

4. Quiet, harmless, trustworthy patients in dormitories and single rooms with open doors, without attendants' inspection.
5. A lady, a trained nurse, as night superintendent for the whole asylum.

Lantern Demonstration of Gross Lesions of the Cerebrum. By JOSEPH SHAW BOLTON, M.D., London County Asylum, Claybury.

(Abstract.)

I. THE GROSS LESIONS OF MENTAL DISEASE.

THIS demonstration was a further report on the subject laid before the Association at the meeting at Claybury in February last, viz., the morbid changes occurring in the brain and other intra-cranial contents in amentia and dementia. In a paper read before the Royal Society in the spring of 1900, and subsequently published in the *Philosophical Transactions*, it was stated, as the result of a systematic micrometric examination of the visuo-sensory (primary visual) and visuo-psychic (lower associational) regions of the cerebral cortex, that the depth of the pyramidal layer of nerve-cells varies with the amentia or dementia existing in the patient. At the meeting of the Association referred to it was further shown, from an analysis, clinical and pathological, of 121 cases of insanity which appeared consecutively in the post-mortem room at Claybury, that the morbid conditions inside the skull-cap in insanity, viz., abnormalities in the dura mater, the pia arachnoid, the ependyma and intra-cranial fluid, etc., are the accompaniments of and vary in degree with dementia alone, and are independent of the duration of the mental disease. Since that date the pre-frontal (higher associational) region has been systematically examined in nineteen cases, viz., normal persons and normal aments (infants), and cases of amentia, of chronic and recurrent insanity without appreciable dementia, and of dementia, and the results obtained form the subject of the present demonstration. A paper on the whole subject will shortly be published in the *Archives* of the Claybury Laboratory.

In the table (Fig. 1) is given a summary of the results,

already published, of micrometric examination of the primary visual and lower associational (visuo-psychic) regions of six brains, to show the condition of the pyramidal layer of nerve-cells in normal amentia (infants) and in dementia. The table needs no detailed description in this abstract, but the layers marked out in it are as follows :

1. In the first half (reading from above downwards)—
 - (1) Superficial layer of nerve-fibres.
 - (2) Layer of pyramidal cells.
 - (3*a*) Outer layer of granules.
 - (3*b*) Layer of nerve-fibres or line of Gennari, containing solitary cells of Meynert.
 - (3*c*) Inner layer of granules.
 - (4) Layer of nerve-fibres or inner line of Baillarger, containing solitary cells of Meynert.
 - (5) Layer of polymorphic cells.

At the periphery of the visual area layers 3*a*, 3*b*, and 3*c* run into one, namely, layer 3 in the second half of the table. In the first brain illustrated, that of anophthalmos, layers 3*a* and 3*b* are not subdivided, as the granules in the former are too scanty for accurate measurement.

The first half of the table, viz., the primary visual area of the cortex, shows that the layer 3*b* is markedly decreased in cases of long-standing blindness, and that there is a decrease, independent of blindness, in the depth of the pyramidal layer of nerve-cells in both the aments and the dements.

2. In the second half of the table (the visuo-psychic region of the cortex) the pyramidal layer in the dements is decreased as before ; but in the aments it is, as might be expected *a priori*, much more decreased, and this also varies with the age of the case.

In the other tables (Figs. 2 and 3) are shown the results of micrometric examination of the pre-frontal region in a series of the brains previously referred to. The portion of the cortex made use of was that at the extreme pole of the hemisphere, across the transverse fissure of Wernicke, and included a portion of the orbital surface of the frontal lobe. The lamination is identical, as regards cell layers, with that shown in the second half of the first table, Fig. 1.

In Fig. 2 is shown a summary of measurements, in millimetres, of one of the cases (the last but one in Fig. 3). This is

introduced to show the regions measured and the general system adopted.⁽¹⁾ The subdivisions in Figs. 1 and 3 are in each case derived from general averages similar to those shown in Fig. 2.

In Fig. 3 it can be at once seen that the pyramidal layer of nerve-cells is the last layer to develop in the fœtus and infant, and also that it is decreased in dementia, the other layers also becoming decreased as the dementia is more pronounced. The pyramidal layer is also decreased in imbecility, and markedly so in severe imbecility or idiocy; but it is an important fact that this layer is also decreased in chronic and recurrent insanity without appreciable dementia. In other words, *in insanity without dementia a gross lesion exists, which is of the same nature as and only differs in degree from that existing in imbecility*. Lest it should be thought that this decrease is merely due to a degree of dementia which is clinically unrecognisable, it may be stated (1) that the decrease is marked, in some cases as marked even as that occurring in severe dementia; and (2) that both the general histological and the micrometric appearances are infantile in type and quite different from those of dementia. Hence in the idiot, the imbecile, and the non-demented lunatic the lesion consists of an arrest of development, the micrometric characteristics resembling those of infants; and it is highly probable that in dementia a retrograde wasting occurs in the reverse order, more or less, to that of the normal development of the cortex. It may be, also, that the relatively slight differences which exist in the depths of the cortical layers in normal brains are associated with differences in the mental power of the individuals to whom they belong.

This part of the demonstration was completed by an exhibition of lantern plates of hemispheres, showing various degrees of non-development and of wasting.

II. GROSS LESIONS OF THE CEREBRUM NOT NECESSARILY ASSOCIATED WITH MENTAL DISEASE.

(1) Large abscess of the left frontal lobe in a married woman 20 years of age, the result of a left pyonephrosis following blocking of the upper end of the ureter by a calculus. Four days after her confinement the patient developed sym-

ptoms diagnosed "puerperal melancholia." Some weeks later she was admitted to Claybury in a stuporose condition, and died in three days. The abscess was a sufficient explanation of the symptoms.

(2) Right capsular hæmorrhage in a chronic female lunatic æt. 26 years. Death occurred thirty hours after the onset of marked left hemiplegia. A generally adherent pericardium and extreme morbus cordis were found at the autopsy, together with advanced atheroma of the aorta.

(3) Subdural hæmorrhage in a non-demented male æt. 70 years. A cake of blood was found lying on the right motor region, and according to the history pressure symptoms had existed for from four to five months.

(4 and 5) Embolism of the right internal carotid artery beyond the origin of the ophthalmic branch. A chronic delusional male æt. 42. Atheroma of large vessels. Four days before death the patient showed nearly complete paralysis of the left arm, conjugate deviation of the head, neck, and eyes to the right, and apparent slight ptosis of the right eyelid. The knee-jerks were increased, and there was patellar clonus. The breathing was Cheyne-Stokes. The patient resisted attempts to open his eyes. Both discs were normal.

(6 and 7) Thrombosis of the greater part of the left anterior and middle cerebral arteries. Male æt. 69 years. Right-sided paresis ten weeks before death, complete right hemiplegia five weeks before death and gross mental impairment. Extreme calcareous degeneration of the cerebral arteries.

(8 and 9) Embolism of right cerebral artery of ten years' duration. Married woman æt. 49 years. Epileptiform seizures and emotional symptoms since the lesion. Partial paresis of the left arm and leg. No dementia. Chronic mitral disease.

(10 and 11) An exactly similar case in a woman æt. 59 years. It was, however, less severe, and the patient earned her living as a laundress in the interval between her attacks of insanity. Before death she was in the asylum for a month.

(12) Recent red thrombosis of branches of the left posterior cerebral artery. Female æt. 65 years. Alcoholic dementia. Atheroma of cerebral arteries. Older thromboses of right motor area with left epileptiform seizures.

(13) Old cyst in left temporo-sphenoidal lobe. Male æt. 32 years. Advanced general paralysis. Vegetative endocarditis.

(14) Aneurysmal dilatations of basal arteries and gumma of right crus cerebri. Female æt. 44 years. Left-sided seizure two days before death, and extreme optic neuritis most marked in the left eye. There was wasting of the olfactory nerves, also most marked on the left side.

(15) Sarcoma of the dura mater pressing on the right pre-frontal region. Female æt. 52 years. "Epileptic" dement. Right-sided hemiplegia for ten days before death. There was a recent thrombosis of the right middle cerebral artery beyond the origin of the first branch. The tumour was not suspected during life.

(16) Cyst of right motor area. Female æt. 37 years. Emotional and incoherent, with delusions of grandeur. Left-sided seizures.

(17) Secondary scirrhus of the dura mater. Female æt. 42 years. Chronic delusional case without dementia. Scirrhus of breast. Secondary growths in the liver, in the left femur causing "spontaneous fracture," and in the dura mater causing left-sided seizures.

(18) Sarcoma of the left optic thalamus. Male æt. 56 years. Dazed, lost, and restless. Dirty, but not wet. Pupils normal. Seizure a week before death.

(19) "Neurogliosis" of brain. Male æt. 18 years. Epileptic from four to five years of age, and in an asylum since thirteen years of age. An imbecile with very little intelligence. Four hundred and six fits during the last ten days of life, of which 168 occurred on the fifth day before death.

DISCUSSION

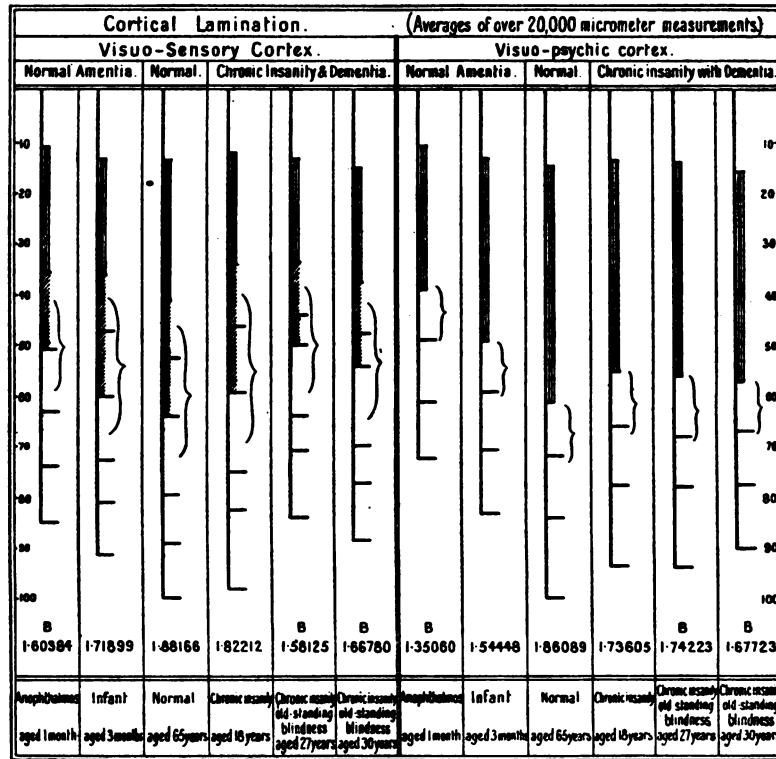
At the Annual Meeting of the Medico-Psychological Association, Cork, 1901.

The PRESIDENT.—We are all exceedingly obliged to Dr. Bolton for his able, exhaustive, and interesting address. The photographs he has shown must have taken an enormous amount of time and trouble in preparation, and his demonstration teemed with detail.

Dr. CLOUSTON.—We have never heard an address that contained a greater amount of valuable scientific information, and must express our appreciation of Dr. Bolton's results. The pathological measurement of the cortex is the very earliest method of investigation that I can remember. I was very much surprised by his new results with his own methods in reference to the gradation of the pyramidal layers in relation to mental condition; but I incline to disagree with Dr. Bolton's opinion that chronic delusional cases are not demented, believing as I do that they often suffer from a very appreciable amount of mental enfeeblement.

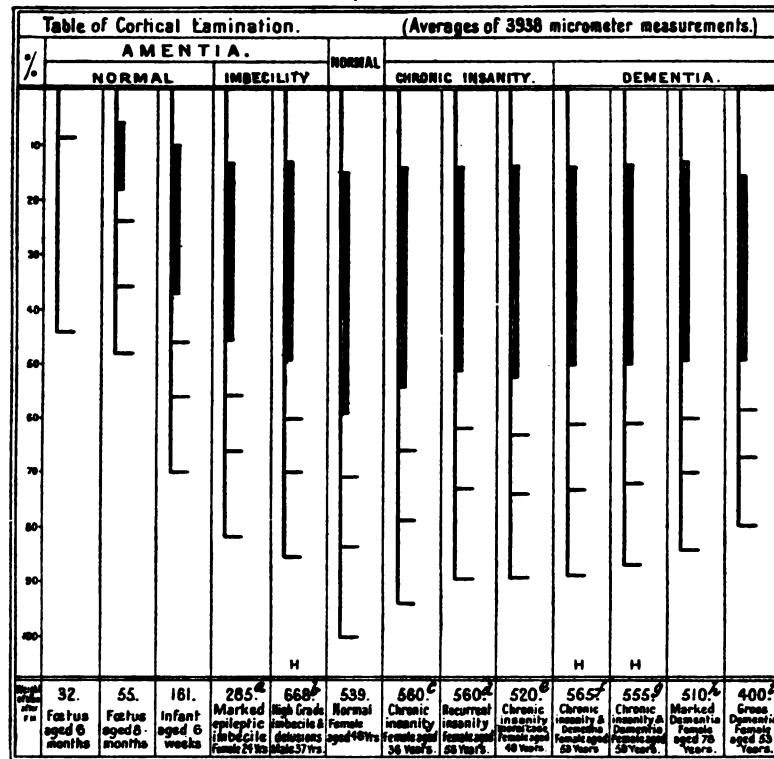
Dr. BOLTON.—I am afraid that I have been rather misunderstood by Dr. Clouston with reference to the question of dementia in chronic delusional cases, probably owing to the fact that I have this morning only dealt with the second half of my research. In the demonstration on the morbid changes in dementia, which I gave

FIG. 1.



The subdivisions from above downwards refer to the cell layers described on p. 730. In the first half of the table, layers 3 a, 3 b, and 3 c are bracketed together, and are equivalent to layer 3 in the second half, which has a bracket opposite to it. For further details see *Phil. Trans.*, vol. cxciii, series B, 1900.

FIG. 3.



Weights before hardening in formol: a, 265; b, 520; c, 498; d, 495; e, 488; f, 503; g, 445; h, 440; i, 347.

before the Association in February last, I made, on pathological grounds, a grouping of 122 cases of insanity into five cases, namely, (1) cases without appreciable dementia, (2) cases with barely appreciable dementia, (3) cases of chronic insanity with obvious dementia, (4) cases of dementia which still exhibited symptoms of insanity, (5) cases of gross dementia. Certain of the chronic delusional cases were placed in Group II., and it was to these cases that I referred during the present demonstration as chronic delusional cases without dementia. A large number of delusional cases were, however, placed under Classes III and IV.

(1) For further details see *Phil. Trans.*, Series B, vol. cxci, pp. 165-222.

Physical and Moral Insensibility in the Criminal. By
W. NORWOOD EAST, M.B.Lond., M.R.C.S.Eng., L.R.C.P.
Lond., Deputy Medical Officer, H.M. Convict Prison,
Portland.

THESE observations, carried out at H.M. Convict Prison, Portland, were undertaken to ascertain whether the moral insensibility of the criminal, which is so prominent a psychical characteristic, had any physical parallel.

For this purpose one hundred convicts have been examined as to the proficiency of their special senses. The ages of these men varied from eighteen to sixty-six years; they were undergoing various terms of imprisonment, from three years up to life sentences; some were first offenders, others in addition to numerous short sentences had served from one to four separate terms of penal servitude. The crimes included burglary, theft robbery, receiving stolen goods, forgery, fraud, coining, blackmail, murder, manslaughter, wounding with intent to murder or cause bodily harm, procuring abortion, assault, rape, carnal knowledge, unnatural offences, bigamy, arson, and perjury.

To obtain a standard with which to compare the criminal sensibility, ten similar examinations were carried out at Guy's Hospital on senior men, six of whom were holding or had held house appointments; one was qualified but had held no house appointment, and three were unqualified. To these gentlemen my best thanks are due.

Vision was tested by the usual test-types of Snellen; colour vision by means of Holmgren's wools; hearing, after removing any cerumen, by taking the mean distance at which a lever watch was heard on receding from and approaching each ear separately. The solutions used for testing olfactory sensibility were