delusions. Died 1876.


Case XXXI

Anna Lindsay of Philip aged 70. Widower. 1st attack: admitted April 1870. Said to have been intemperate. In bodily condition. Slight transverse cicatrizes on neck. Right pupil larger than left. Slight opacity of right lens. Mentally in a state of great depression; sleeping little. Hypochondriasis is progressive. Continued in a state of hypochondriasis until April 1871 when her health failed and she died from severe decay in Dec. 1871.

Extract from P. M. Report. On removing dura from right hemisphere its under surface is seen to be crusty.
On the left side a distinct false membrane is seen stretching over the hemisphere more strongly attached to dura. Membrane thicker anteriorly where it has much the appearance of a blood-lob. The membrane is opaque posteriorly. Brain substance normal: membranes non-adherent. Arteries at base atheromatous. Dura presents a purplish appearance in base at base.

Case XXXII Dr. Smith or Downie admitted October 1867: died in 1873. Was in good health on admission & balanced under acute mania. Progress was very erratic and discontinuous with delusions of suspicion &. In July 1873 lost power in right arm and leg: face drawn to left side. Improved a little later in August had another slight stroke and died three days afterwards. Extract from the Report: calvarium thick: diploe congested Dura mater.
Non-adherent: membranes congested
A small arachnoid cyst (recent) found
over summit of right hemisphere. In
left corpus striatum two old haemorrhages
and one recent one. Atheroma of arteries at
base. Brain weighs 39½ oz.

Case XXXIII Ann Ford of Spackam
Was admitted April 1880 labouring under
melancholia with delusions: pupils being
unequal. Gradually improved and
was discharged in September. In Jan 1881
had a paralytic seizure affecting the
right arm there being also loss of
sensation. Her speech was also
affected. Became very excited and
violent a few days after this had
three attacks afterwards similar
do it - Pain in head, arm, tongue with
loss of power and unformed speech
Bodily Condition Right pupil more
dilated than left: Speech thick:
Hearing due
Progress Gradually developed del-
lusions of grandeur & then sense
Paralytic symptoms and dementia.


Case XXXIV

Elizabeth Mutteron: aged 23. Was at one time an attendant in this asylum but left on account of ill-health. This is patient's first attack and on admission had lasted a few days. Was noted as being in bad health; had never menstruated; suffering from hysteria. Mentally said to be emotional; hysterical; complains that she never feels well. Progress improved in health the first two months. But three months after admission commenced to have fits apparently of a
Hystero-epileptic character and followed by hyperaesthesia. In October had a severe fit falling and bruising her face— that was 5 months after admission. Six months after admission she is noted as having the appearance of brain disease: convulsed, grinding her teeth, squinting inwardly with her eyes urine albuminuria. Improved a little but gradually became worse again: 2 1/2 years after admission was laid on bed, being curled up in bed unable to extend her legs. Pupils dilated & sluggish, speech slow and. She seems to have done difficulty in joining her words and motor paralysis in the arms. Mentally very confused. About one month later was found unconscious in bed with labored breathing. Pupils are widely dilated and fixed do not respond to light. Died after 2 days in this condition.

Extract from P.M. Report. Dura non-adherent: diploe congested, on removing dura a large subarachnoid
Cyst was found covering the right hemisphere. Membranes thickened; opens freely. On section brain matter soft; grey matter reduced. No cerebral disease.

Brain weighs 1/2 ounce.

Case XXXV - False Membrane

Cecilia Lyell: single; aged 35; of no occupation. Was admitted in July 1880 in poor health with marked delusions of suspicion; very unsociable and ill-natured. Continued in this state and died of Pneumonia 5 years later.

Extract from P.M. Report: Calvarium thick and dense especially posteriorly. Small and motionless papillary sinus. Under the dura on the right side there is a patch of yellowish gelatinous tissue - pure connective tissue with imprisoned fluid - it thinned out into a delicate membrane.

Germinig one variety of false membrane.

Arachnoid Tissue: non-adherent.

Brain substance pale: no striking abnormality. Brain weighs 1/2 oz.
False Membranes: Case XXXVII

Isabella Ramsay, admitted June 20th, 1884; slight general attack; onset gradual during last two years. Bodily condition bad; cardiac murmurs; speech indistinct and hesitating; slight tremor of palmar muscles; tongue tremulous; pupils equal but sluggish. Mental condition Maniacal excitement with delusions of suspicion.

Progress: At first very excited; renewed good for first month, but by September had improved considerably and continued for some time in a condition of partial dementia with slow, embarrassed, tremulous enunciation. Forgetfulness of names. Generally confused; occasional tremor of lips. In April 1885 was confined to bed, having become stupid and dazed but without decided symptoms of paralysis. During the following months had numerous paroxysms with increased stupidity and general loss of power. In Feb. 1886 was slowly failing with coma at times and died.
and died a few days later.

Extract from P.M. Report. Dura adherent to calvarium; more injected than usual but not thickened. On each side there is a large and thick false membrane between dura and arachnoid more adherent to former - each covers the whole upper surface of the hemispheres. The membranes are fibrous and well organized and no appearance of recent haemorrhage is seen in them. At the base of the brain a small thin membrane can be detached from the dura its haemorrhagic origin is quite evident small spots of blood being evident in it. The arachnoid is opaque in it and the pia are non-adherent to they contain in their meshes an excessive quantity of serous fluid which in places collects as bullae. The convolutions are everywhere thin and wrinkled Cerebro-spinal fluid excessive and brownish substance has a brownish appearance - especially on right side. Arteries here and there atheromatous. In the lower surface of temporal ophnoidal
There is a small patch of softening destroying chiefly the cortex and implicating only slightly the medulla. More particularly it is situated opposite the anterior extremity of the calcarine fissure implicating both the occip. temp. medialis and lateralis and forming the inferior boundary of the lateral ventricles descending cornu.

**Case XXXVII - False Membranes**

**Isabella Christie** - A case of chronic mania with numerous delusions about her identity in particular. Lay about the floor, obstinate, difficult to dress. Died after some three years residence of pneumonia with phthisic aged 65.

**Extract from P.M. Report** - Calvarium thin; dura normal. In its inner surface on both sides a thin membrane
which easily derapes off. Arachnoid & pia strip readily. There is excess of fluid and the convolutions are slightly atrophic. Brain weighs 48 ounces.

Case XXXVIII  Emily Lievenwright
Aged 55: Admitted May 1892, labouring under melancholia with delusions of suspicion. An irritable cantankerous patient with many delusions.

Excerpt from Dr. Repert Salvarium thick dura adherent to calvarium
thin, dura adherent to calvarium thickened. A thin bloody pale membrane
on the floor of the middle fossa on
inner surface of dura makes
Arachnoid congested: it and pia
make strip readily from convolutions.
No cause. Disease of brain. Weight 42 1/2 lb
Pneumonic consolidation of lungs

Case XXXIX
Jane Thomson, or Smith, widow. 68
in perfect health on admission. Labourer
under senile dementia. Having loss of memory, great weakness
was misery especially at night. Her health gradually failed and she died about two years after admission.

**P.M. Report (Extract)**: Calvarium thin; dura lax on its inner surface over cerebrum hemispheres of right side. A pale membrane near the middle line it is neither thick or fibrous. No extravasated blood visible on it; it thins off externally and does not reach to the base. Arachnoid is opaque: it and pia are separated. Membranes strip readily from cortex. General atrophy of cerebral convolution. Lateral ventricles distended. Brain weighs 38 ounces.

**Case XIII**: Helen Reid, aged 42; an inmate of asylum for 15 years. Chronic mania with delusions dying of senile decay—dying of senile decay with Pneumonia.

**P.M. Report (Extract)**: Calvarium thick, inner surface of dura covered here and there with a delicate Palse Membrane. On upper surface of
Araaknoid there are numerous small bloody spots - as from minute extravasions. Pia non-adherent. Araaknoid opaque. Brain weighed 1 lb.

Case XII Mary Campbell or Brinbecca
aged 59: married: duration 2½ years: suicidal: spinterocrae habit: Has been drinking heavily for years: but two years ago first showed signs of insanity. Has of late been clumsy with her right hand and her right side is also affected. Lately often restless and destructive. A nephew is a General Paralysis. Bodies state led: tongue tremulous; speech thick; kept nervous smaller than right. Pupils dilated. Has a jerking about the arms. Spastic Paralysis of lower limbs: Patellar reflexes are exaggerated. Ankle clonus in the right leg. Was admitted June 1749 and then was in a state of dementia: incoherent in conversation with loss of memory to. Got gradually worse: more destructive increasingly demented...
more pensive. Grinding her teeth and
moaning constantly as though in pain.\n\n---

Extract from P.M. Report. Calvarium thick
dense and difficult to saw through. Adherent
all over to subjacent dura more
especially at the foramina. On inner surface
of dura all over there was a pretty
discoloration—little bits of membrane
could be torn away with the forceps.
Bullae in arachnoid— which was opaque
Purse lesions opaque fluid. Membranes
strip readily from cortex; convolutions
are atrophied; no gross lesion. No
granulations on lining membrane of the
ventricles. Brain weighs 41 ounces.

Case XLII  
Joan Larriick - Age 56
Was admitted April 1884 and died in
the Asylum November 1891 of Phthisis
Was calumniated under Chronic Mania
and a previous attack. When an
inmate was always excited and
extremely noisy, with delusions of suspicion.
Became more noisy shouting day and night and continued so until her death.

Extract from P.M. Report: Leaps and calvarium normal. On removing the dura mater a false membrane was found extending over the convolutions on the summit of the left cerebral hemisphere. It is thin and semi-transparent and is loosely adherent to the dura mater. Arachnoid membranes strip readily. Ebony plaque in the false cerebrum. Brain weighs 3.4 1/4 oz.

**Crystalline Granulations on Arachnoid**

This condition occurred in cases of 15 males and 8 females. The mental condition in association with this was General Paralysis (most frequently): Organic Delirium, and Epilepsy. These granulations appear to be similar to those occurring on the lining membrane of the ventricles.

**Adhesion of Dura with Arachnoid**

A rare condition - occurred in only
1/2 per cent of the cases examined.

Opacity and Thickening of Pia-Arachnoid
This occurred frequently in the line of the vessels. But general opacity and thickening occurred in:

- 121 males = 30 per cent
- 84 females = 21 per cent.

This is a very common feature in the brains of the chronic insane.

Tumours involving Arachnoid were found in three cases. In two cases tubercles; in the other a gumma.

Pia Mater
Marked Injection of Vessels of
This occurred in 20 males - or 5 per cent; and in 10 females - or 4 1/2 per cent. The most common conditions associated with this were Status Epilepticus, acute pneumonia, and exhaustion from mania.
Dedema of Pia Mater. This condition was observed in 32 males - or 8 1/3 per cent and in 25 females - or 6 1/2 per cent. It is commonly associated with excessive quantity of cerebro-spinal fluid as in cases of Brain atrophy and chronic disorganization.

Rug in Meaces of Pia Mater occurred in 11 cases - all males - three of these were meningitis located universally and the remaining a limited region was affected about the meninges in a case of General Paralysis.

Local Bullae of Fluid in Pia Mater occurred in 20 males = 5 per cent

" 18 females = 4 1/3 per cent.

In none of the cases were there any localizing symptoms during life and the brain was found in all atrophied to a corresponding extent at their seat. They merged appear to be compensatory and secondary to local cortical atrophy.
Sanguineous Effusion in Pia Mater. This occurred in 4 cases amongst the males and in 13 cases amongst women. In all these there was coincident vascular disease.

Tumours Involving Pia Mater
In one case cartilaginous (see under dura); in two cases tumourous.

Bromion Gelatinous Deposit in Pia Mater
This occurred in seven males and in four females. All the cases were instances of chronic derangement.

Thickening of Pia Mater in a most notable degree occurred in seven of 17 men (41.1% per cent) and in 12 women (41.1% per cent).

Adhesion of Pia Mater to the Grey Matter
This occurred in 53 cases (or 114 per cent):—
General Paralysis - 43 cases.
Epilepsy - 3 cases
Cerebral Hemorrhage - 2 cases
Lesion Reorganization - 3 cases
Phthisis Pulmonalis - 2 cases
Total 6-3 cases

Adhesion occurred in 20 females (5 percent)

Of these General Palsy - 9 cases
Epilepsy - 1 case
Chronic Reorganization - 3 cases
Lesion Brain - 2 cases
Acute Lung Affection - 2 cases

Tuberculosis of the Males
Occurred in two males and one female

Blood Vessels
Aneurysmal Dilation of - It was noted that the basilar artery was aneurysmal in five cases. In three of these the patient had been a chronic Epileptic.

Inflammatory Aneurysms were noted especially in these cases.
Miliary Aneurisms - Case I. J. N. male, who died acutely. Rusty discoloration of the arachnoid. In the posterior and middle fossae of the brain on both sides a thin layer of dark semi-liquid blood. The glottis in majority of all. When examined microscopically it was found to present numerous twisting, very well marked aneurysmal dilatations. Dilatations of various sizes. From a slight bulging to a distinct round mass. In many instances these aneurysms were found where the vessels bifurcated.

Case III. Military aneurism found in case of Arachnoid Cyst No. XVIII (see page 59)

Injection of Blood Vessels of Brain. This was found in an extreme degree in the cases of 12 men and 12 women.

Atheroma of Blood vessels found in

Sixty males = 15 per cent.
Fifty eight females = 12 per cent.

--- Grey Substance ---

Abnormalities in thickness of occurred in 16 males and 14 females. In all of them the grey matter was thinner than normal. Noticed especially in cases of brain atrophy associated with female atrophy.

Anaemia of Grey Substance seen in 20 males and 18 females. Associated usually with general anaemia.

White softening was observed in
Nine cases and grey softening in 19 cases.

Superficial cyst in grey substance was seen in the case of a male dying of tuberculosis at age of 22. A small cyst was found just below the tip of the left temporo-occipital lobe, filled with clear serum. Brain otherwise normal. This cyst had caused no symptoms at all during life.

Flattening of convolutions was seen in cases of 16 males (44 percent) + 16 females (44 percent). In all cases there was excess of cerebro-spinal fluid.

Lupous in the grey substance occurred in 3 cases. One case was dangerous, one gummatous and the third tubercular.

In the last mentioned the patient was a female who developed manic-deprrssive symptoms at the age of 12. Became blind transiently, epileptic with staggering gait, dying.
At the age of 15. On examining brain towards the posterior extremity of the left hemisphere (or uncinate) convolution was a small tumour about the size of a pigeon's egg invading the brain substance which is softened in its immediate vicinity in section it is found to be of a greenish yellow colour about the consistence of cheese. There is also a small deposit in the middle temporal convolution of the opposite side with similar characters. In the cerebellum there is a similar growth invading both lobes at the posteroinferior part of the superior surface. Microscopic examination showed the tuberculosis nature of the tumour.

**White Substance**

Induration occurred in 5 males and 4 females. Edema of white substance occurred in 36 males (or 9 per cent) and 32 females (or 8 per cent). White softening in 16 males (four per cent) and in 28 females (8 per cent). Brown softening occurred in three
Cases only:
1. A case of fracture of skull
2. " " false membrane with disorganization
3. " " meningitis.

**Effusion of Blood into White Substance**
This occurred in case of 2 males and one female. As regards locality:
In one case in the Dors
   " " left hemisphere (whole)
   " " (lateral ventricle)
   " " (cau. cau.
   " " right hemisphere (frontal-lobe)
   " " left hemisphere - whole - (with base aneurism)
   " " numerous minute extravasation
      on both sides. Epileptic fit 16.

**Excessive shrinking of white substance**
occurred in 6 males & 4 females.

Marked injection of vessels of white substance
occurred in 1 per cent of cases examined.

**Hemorrhage in white substance - 2 cases**
In one case a fibrous tumour -
   " " " gummatous tumour -
Cysts in White Substance — 2 cases

1. A large cyst in right hemisphere filled with watery serum having a distinct lining membrane traversed by white bands — which prove to be blood vessels.

2. A small cyst at the posterior part of right hemisphere, the size of a pea, near the posterior extremity of the lateral ventricle.

Both cases were the remains of old haemorrhage.

Optic Thalamus and Corpora

Haemorrhage in — occurred in 16 cases

8 males or 1 026 cent.

8 females or 1 026 cent.

Punctiform Haemorrhages in — occurred in three females.

Pink Softening (or Sclerotisation) of occurred in nine males and five females.

White Softening occurred in 2 males and four females.
Tumours in corpus striatum and thalamus - A small cartilaginous-like tumour was found on the floor of the right lateral ventricle at the upper part of the anterior horn. This had caused no symptoms during life.

Cysts in - In three cases cysts were seen - the sequel of subarachnoid haemorrhage.

Patches of leucoele - occurred in the case of one female.

Cerebrocele in - Found in one female.

Ventricles

Excessive amount of serous fluid.

The normal quantity of fluid was here reduced at 2 drams. Of the 200 brains examined this abnormality was found in 205 - or 25.6 percent.

In males 113 or 28 percent of cases.

Females 92 or 23 percent.

General Paralysis accounted for 270 of the male cases and 100 of the females.

Residual effusion occurred in the
Ventricles in the case of two males -
Sanguineous effusion in ventricles was
seen in case of four males and seven
females.

Granulations or thickening of ependyma
This was found in 96 cases in all
or about 12 percent
In 64 males or 16 percent.
32 females

General Paralytic was found as
the associated condition in 20 of
the males and 8 of the females.
The remaining occurred in cases of
chronic Brain degeneration and
in Epilepsy.

**Septum Lucidum**

Tubercle in occurred in one
Case - that of a male dying of
Tubercular meningitis. A small
Node of tubercle the size of a
No 1 shot was observed about
the middle of Septum Lucidum.

Bulla of fluid in. In the case
of a male dying from General Paralysis
the pericardium was dilated into
a bulla. The size of a small bean at its
anterior part - containing clear serous
fluid.

Choroid Plexus

Crypts about the size of a small bean
were specially noted in the cases of
four males - all advanced in years.
An earthy deposit was found in the
posterior end of the right choroid
plexus; the size of a field - bean
of a nodulated nature and of a
consistence midway between that
of shale and nervous matter.

Corpus Callosum

Tumour of. In the case of a
male dying at the age of 49, a
tumour was found in the corpus
callosum extending into the left
ventricle and involving the outer
and posterior margin of the
left optic thalamus unit leaving
the corpus striatum untouched. The right ventricle not involved except by the mere pressure of tumour.

**History of case.** A weaver, aged 49; opiny intemperate habits, weak in lower limbs on admission, very demented. A short time after was completely paralysed in lower limbs, loss of power over bladder; pupils dilated. Sank and died 3 months after his admission.

**Pons**

Haemorrhage into Pons occurred in only one case - that of a male - and the effusion was only the size of a pea. Softening. Foci of softening were seen in the pons in 3 cases.

Softening of floor of 4th ventricle was seen in one case.

Granulations on floor of 4th ventricle were noted only in one case - that of a General Paralytic.

**Cerebellum**

Adhesion of Membranes - this rare condition was seen in only two cases - one an Epileptic, the other G. Paralytic.
Tumours of cerebellum were seen in two cases. Both were of a tubercular nature.

Pus in cerebellum seen in two cases of meningitis.

Softening of cerebellum seen in 3 males and in 4 females.

General Atrophy of cerebellum was seen in one case. No noteworthy symptoms were observed during life.

Right lobe of cerebellum was atrophied in one case. This was in a female labouring under General Paralysis with numerous patches of softening.

\textbf{Crua Cerebri}

Softening of crura was noted in two cases - both males - with general disorganization of the brain and other areas of softening.

\textbf{Pituitary Body} A tumour of the pituitary body was seen in one case. No special symptoms observed during life.
General Considerations

Apparently Normal Brains
No abnormality could be detected in the cases of:

36 males or 9 per cent
56 females or 14 per cent

Softening of Left Hemisphere - was found in cases of two females with general disorganization of brain.

Softening of Right Hemisphere - also was found in two female cases.

Abnormally Firm Consistency - This was seen in case of three females.

Narrow and Atrophied Convolutions
This condition was observed:

In 32 male brains or 8 per cent.

28 female " 7 per cent.

Cases of General Paralysis

Males - 47 cases \( \text{Total} \) 62 cases.
Females - 15 cases or 7.75 p.c.
Marked Difference in Weight and Size of the two Cerebral or Cerebellar Hemispheres

This condition was found in 12 cases - an equal number of males & females - or about 1.5 per cent of cases examined.

Marked Asymmetry - Case I.

Charles Copland (This case is fully described under False Membranes page 30). He was an epileptic of intemperate habits. A false membrane existed in arachnoid sac over the right hemisphere.

His Right cerebral Hemisphere weighed 1 3/4 ounces. 

Left do. do. do. 1 9/4 oz.

Marked Asymmetry - Case II.

John Martin, an epileptic who died at the age of 33 from Status Epilepticus. Had attacks of acute mania at the age of 29; recovered and relapsed at the age of 32. Began to have Epileptic fits 9 months before his death. Used to pass large quantities of urine daily - showing no abnormal constituent. Sometimes 20 ounces a day - salts deficient.
Extract from O. M. Report

Convolution are flattened. An ounce of turbid serum in the lateral ventricles. Yeudyma has a greased granular aspect. Right hemisphere is larger than left - more flattened at its summit and hypertrophied at the base. There was also edemaemia while softening in centre of the hemisphere.

His right cerebral hemisphere weighed 24 1/2 oz.
His left do. do. do. 23 3/4 oz.

Marked Asymmetry Base III

His right cerebral hemisphere weighed 22 oz.
His left do. do. do. 18 1/4 oz.

(Base fully reported - see "tumours of dura mater" page 11)

Marked Asymmetry Base IV

Alexander Hill: An Epileptic; at 148; weak-minded since birth. Died after being 3 years in asylum in status epilepticus.

Extract from O. M. Report: Granulation on Yeudyma. Left hemisphere broken.
up into a softened mass. Corpus striatum also broken up and present in its softened mass a prune-juice-like colour.
The right cerebral hemisphere weighs 22 1/4 oz.
  " left do. do. do. 22 3/4 oz.

Marked Asymmetry - Case V

Andrew Jourley, who died of Cancer of Brain at age of 37. The cancerous mass protruded from dura mater into the centre of the right Hemisphere. The central part of this hemisphere was disintegrated and softened.
Right Hemisphere weighed 21 3/4 oz.
Left Hemisphere  20 1/2 oz.

Marked Asymmetry - Case VI

Robert Dinnie, who was an inmate of the Asylum for five weeks and died from exhaustion following acute mania; at age of 47. At death the left pupil was slightly dilated.

Extract from P.M. Report. on the brain caps being removed the dura
Presented a loose and flattened appearance. There was marked fluctuation over the region of the frontal convolutions and on removing the dura mater a quantity of clear fluid (6 to 8 ounces) escaped from the base of the arachnoid. No apparent change in the dura mater itself. Pia-arachnoid opaque and thickened and in one of the vessels running behind the fissure of Rolando on the right side was a small clot. The clot was 3/16 inch in length and was composed of partially organized fibrin. The vessels in its vicinity being opaque and thickened. Later the ventricles contained little fluid. On removing the brain and looking at its surface purposes there was a marked difference between the two hemispheres--most marked in the frontal lobe--the convolutions on the right side appearing full and rounded while those on the left were flattened and indistinct. Also in measuring from the ophtemoro-
Sphenoidal loop of corresponding pericranial bone. The difference being 3/4 inch. (Right side 6 in. Left 5 1/2)
The most marked change in the size was seen in the gyrus cuneus lateralis of the left side which was of a yellowish gray colour and considerably flattened. Pia-arachnoid in this region thickened and opaque and on removal dragged away portions of the cortex. Limits of softened patch were clearly defined by margina revolutions.

Under surface of Brain
R. Dinnie
Asymmetry

On section the left optic thalamus seemed much rostral then the right
but beyond this no abnormality could be detected in the various ganglia at the base.

Weight of Right Cerebral Hemisphere 20 oz.
" " " " Left " " 16 1/2 oz.

Scraper from gyrus uncinius of left hemisphere.

Marked Asymmetry Case VII

Margaret Rodgers, aged 24: Prostitute, was received into asylum from a house of refuge in a state of dementia with paraplegia and mental degradation. Her mental symptoms were only of a fortnight's duration at her death. She was a very dirty paralytic dement.
Extract from P.M. Report. Calvarium was thick. The right hemisphere of the cerebrum was bulging and fluctuated under the fingers. On section it was found to be reduced to a compact jelly mass. The white matter especially being broken up. The left lobe of the cerebrum was much shrunken and the disproportion in size was very remarkable. On section the corpus striatum and optic thalamus were found to be nearly absorbed on the left side and in the former an old electric wire was seen about one inch in length. Both lateral ventricles were very small— the right one scarcely noticed. Fourth ventricle showed thick, grey granulations.

Weights:
R. Hemisphere 26 oz.
L. Hemisphere 15 oz.

Case of
Margaret Rodger
Marked Asymmetry  Case VIII

Mary Milne: aged 65. A case of organic dementia. The upper surface of the left hemisphere was quite soft and disorganized. Right hemisphere apparently normal. On section the whole of the left hemisphere found softened and disorganized from periphery to base. The arteries were very atheromatous at base.

Right Hemisphere of cerebrum - 21 ounces.
Left Hemisphere of cerebrum - 23 ounces.

Marked Asymmetry  Case IX

Sophia Constand: on admission aged 30: an intemperate subject to paroxysms of excitement. Very irritable and quarrelsome. Six months after her admission was seized with paroxysms of convulsions which lasted 12 hours on end. (The left arm apparently was numbed from infancy). During her residence had not any other fits of a convulsive character but was subject to attacks like Petit Mal.

Died of phthisis four years after admission.
Contrast from P.M. Report. Right anterior portion of calvarium is found to be much thicker than the left and the right frontal sinus extends also much higher in the bone. Externally on viewing the brain there is found to be a marked difference in the size of the hemispheres. The left hemisphere is apparently normal as regards size, convolutions and markings. The right besides being abnormally small is covered in places with small bullae of fluid - not abundant on the anterior pole; on the left side they are few in number and mostly confined to the occipital pole. The convolutions on the right side are remarkably small throughout with the intervening pulvinar shallow. Membranes strip readily; they are thickened and opaque. On section the ventricles are found to be much distended with fluid: the descending cornu of the right lateral ventricle being especially much dilated. Left half of cerebellum smaller than right.
Vertex of Brain - (Sophia Bruckshanks)
showing marked asymmetry

Case X - Clementina Marie or Robbie
A case of organic dementia. Died of extensive softenings of brain
about 6 months after admission - at
the age of 78.

P. M. Report. (Extract from). The upper
3/4 ths of left ascending parietal convolution
considerably broader - in some places twice
as broad - as corresponding convolution on
the opposite side. Posterior parietal lobule
of left side larger than that of right.
Ascending frontal of left side is broader
than that of right. In both hemispheres
there were numerous localized softenings.
There was atrophy of grey matter of
right lobe of cerebellum - the right half
was lighter than the left half by a
little less than 1/4, since.

Microscopic examination of softened
matter showed compound granular
bodies, Rinds on vessels; cholesterol
and amyloid bodies. Linear arrangement
of granules as if marking course of vessel

Marked Asymmetry - Case XI

Mrs. McGovern: Chronic mania; who
died of heart disease at the age of
70. Having shown no special symptoms
during life.
Extract from P.M. Report - There is marked sparsity and thinning of arachnoid. Sulci are expanded and separated by fluid on left side in preceding parietal cortices at the base of 2nd frontal convolution. There is a depression in ascending frontal of left side between the two parts of the 2nd frontal convolution: no similar depression on right side. On both sides ascending parietal very thin. Left cerebellum (Tonsillar Medulla) lighter by 3/4 ounce than the right. Pia makes adherent over the cerebellum as also over the base of temporal-epiphenoidal lobes. The pons on section appears to be congested. The arteries at the base are congested thickened but not atheromatous.

Site of Depression - Case of Mrs. Wighton
Marked Asymmetry - Case xii

Mary Robertson of Cathill, widow, aged 58.

First attack: 6 months duration. Admitted to Dumbarton Asylum August 1887.

History has gradually become restless and unsettled during the past year and has lately commenced to wander about.

On admission she was described as being weak-minded, simple and rather silly. Her memory was bad and she felt absent-like at times. Had a nervous feeling seemed not settled to anything; she felt she was not as she used to be. In medical condition no special abnormality was observed except a restless, almost chronic movement in her arms, head and shoulders.

Progress. Continued in this simple good-natured restless state for some months. She was however a poor sleeper. Five months after admission she is described as being a fidgety, restless, rather weak-minded patient. In Sept. 1888 she is described as restless, wandering, almost unable to fix her mind.
In January '89 she was described as getting more, more demented, dirty and degraded in her habits: wandering about restlessly. In January '89 she is noted to have deteriorated greatly of late evilly. Jilted, she seems to be delighted when she makes a mess. Appetite is excessive & she eats voraciously. In April '89, her health had failed greatly & was confined to bed. Unusually dirty, mischievous, delighting to give the attendant trouble. Says they are paid to clean up the mess she makes. On 14th May '89 was noted to be paralyzed in the right arm. No other symptoms noted at the time but that evening became comatose and died in a state of coma next day - about 20 hours after first seizure.

Extract from P.M. Report

Salvinius thickened on right side and somewhat irregular in shape on removing it. There was escape of an excessive amount of fluid in the subdural space (through an
accidental wound of the Dura Mater. Dura firmly adherent to Calvarium. Pia-arachnoid opaque in places, and there are collections of clear fluid in the sulci. In inspecting the cerebrum there is seen at once to be a marked difference in the size and shape of the two hemispheres. Left hemisphere seems to be normal in shape—except in so far as it has participated in a general process of brain atrophy. The right hemisphere however is very much smaller than its fellow: measuring 1 1/8 inch less antero-posteriorly and 3 1/8 inch less mediocorally, convolutions flattened on both sides but more especially on the right.

On section the brain substance is found to be of poppy-seed size. Generally on the left side there is an extensive softening of the corpus striatum. Membranes strip readily from corona.

Weight of Left Cerebral Hemisphere 16 3/4 oz.

" Right " 15 oz.

Cerebellum Pars Ve 5 3/4 oz.
Whole Encephalon 37 3/4 oz.
Vertex of Brain

Photograph of Cerebral Hemispheres shewing Asymmetry

Case of Mrs. Cuthill
Base of Brain

Photograph of Cerebral Hemispheres shewing Asymmetry.
base of Mrs. Buthill.