

THE EPILEPTIC CONSTITUTION.

A study of seventy cases of Epilepsy at Whittingham
Mental Hospital, Preston, Lancs.

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PART I.INTRODUCTION.

The history of epilepsy for the last hundred years reveals a sublime obstinacy in the face of difficulties, ever increasing in number and complexity. Instead of the goal of discovery becoming nearer with each step of new accomplishment, it has seemed to recede further and further into the darkening distance.

In 1857 Brown-Sequard(1) was certain that he could produce epilepsy in animals by asphyxia or by injuries to the spinal cord. Silberstein,(2) sixty years later, produced epileptiform convulsions in animals by injuries to the brain and other portions of the nervous system. He however was careful to issue the warning that such injuries are not essential to the disease of epilepsy.

The production of movements simulating a localised convulsion, by means of electrical or other excitation of certain areas of the cerebral cortex, has resulted in a wider knowledge of the anatomy and physiology of the central nervous system. Regarding epilepsy, however, the procedure has yielded little more information than the movements produced by the stimulation of the spinal nerves. The application to the cortex, or the injection into the blood, of certain drugs, has taught us the lesson

that widely dissimilar substances such as lead, the toxins of uraemia, absinthe or picrotoxin may, through their action on the central nervous system, produce convulsions. Yet this valuable lesson has hardly furnished any assistance to the understanding of the disease.

"If on the one side", wrote Reynolds, (3) "it is said that convulsions are induced by cerebral anaemia, by eccentric irritation, by injury to the nervous centres inflicted by disease on the brain and on the spinal cord, or experimentally produced by lesions of the former or the latter, by blood disease and by general cachexia and debility, it must be said in reply that epilepsy exists when no one of these conditions is present; and the utility of their observation, quoad the pathology of epilepsy, is to show how, when they are not present, they are related to the central fact of epilepsy."

It must indeed be plain that if any disease exists both in the presence of, and in the absence of, a certain condition, that condition, much as it may contribute to increase or to diminish its severity, cannot be considered as the causative factor of that disease, and every condition in connection with epilepsy thus far observed has been open to this objection.

The very multiplicity and variety of factors

described by Kraepelin(4) as concomitant with different cases of epilepsy, is sufficient to convince anybody that such factors can only serve as contributories to the causation of the affection. Yet even if a constant factor concomitant with the symptom-complex of epilepsy were to be discovered, say of the nature of a chemical substance in the blood, proof would still be wanting that that factor is the cause of the disorder. Even if the application of such a substance to the cortex, or its introduction into the blood of an animal, brought about regularly a convulsion, we might still be justified in doubting its responsibility for the disease. For it is known on the one hand that chemical substances exist in the normal animal body, whose application to the cortex produces serious alteration to the cerebral circulation. An example of such a substance is Epinephrin. On the other hand it is known that the effect of the introduction into the body of foreign substances, is no measure of the effects of those substances on the organism to which they are native.

It is in view of these facts that I would attempt to present Epilepsy as a psychobiological problem, as a study of the individual peculiarly constituted, rather than simply as a disease.

SCHEME OF THESIS.

I propose to record the results of observations made on a group of epileptic patients at present under my care at the County Mental Hospital, Whittingham, Preston. Anatomical, physiological and psychological anomalies of epileptics are presented and discussed. Finally it is claimed that the facts emerging from this study indicate a constitutional basis in epilepsy.

THE CLINICAL MATERIAL.

My study is based upon an examination of 70 male cases. It may be objected that this investigation should include observations made in the case of female epileptics, but the reasons for the restriction to the male sex are that small glandular and genital anomalies are more easily detected in men than in women.

Only those were selected who, in their clothes, on first appearance, presented a look of physical normality. This practical if unscientific test excluded oligophrenics and others with striking physical characteristics or gross dysglandular stigmata, such as those associated with pituitary excess or deficiency.

A further restriction excluded cases where the family or personal history was not available.

All the cases selected suffered from Grand Mal.

METHOD AND TECHNIQUE.

- (a) Each patient was measured with tape measure and callipers and classified according to Kretschmerian principles. (5).
- (b) Dysplasias and stigmata were noted.
- (c) An X-Ray examination of the Jugular Foramina in the case of 10 epileptics was made. The results were compared and contrasted with the findings in the case of 7 non-epileptics.
- (d) Various physiological anomalies were investigated.
- (e) Heredity was considered..
- (f) Psychological phenomena were examined.

THE PHYSICAL HABITUS.

At the outset it must be admitted that no new physical type emerged from my examination, which might truly be called the "Epileptic Habitus". Nevertheless, the fact remains that, out of the 70 cases examined, not one can be recorded as a pure Kretschmerian type. In other words, in every case, the basic physical habitus was overlaid with greater or lesser dysplastic stigmata of various kinds.

In spite of such findings, however, the picture was never so blurred as to render a physique-diagnosis other than dysplastic impossible.

The following table indicates the physique-diagnosis in the 70 cases.

TABLE. I.

| | |
|----------------|-----|
| Pyknics. | 24. |
| Leptosomatics. | 28. |
| Athletics. | 18. |

The following table indicates the various types of dysplasias which were found. These are grouped under their appropriate "physical habitus."

TABLE. II.Pyknics.

| | |
|---------------------------------------------|-----|
| (a) Hypoplasias with slight hypothyroidism. | 1. |
| (b) Athletic traits. | 2. |
| (c) Dysgenitalisms. | 10. |
| (d) Infantilism. | 3. |
| (e) Feminisms. | 5. |
| (f) Eunuchoid obesity. | 3. |

Leptosomatics.

| | |
|-----------------------------------|-----|
| (a) Hypoplasias. | 8. |
| (b) Hypoplasias and infantilisms. | 5. |
| (c) Dysgenitalisms. | 11. |
| (d) Feminisms. | 1. |
| (e) Pyknic traits. | 1. |
| (f) Acromegaloid traits. | 2. |

Athletics.

| | |
|---------------------------------|----|
| (a) Feminisms. | 4. |
| (b) Dysgenitalisms. | 5. |
| (c) Acromegaloid traits. | 2. |
| (d) Slight pyknic traits. | 2. |
| (e) Elongated eunuchoid traits. | 5. |

In Table II, "Dysgenitalisms" include anomalies of the hair growth and of the genital organs, while feminine curvature of the pelvis and excess of glandular tissue in the breasts are considered as feminisms.

ADDITIONAL PHYSICAL TRAITS.

Following upon the purely Kretschmerian examination, a search was made for additional traits and stigmata. These, with their frequency of occurrence, are recorded in Table III.

| <u>TABLE III.</u> | Cases. |
|----------------------------------------|--------|
| (1) High arched palate. | 48. |
| (2) Asymmetry of head. | 32. |
| (3) Marked coarseness of skin of face. | 10. |
| (4) Metallic appearance of face. | 15. |
| (5) Marked asymmetry of ears. | 3. |
| (6) Adherent ear lobes. | 25. |
| (7) Very simple ear pattern. | 4. |
| (8) Loose skin in front of ears. | 2. |
| (9) Excessively large uvula. | 7. |

| | |
|-----------------------------------------------------|-----|
| | 8. |
| (10) Blue sclerotics. | 3. |
| (11) Flattening of thenar and hypothenar eminences. | 15. |
| (12) Hammer toe (bilateral). | 1. |
| (13) Incurving of little finger. | 6. |
| (14) Excessive growth of hair on back and arms. | 1. |
| (15) Absence of pigment in part of pubic hair. | 1. |
| (16) Abnormal bronzing of skin. | 4. |
| (17) Hairy moles. | 7. |
| (18) Umbilical hernia. | 2. |

COMMENTARY ON THE ABOVE TABLES.

In general it appears that the 70 cases present more anatomical deviations than normal people. 37 per cent show dysgenitalisms. 45.7 per cent showed an asymmetry of the head. An even higher percentage (68.5 per cent) showed high palates.

The bronzing of the skin, found in 4 cases, was suggestive of that found in Addison's Disease, but there was no asthenia or emaciation, and the blood pressure was normal.

The flattening of the thenar and hypothenar eminences was regarded as atavistic.

Infantilism is noted in 11.4 per cent of cases.

The "metallic appearance" is referred to by Bianchi(6).

Hypoplasias alone and combined with other stigmata or abnormalities were present in 20 per cent of cases. This would appear to indicate a polyglandular defect.

X-RAY EXAMINATION OF THE JUGULAR FORAMINA.

A study of an article by Davis(7) has prompted me to investigate differences, if any, in the jugular foramina between epileptics and normal individuals.

10 epileptics and six normals were examined and the brother of one of the epileptics and himself a patient in the hospital was also examined.

The technique adopted was substantially the same as that used by Davis with the following modifications. A compression band was not used. Instead of using a 1.5 KW metalix tube a 6 KW metalix tube was employed. A 5 inch cone was used and the Target-film distance was increased to 42 inches, with a penetration of 90 K.V.P. and 15 milliamperes. The time factor was 4 to 5 seconds.

It was found advantageous to use an 8 by 10 inch film with a lead mask covering the cassette and leaving a 5 inch circular opening. This reduces distortion and leaves a clear picture in the centre of the film.

It is obvious that only certain epileptics could be selected for such an examination.

X-RAY REPORTS ON JUGULAR FORAMINA.EPILEPTICS.Cases.

No. 1.

The right foramen is much larger and more circular than the left. They are entirely different in shape and form.

No. 2.

The right jugular foramen is definitely larger than the left and the latter is also much more dumb bell shaped.

No. 3.

The left jugular foramen is much larger than the right and has also a hollow cave in its anterior border not present in the similar position on the right side.

No. 4.

The left foramen is much larger and more regular in shape than the right.

No. 5.

There is a difference in shape between right and left in posterior border notably. There is a bony projection also from the external lateral border of the right not so marked in left.

No. 6.

The left foramen is much larger than the right.

No. 7.

There is a difference in form and shape. The left is egg shaped. The right is chestnut shaped, but there is no apparent difference in size.

No. 8.

There is a very great difference in size and shape of the foramina. The right is oval. The left is kidney shaped, and is smaller than the right.

No. 9.

There is a marked difference in the two foramina. The right is well marked and of good size: the left is smaller and not so well defined.

No. 10.

There is some difference between the right and the left foramina. The right foramen is slightly narrower, and in its anterior third, its borders are sharper and clearer than the left.

NON EPILEPTICS.

Cases.

No. 1.

The foramina are unequal in size. The left is larger than the right. The shape and the direction of the foramina are symmetrical.

No. 2.

The foramina are ill defined and narrower than normal, but the cavity of the right foramen is clearer cut and its bony boundaries are harder

and better defined than the left.

No. 3.

The foramina are unequal in size and in shape.

The right is larger and more clearly defined than the left.

No. 4.

There is a difference in size and in shape.

The left is crescentic and definitely smaller than the right, which is wider and more expanded.

No. 5.

The foramina are practically symmetrical.

Possibly the posterior half of the right foramen is more clearly defined than the left.

No. 6.

The foramina are unequal in length and width.

Both foramina are narrow and ill formed.

No. 7.

Non epileptic case. He is a case of Dementia

Praecox and is a brother to Epileptic No. 1.

The jugular foramina are unequal in size and shape and the right foramen is slightly larger and is oval. The left foramen is circular.

A survey of the foregoing reports reveals the tendency to irregularity in shape and inequality of size in the foramina of both the epileptic and normal cases.

Davis in his article gives details of measurements which in my opinion are of very doubtful value. He admits that "the plates of twelve were excluded as the outline of one foramen was not clear cut enough to permit an accurate measurement." He also omits to show any photographs of X-Ray films, but instead includes a photograph of the occipital bone showing extremely small jugular foramina. No photographic or sketch comparisons are shown.

It was found difficult and impracticable to take measurements in the cases which I investigated.

It was decided to photograph the X-Ray film; thus a convenient and easy form of comparison was available.

In contrast to the findings of Davis, my examination showed that the foramina of the epileptic were larger than any of the normal foramina.

The cases examined by Davis ranged in age from 3 to 54 years. All the cases which I examined were in the third decade, so that bony development was more uniform.

PHYSIOLOGICAL CONSIDERATIONS.

In this section of my thesis I propose to deal with certain aspects of epileptic physiology, which I submit are instructive in the consideration of the constitution.

There are many difficulties to contend with, however, in this study. There is the physiology of epilepsy just before, during, and immediately after the fit to consider. There is also the physiology of the quiescent period. It is also difficult to decide what function is acquired and what is innate.

It is also at this stage that one is tempted to enter upon discussions regarding the pathology of the "disease" called Epilepsy, and to avoid the real issue, namely, the collection of facts, however few, isolated and seemingly unconnected they may be, that serve to demonstrate an abnormal or defective constitution.

It is obvious that as far as the constitution is concerned, many physiological phenomena in epilepsy are not revealing.

Lennox and Cobb(8) in their book on "Epilepsy" state, "Although we have discussed the four main theories which have been advanced to explain the neurological mechanism involved in a fit (the so-called irritation, release, short circuit and explosive theories), to none have we been able to assign an exclusive position."

Later in their book they state, "The physiological changes which we have mentioned (anoxaemia, alkalosis, edema) are themselves only contributory factors. They tend to induce seizures by increasing the irritability of nervous tissues, producing an effect which is not specific for epilepsy."

Strauss(9) discussing Temple Fay's article on "Epilepsy. Clinical observations on the control of convulsive seizures by means of dehydration.", says, "Dr Fay unquestionably through his method of dehydration has reduced the number of convulsions but there is something else which must be brought in here for consideration, for me at least, to believe or accept this theory in its entirety because that external hydrocephalus which is demonstrable must be more or less persistent and while there may be slight variations in the quantity of fluid contained within the skull, nevertheless I can't conceive of a variable there in ordinary life of such degree as to bring on these convulsions at one time and their absence at another."

A few general considerations are now presented, and these are followed by two special observations.

GENERAL CONSIDERATIONS.

The general physical health of my 70 cases has been good during the past year. No case suffered from the influenzal epidemic which occurred in the hospital during the early part of this year. There was also a severe outbreak of Bacillary Dysentery, but all the 70 cases escaped infection, and in fact all the epileptics in the hospital went free.

One of my cases suffers from non active Pulmonary Tuberculosis.

Most epileptics have good appetites: none of my cases have ever required to be artificially fed

The speech of epileptics seems characteristic. A defect was found in most of the series. In view of the large percentage of high arched palates, this is not unexpected.

The speech defect is a sort of repetition of a word or phrase here and there.

The stream of talk is not continuous but overlapping. One writer has likened it to stereotypy; in fact he called it a stereotypy of speech(10). This is a type of speech that one frequently finds in children. This may be considered in relationship to the previous findings of infantilism, eunuchoid traits, and dysgenitalism, as showing an inherent anatomic-physiological defect.

A striking feature of the epileptic is the amazing manner in which wounds heal. It would appear that nature has here provided a special protective mechanism.

PULSE RATES IN EPILEPTICS.

During the course of routine examination of epileptic patients, it was observed that the pulse rate in the evening might vary as much as 20 beats from the rate recorded in the morning.

The subject was pursued further by comparing the pulse rates of 23 epileptics with the pulse rates of a similar number of the male staff here.

The epileptics selected were of the least excitable type, and records of the pulse rate were accepted only for days when the patient was free from fits. No observations were made in the case of patients with obvious heart disease.

The pulse rate was taken at 10 a.m., 2 p.m., and 6 p.m. , and an average was made of the records for 30 days.

The following two tables show differences between the epileptic and the normal ranges of pulse rate.

The highest normal daily range is 6 beats (80-84-86), whereas the highest epileptic daily range is 22 beats (96-82-74).

The lowest normal range is 1 beat(79-80-80), but one case showed no average variation (75-75-75).

The lowest epileptic range is 6 beats (88-84-82).

The striking feature, however, of the investigation

was the direction of range in the two types. In the normal cases the pulse rate, with the exception of the one instance where it remained stationary, increased towards evening. In the case of the epileptics the rate decreased towards evening.

It is difficult to explain this difference except on the basis of constitution.

It should be added that the records were made every day in the same room, and that no disturbing influence was allowed to upset the subject during examination.

The following two tables set forth the findings in detail.

TABLE IV.PULSE RATES OF NON EPILEPTICS.

| <u>CASES.</u> | <u>MORNING.</u> | <u>AFTERNOON.</u> | <u>EVENING.</u> |
|---------------|-----------------|-------------------|-----------------|
| 1. | 80. | 80. | 82. |
| 2. | 84. | 84. | 86. |
| 3. | 81. | 82. | 86. |
| 4. | 79. | 80. | 80. |
| 5. | 75. | 75. | 75. |
| 6. | 85. | 82. | 88. |
| 7. | 84. | 82. | 85. |
| 8. | 82. | 87. | 88. |
| 9. | 74. | 74. | 76. |
| 10. | 84. | 82. | 84. |
| 11. | 83. | 87. | 87. |
| 12. | 78. | 80. | 81. |
| 13. | 80. | 84. | 86. |
| 14. | 76. | 76. | 78. |
| 15. | 82. | 80. | 84. |
| 16. | 74. | 72. | 75. |
| 17. | 82. | 82. | 86. |
| 18. | 83. | 85. | 87. |
| 19. | 73. | 76. | 76. |
| 20. | 74. | 75. | 75. |
| 21. | 74. | 74. | 74. |
| 22. | 81. | 83. | 85. |
| 23. | 79. | 82. | 82. |

TABLE V.PULSE RATES OF EPILEPTIC PATIENTS.

| <u>CASES.</u> | <u>MORNING.</u> | <u>AFTERNOON.</u> | <u>EVENING.</u> |
|---------------|-----------------|-------------------|-----------------|
| 1. | 88. | 82. | 78. |
| 2. | 92. | 86. | 80. |
| 3. | 86. | 80. | 70. |
| 4. | 86. | 78. | 76. |
| 5. | 84. | 76. | 70. |
| 6. | 90. | 84. | 78. |
| 7. | 94. | 84. | 78. |
| 8. | 89. | 80. | 74. |
| 9. | 93. | 85. | 72. |
| 10. | 80. | 76. | 70. |
| 11. | 86. | 74. | 72. |
| 12. | 88. | 80. | 75. |
| 13. | 96. | 82. | 74. |
| 14. | 84. | 81. | 75. |
| 15. | 88. | 74. | 70. |
| 16. | 96. | 84. | 80. |
| 17. | 86. | 80. | 77. |
| 18. | 81. | 75. | 70. |
| 19. | 84. | 80. | 76. |
| 20. | 88. | 84. | 82. |
| 21. | 94. | 87. | 80. |
| 22. | 78. | 74. | 68. |
| 23. | 80. | 73. | 70. |

THE EFFECT OF ULTRA VIOLET RAY THERAPY IN EPILEPSY.

It has been occasionally observed in this hospital that patients who were epileptics became more irritable and suffered from an increased frequency of fits after a few exposures to ultra violet light.

It was decided to test this finding systematically. 10 of my cases were selected for treatment. Each patient had had an average of not less than 4 fits per week during the previous year.

Three minutes was the time of exposure at the first session, and the time was increased by half a minute at each succeeding exposure up to the end of the fourth week. Two exposures were given weekly.

In all cases the skin appeared to react in the usual fashion as far as naked eye observation could determine.

No striking mental change appeared until the expiry of two weeks, when irritability and restlessness became evident.

During the third week there was an increase of fits in three cases. One patient with a weekly average of five fits had twelve fits. The other two with averages of four and five, had ten and thirteen fits respectively. Treatment was stopped in these three cases during the fourth week on account of further increases in the number of fits.

In two cases there was no increase in the frequency of fits during or after the treatment, but signs of increased irritability were present.

During the fourth and fifth weeks all the other cases began to show an increase in the number of fits.

The treatment was terminated at the end of the sixth week.

It would seem fairly well established from the foregoing account, that epileptics tolerate ultra violet light badly.

In this connection it is interesting to note that the nervous system and skin both take their origin from the same embryological layer, the epiblast.

PART II.

| | PAGE. |
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| Heredity | 1. |
| Psychological Considerations | |
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| (b) Case notes with reference to the Epileptoid Temperament | 10. |
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| Religious Tendencies in the Epileptic | 19. |
| Summary of Investigation | 25. |
| Conclusions | 27. |

PART II.HEREDITY.

There is an increasing appreciation that heredity plays an important part in the etiology of epilepsy. Studies in human heredity, however, are always a matter of difficulty, as the necessary information is often impossible to obtain. In the present study, nevertheless, I was able to collect sufficient evidence of morbid heredity to render this part of the investigation of clinical value, even if it fails to satisfy the academic student of genetics.

16 cases showed no evidence of hereditary taint. The following table sets forth the morbid heredity in the remaining 54 cases.

TABLE I.

- (1) Father drunkard. Maternal uncle drowned himself.
- (2) Mother drunkard.
- (3) Father drunkard and committed suicide.
- (4) Father committed suicide.
- (5) Father and mother heavy drinkers. Sister epileptic.
- (6) Paternal aunt was a patient in a mental hospital.
- (7) Maternal aunt drunkard. Maternal uncle was a patient in a mental hospital.
- (8) Mother committed suicide.
- (9) Father psychopathic.
- (10) Maternal uncle committed suicide.

- (11) Father drunkard.
- (12) Father weak minded.
- (13) Cousin died in a mental hospital.
- (14) Maternal great uncle committed suicide.
- (15) Father alcoholic.
- (16) Maternal uncle suffered from epilepsy.
- (17) Mother died of cerebral haemorrhage at age of 41.
- (18) Sister is an epileptic.
- (19) Brother is in this hospital suffering from Schizophrenia.
- (20) Maternal grandmother insane.
- (21) Father drunkard.
- (22) Father committed suicide.
- (23) Brother in a mental hospital.
- (24) Mother psychotic.
- (25) Sister is an epileptic.
- (26) Mother psychotic.
- (27) Brother weakminded.
- (28) Maternal uncle psychotic.
- (29) Mother drunkard.
- (30) Father died aged 19 of appendicitis.
- (31) Mother died of pulmonary tuberculosis at age of 28.
- (32) Mother weak minded.
- (33) Father drunkard. Mother died of pulmonary tuberculosis.
- (34) Father weak minded.
- (35) Paternal grandfather was in a mental hospital.

- (36) Cousin psychotic.
- (37) Maternal uncle drunkard.
- (38) Father morally degraded and addicted to periodic alcoholic excess.
- (39) Mother weak minded.
- (40) Brother in a mental hospital.
- (41) Grandfather psychopathic.
- (42) Mother weak minded.
- (43) Father criminal.
- (44) Sister in a mental hospital.
- (45) Maternal uncle weak minded.
- (46) Father moral degenerate.
- (47) Both parents highly strung type.
- (48) Mother suffered from Graves's disease.
- (49) Paternal grandfather suffered from diabetes mellitus.
- (50) Paternal grandparents both died from cerebral haemorrhage.
- (51) Mother weak minded.
- (52) Father and mother drunkards.
- (53) Mother died from diabetes mellitus.
- (54) Father drunkard.

The importance of alcoholism in the ancestry in relation to epilepsy in the offsprings is shown in the above table. Alcoholic excess is recorded 14 times or in 20 per cent of cases. It is difficult, however, to decide whether to regard alcoholism as truly aetiological or causal. It may be that the ancestors take to alcohol because they are mentally abnormal and that the mental abnormality is transmitted to the children.

On the other hand alcohol may directly affect the germ plasm.

Rudin(1) discussing the significance of alcoholism in the ancestry suggests that "if there exists any causal interrelation between alcoholism of the father and epilepsy of the child, it is probable in the sense that the alcoholic intoxication of the father activates an epileptic family anlage."

General hereditary tainting occurs in 77 per cent of cases. A striking feature of the table is the abnormalities found in the near relations of apparently normal parents. It has also to be noted that no cases of epilepsy were recorded in the parents.

Snell(2) found that in genuine epilepsy hereditary tainting was present in 81.26 per cent of cases.

PSYCHOLOGICAL CONSIDERATIONS.

PERSONAL HISTORY.

The personal history was investigated in all the 70 cases. First of all an enquiry was made regarding the onset of convulsions. Then an attempt was made to assess the temperament of the patient prior to his mental breakdown. This was based on the Kretschmerian classification.(3). The following were the descriptive criteria adopted.

- (1) Schizothyme-schizoid: self absorbed, quiet, shy, apathetic, indolent, resentful, moody, stiff, languid, suspicious, stubborn, reticent, self-willed, monosyllabic.
- (2) Cyclothyme-cycloid: lively, companionable, tender hearted, alternations of mood -- cheerful and sad, dependent, good natured, easy going, loquacious, quietly humorous.
- (3) Epileptoid: Coarse, brutal, strained ill-humour, explosive temper, tendency to severe affective crises, intolerance of alcohol, bigoted, fussy, pedantic, egocentric.

It will be observed that some of the Kretschmerian temperamental characteristics are omitted, and that a modification has been effected in the "Epileptoid" group. The omissions were made purposely because the descriptions or concepts offered difficulties to the persons furnishing the history.

The "Epileptoid" group is a combination of Kretschmer's(3) "Epileptoid characteristics" and "Epileptic character," with the details of fits and allied states omitted. It is reasonable to suggest that an individual could be quiet and tranquil between seizures, and those responsible for the history were instructed to omit phenomena closely connected with fits. In this way it was hoped to arrive at a more accurate estimate of the basic constitution.

The following table gives the age of onset of fits and indicates the temperament group.

TABLE II.

| AGE AT ONSET OF FITS. | SCHIZOTHYME SCHIZOID. | CYCLOTHYME CYCLOID. | EPILEPTOID. |
|--------------------------|--------------------------|------------------------|-------------|
| (1) 36. | X. | | |
| (2) 8. | | | X. |
| (3) 5. | | | X. |
| (4) 19. | X. | | |
| (5) 16. | | X. | |
| (6) 42. | X. | | |
| (7) 23. | X. | | |
| (8) 58. | X. | | |
| (9) 22. | X. | | |
| (10) 28. | X. | | |
| (11) 28. | X. | | |
| (12) 21. | X. | | |
| (13) 56. | | X. | |

| AGE AT ONSET OF FITS. | SCHIZOTHYME SCHIZOID. | CYCLOTHYME CYCLOID. | EPILEPTOID. |
|--------------------------|--------------------------|------------------------|-------------|
| (14) 50. | | X. | |
| (15) 5. | | | X. |
| (16) 18. | | X. | |
| (17) 1. | | | X. |
| (18) 32. | X. | | |
| (19) 13. | X. | | |
| (20) 28. | X. | | |
| (21) 5. | | | X. |
| (22) 12. | | | X. |
| (23) 36. | X. | | |
| (24) 15. | X. | | |
| (25) 8. | | | X. |
| (26) 9. | | | X. |
| (27) 2. | | | X. |
| (28) 1. | X. | | |
| (29) 6. | | | X. |
| (30) 23. | | X. | |
| (31) 14. | | | X. |
| (32) 8. | | | X. |
| (33) 1. | | | X. |
| (34) 19. | X. | | |
| (35) 15. | | | X. |
| (36) 13. | X. | | |
| (37) 3. | | | X. |

| AGE AT ONSET OF FITS. | SCHIZOTHYME SCHIZOID. | CYCLOTHYME CYCLOID. | EPILEPTOID. |
|--------------------------|--------------------------|------------------------|-------------|
| (38) 16. | X. | | |
| (39) 34. | X. | | |
| (40) 11. | X. | | |
| (41) 27. | | X. | |
| (42) 23. | X. | | |
| (43) 54. | X. | | |
| (44) 17. | X. | | |
| (45) 10. | | | X. |
| (46) 2. | | | X. |
| (47) 11. | | | X. |
| (48) 2. | | | X. |
| (49) 13. | X. | | |
| (50) 26. | | X. | |
| (51) 19. | | X. | |
| (52) 5. | | | X. |
| (53) 14. | | | X. |
| (54) 27. | X. | | |
| (55) 12. | | | X. |
| (56) 10. | | | X. |
| (57) 19. | X. | | |
| (58) 3. | | | X. |

| AGE AT ONSET OF FITS. | SCHIZOTHYME SCHIZOID. | CYCLOTHYME CYCLOID. | EPILEPTOID. |
|--------------------------|--------------------------|------------------------|-------------|
| (59) 20. | X. | | |
| (60) 10. | | | X. |
| (61) 30. | X. | | |
| (62) 16. | | | X. |
| (63) 25. | | X. | |
| (64) 17. | X. | | |
| (65) 8. | | | X. |
| (66) 13. | | | X. |
| (67) 11. | X. | | |
| (68) 29. | | X. | |
| (69) 15. | X. | | |
| (70) 2. | | | X. |

TABLE III.

EPILEPTOIDS.

| PKYKNICS | LEPTOSOMATICS. | ATHLETICS. |
|----------|----------------|------------|
| 19. | 5. | 5. |

SCHIZOTHYME SCHIZOID.

| PKYKNICS. | LEPTOSOMATICS. | ATHLETICS. |
|-----------|----------------|------------|
| 0. | 21. | 10. |

CYCLOTHYME CYCLOID.

| PKYKNICS. | LEPTOSOMATICS. | ATHLETICS. |
|-----------|----------------|------------|
| 5. | 2. | 3. |

Table III. indicates bodily types in each temperament group. It will be observed that 65.5 per cent of epileptoids have a pyknic physical habitus. Further, no patient whose prepsychotic temperament was diagnosed as epileptoid, had the onset of fits after the age of 16 years.

A schizothyme schizoid temperament is first observed in the case of two patients with onset of fits at the age of 11 years. No schizothyme schizoid case showed a pyknic physical habitus.

The small cyclothyme cycloid group showed a pyknic habitus in 50 per cent of cases.

In view of the findings that 65.5 per cent of epileptoids have a pyknic physical habitus, I wish to put forward the suggestion that such patients really belong to a "distorted cyclothyme cycloid" class.

CASE NOTES WITH REFERENCE TO THE EPILEPTOID TEMPERAMENT.

Case A.

Admitted to the hospital 12th October 1926. Present age 37 years. He had his first fit at the age of 16.

On admission he was strange in manner, confused and mildly excited. In November 1926 he is reported as being "clean and tidy, happy and contented."

He remained bright and cheerful apart from periods of confusion at the time of fits which occurred about

once a week, until January 1927, when he had a period of excitement. In August of the same year he became depressed and started to refuse his food. Towards the end of the year he again became excited and developed ideas of superiority over the other patients. For several days he paraded up and down the wards exclaiming, "Thank God, thank God, I'm cured."

In the early part of 1928 he was quiet and industrious but still retaining exalted ideas about himself. Later in the year he became irritable and complaining and imagined that everyone was against him. He tends to be depressed at times.

In 1929 he was generally abusive and easily upset. In 1930 he had periods of noisy excitement. At the end of the year he was bright and cheerful. In 1931 he was granted parole. His behaviour was fairly good. At times he was garrulous and boastful. At other times he tended to be depressed.

Since 1931 he has had similar periods of excitement, exaltation and depression.

Case B.

Admitted to hospital 20th August 1929. Present age 39 years. Married. He had his first fit at the age of 8.

On admission he was strange in his manner, refused to obey the orders of the staff, and appeared as if he had had a fit recently.

During 1929 he had severe fits accompanied by profound confusion, but in the intervals he was bright and cheerful and was extremely garrulous in his conversation.

In 1930 he became dull and apathetic. He remained in this state until November 1930. He then became more talkative but was fairly well conducted and amenable.

Apart from confusion associated with fits, his history was uneventful in 1931.

In March of 1932 he became acutely depressed and attempted suicide by cutting his throat. In May of the same year he improved and was cheerful and industrious.

At the end of the same month he again became depressed. He remained depressed until January 1933. He gradually became brighter and started to work in the wards again. Eventually he became exalted, noisy and arrogant.

In May of 1933 he again became depressed. He developed suicidal ideas again. He has been regarded as suicidal ever since, though he has occasional periods when he is comparatively happy and contented.

It will be observed in this case that the symptoms are tending towards a permanent melancholia.

Case C.

Admitted to hospital 1st May 1933. Present age 22 years. He had his first fit at the age of 3.

On admission he was dull and depressed. At the end of a fortnight he became brighter and took a greater interest in his surroundings. During the rest of the year, he was willing and industrious and very sociable,

except during the time immediately preceding and following a fit, when he became impulsive and interfering.

His history in 1934 and 1935 is similar to the account given for 1933.

Case D.

Admitted to hospital 8th January 1934. He had his first fit at the age of 14. Present age 22 years.

On admission he was dull and apathetic. He took no interest in his surroundings. In February he became a little brighter, while in March he was working in the wards and was very sociable.

In April he showed signs of depression. He stated that he wished to die.

In June he became bright and cheerful again. Since then he has had alternating states of depression and cheerfulness, punctuated by fleeting bouts of confusion due to fits.

Case E.

Admitted 26th May 1932. He had his first fit at the age of 5. Present age 30 years.

On admission he was lost and confused. During the first week he became dull and apathetic. About the middle of June he started to work in the wards, and later he was sent to work on the hospital farm, where he became bright and cheerful. Apart from confusion associated with the occurrence of fits, there were no

adverse reports regarding his mental condition. He was a good and willing worker. In August he tended to be a little depressed, but soon became bright and happy again. He, however, had several strong fits in close succession which rendered him very confused. When confused he tends to be quarrelsome, which is in contrast with his usual behaviour.

The succeeding history up to the present date shows no change from the description already given.

Case F.

Admitted 20th August 1932. He had his first fit at the age of 8. Present age 31 years.

On admission he was rough and violent. His speech was disconnected. After a few days he stated that he must have been queer to have been brought here. He also stated that after fits he became confused.

During the next few months he proved himself a good worker. Later he had periods of depression, when he bemoaned his fate.

He has continued to prove himself a good worker when he is free from fits, which occur in groups about every three weeks or so. When working he is pleasant and sociable.

A day or two prior to the onset of fits he is sometimes inclined to be grandiose and overbearing.

COMMENTARY.

The foregoing case notes furnish evidence of traces of cycloid activity in the epileptoid. There is a tendency for the mood to change so that at one time the individual may be sociable, grandiose, pleasant, cooperative, excited or exalted, and at another time depressed and perhaps suicidal.

It may be useful at this point to consider the work of Heard(4). In "The Ascent of Humanity", he offers a new conception of history. He claims that man progresses pari passu with the evolution of consciousness.

The first stage of consciousness was at what may be called the co-conscious level. Man at this primitive level was an undifferentiated member of the herd, incapable of the conception of his own individuality. This may be regarded as the golden age. From this undifferentiated mass a new psychism evolves- men with a sense of their own individuality appear. These men, proto-individuals, oppressed with a sense of their isolation, soon learn to exploit their new conscious faculty and become the tribal leaders and conquerors of the primitive world- the heroic age has dawned.

The next stage in the history of the race is one of the disintegration of consciousness, and shows the disintegrating progress continuing to work down and spread among the masses to turn them into private individuals.

The final phase in the evolution of consciousness is the re-acquisition by fully individualised persons of a corporate sense. This fusion of neo-co-consciousness with neo-individualism is termed by Heard superconsciousness.

I contend that Heard's work can be applied to the consideration of the present problem.

Although Mapother(5) has noted schizoid manifestations in very young children, most young children present in my opinion an undifferentiated kind of temperament which is superficially cyclothyme. Although by no means identically the same as co-consciousness, I claim that this undifferentiated level of temperament corresponds ontogenetically with the co-conscious phylogenetic phase.

The next stage ontogenetically is one of differentiation. The child may develop on neo-individualistic lines and become what is understood to-day as a schizothyme, or on proto-individualistic lines and show schizoid characteristics.

The fully developed cyclothymic is the individual who has acquired the rudiments of superconsciousness. He feels himself to be a part of, and therefore in harmony with, his human environment.

It is likely that the cycloid is one who has retained so much of the spirit of the herd in his psychic make-up that at times he actually feels himself out of harmony with the herd, which at this stage of evolution

has become for him over-individualised; hence the fluctuations in the sphere of his affectivity.

Brill(6) also refers to the schizoid in the following terms, "he is more refined and more differentiating in his expressions than the syntonic, who reacts to the thing as a whole rather than to a small detail of it."

Later in the same article Brill quotes Bleuler. The necessary perseverance which enables great men to attain their aim and which in insignificant beings expresses itself in obstinacy and queerness is only afforded by schizoid mechanisms which can block or suppress the contrary strivings of external and internal influences."

CONCLUSIONS.

A perusal of the illustrative case notes with reference to the epileptoid temperament reveals a cycloid element in the make-up of the patients concerned.

Heard's work provides a good interpretation of the genesis of the temperaments.

Brill's statement and quotation clarify the problem of differentiation.

It would seem, then, that the epileptoid is not cyclothyme cycloid in the sense in which such a description can be applied to fully differentiated individuals, but that he has been fixated at the

undifferentiated level. The longer the onset of fits is delayed the greater is the opportunity for differentiation to take place. As has been observed, schizoid elements indicate greater differentiation, and are revealed in the history of those individuals, chiefly, where the onset of fits is delayed until after puberty.

RELIGIOUS TENDENCIES IN THE EPILEPTIC.

The frequent references in the literature to the religiosity of the epileptic made me wonder if this aspect of his make-up might provide, on examination, further evidence in the matter of constitution.

Henderson and Gillespie(7) quote MacCurdy in his reference to the religiosity of the epileptic. MacCurdy states, "they are considerate without being kind, and are religious without zeal, and ... they will work for praise, but not for love."

Bianchi(8) gives a vivid description of the epileptic in this connection. He writes, "The disease weakens the bonds that bind him to the social world and strengthens his inclinations towards things spiritual. He becomes more religious, ostentatiously obedient to the rules and rites of religion. Every day he spends some time in the church; at home he recites prayers and chants. He becomes excessively humble, assuming a very meek and submissive attitude when he meets any of his acquaintances. The consciousness of his own inferiority to other men gives him an expression of humility and reverence. Beneath the surface, however, he is often a captious, irascible, violent, impulsive, cruel being. A slight stimulus is sometimes sufficient to make him throw off the mask of humility and religion, and there, stripped of

all disguise, in all its hideous nudity, stands revealed the irritated beast, with bared fangs and outspread claws."

The following is a summary of case notes on epileptics with pronounced morbid "religious tendencies".

Case A.

He states that he is God and that he got to know this through the war. He claims that he is on this earth to save the world, and that he is expecting a miracle to be performed. He maintains that there are no human beings in heaven, but that it is full of angels. He repeatedly warns his listeners that there will be no smoking, drinking, swearing or sexual intercourse in heaven. He makes noises like a cock crowing, and says he does this because his loving son tells him that the world is being won.

COMMENTARY.

Here is seen pronounced egoism, narrowness and rigidity of opinion.

Case B.

He affirms that he is the Holy Ghost, and that he is able to make himself invisible when he desires to do so. He says he will become invisible at Christmas and will leave the hospital, which will be put in utter darkness. This is to be a form of punishment for everyone here, for what he has had to suffer.

COMMENTARY.

His claim that he can make himself invisible may indicate a retreat from reality. He also evinces an unreasonable hate which may be sadistic in origin.

Case C.

He states that he was compelled by God to get up thirteen times during the night to pass urine, and that God has now cured him of all his troubles.

He also states that he saw the heavens divide when he went over the top in 1916. He thinks this was God's way of saving the soldiers from massacre.

COMMENTARY.

In this case there may be a purification mechanism at work. According to Adler(9) hallucinations of a religious variety, such as are experienced in this case, are to be understood as infantile megalomaniac ideas and as an expression of a feeling of superiority over environment.

Case D.

This patient becomes very sanctimonious at times. He expresses a wish that the whole world should live at peace and he prays to God every night that this may be so.

Frequently he sits by himself reading a bible and shortly afterwards he may be found in wordy or fistic conflict with another patient.

COMMENTARY.

This case shows a conflict between altruistic tendencies and infantile egoism.

Case E.

On admission this case was very emotional. He tried to kiss the doctor's hand and asked forgiveness. He stated that he wished to be cremated so that he could save his father who was dead.

A month after admission he suddenly became excited and attacked a male nurse, whom he accused of having him nailed to the cross. He was put to bed.

Later he was discovered lying in his room in a naked state with arms and legs spreadeagled; there were superficial cuts on dorsum of both feet and on the palms of his hands, self inflicted to represent nail punctures.

He remained in the attitude of crucifixion for some hours. He said he wished to sacrifice himself body and soul. He stated that he was willing to allow the Medical Officer to nail him to the cross to show his faith in God.

He has had several similar attacks since. He adopts various postures significant of several incidents in the crucifixion of Christ, and acknowledged as such by the patient himself.

During one of these episodes he asked for a cross and one was made for him, so that his reactions could

be observed.

COMMENTARY.

Here is seen identification with Christ. The injuries inflicted and for that matter the identification itself, may be a masochistic self portrayal.

The exhibitionism is in itself infantile.

Case F.

He states that he receives messages from Jesus Christ and that sometimes Christ appears before him. He admits to hearing other voices as well and these he thinks are the voices of angels.

COMMENTARY.

The hallucinations in this case are explained in the same way as those in Case C.

Case G.

He often is found singing in an almost incoherent manner, and when asked what he is doing, he replies that he is singing to the angels. He states that he does this to drive away depression.

COMMENTARY.

Adler's explanation appears to hold good in this case also.

CONCLUSIONS.

A study of the case notes on the religious tendencies in epileptics reveals changes in character, such as prominence of egotistical and vital tendencies, which point to a return to the primitive infantile state.

The exhibitionism, hate, and dislike for heterosexual relations are all indicative of infantile libidinous and egoistic impulses.

SUMMARY OF INVESTIGATION.

- (1) The difficulties inherent in the investigations into the cause of Epilepsy have been described.
- (2) It was proposed to consider Epilepsy as a psychobiological problem.
- (3) 70 male patients suffering from Major Epilepsy were examined.
- (4) The physical habitus was investigated in accordance with Kretschmerian principles. Although no new physical type emerged from the examination, the basic physical habitus in every case was overlaid with dysplastic elements.
- (5) Table I (Part I) gave the physique-diagnosis as Pyknics 24, Leptosomatics 28, and Athletics 18.
- (6) Various dysplasias and stigmata were commented upon and the presence of hypoplastic features in 20 per cent of cases was regarded as pointing to a polyglandular defect.
- (7) X-Ray examination of the Jugular Foramina was carried out. 10 epileptics and 7 non epileptics were examined. It was found that the foramina of the epileptics were larger than those of the non epileptics without exception.
- (8) Certain aspects of epileptic physiology were considered and attention was drawn to the ill effects of ultra violet light with regard to the

frequency of fits. It was also observed that the skin and nervous system both take their origin from the epiblast.

The pulse rates of 23 epileptics were compared with the pulse rates of a similar number of male nurses.

In the case of the epileptics the rate decreased towards evening in contrast to the normal increase towards evening.

- (9) Heredity was considered. Alcoholic excess in the ancestry was recorded in 20 per cent of cases. General heredity tainting occurred in 77 per cent of cases.
- (10) Each patient was assigned to a temperamental group according to his personal history prior to the appearance of manifest mental disorder. The results showed that no epileptoid had the onset of fits after the age of 16 years. 65.5 per cent of epileptoids had a pyknic physical habitus.
- (11) It was shown that there were cycloid elements in the epileptoid make-up.
- (12) The genesis of temperament was discussed and it was shown that Epilepsy occurs earlier in the less differentiated individual.
- (13) Religious tendencies were studied in the epileptic and it was seen how egoistic and infantile impulses are at work.

CONCLUSIONS.

- (1) There are among epileptics more anatomical deviations than among normal people.
 - (2) Physiologically considered, the epileptic shows peculiarities which may be justifiably considered as constitutional.
 - (3) Heredity must be reckoned as a determinant in the genesis of Epilepsy.
 - (4) Where the onset of fits occurs before puberty it will be found that the psychic state is less differentiated, than that where the fits commence after puberty.
 - (5) Psychologically considered the epileptic is at an infantile level.
 - (6) To sum up - the epileptic is a biological inferior.
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PHOTOGRAPHS.

Figs. 1 to 13 see Part I. p. 6 et seq.

Figs. 14 and 15 see Part I. p. 9.

Figs. 17, 18, 19 and 20 see Part II. p. 22.



Fig. 1.



Fig. 2.



Fig. 3.



Fig. 4.



Fig. 5.



Fig. 6.

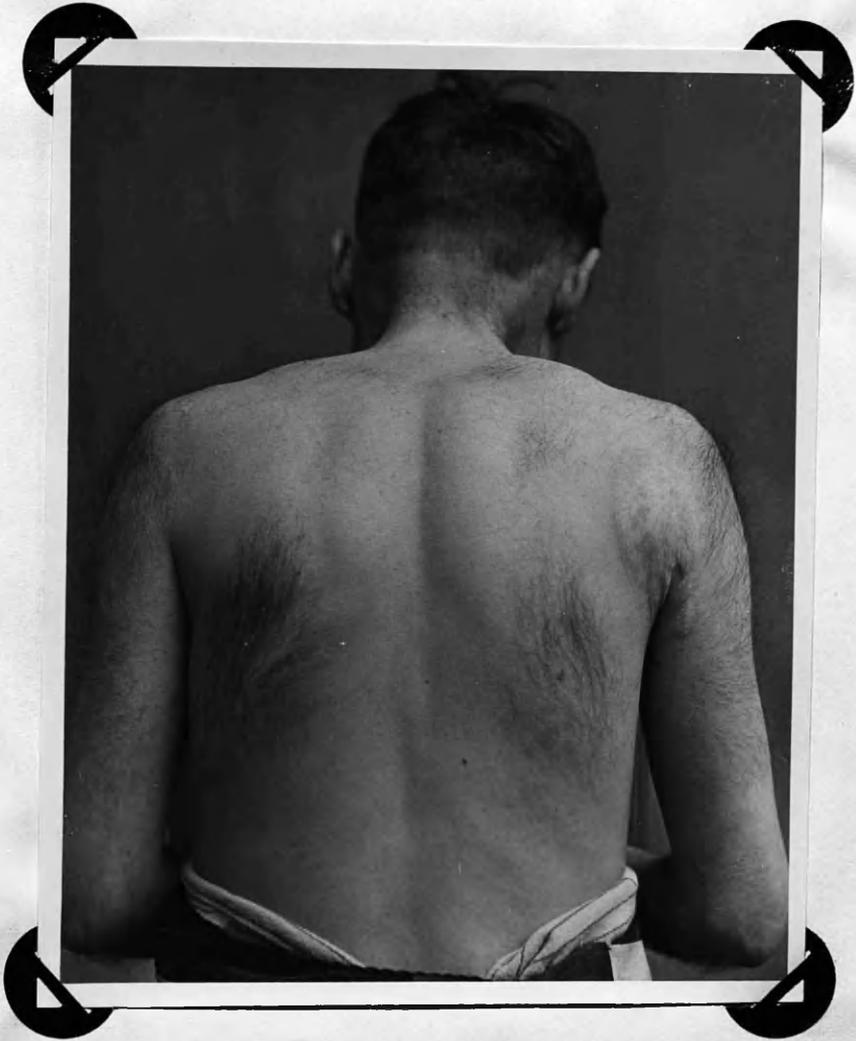


Fig. 7.

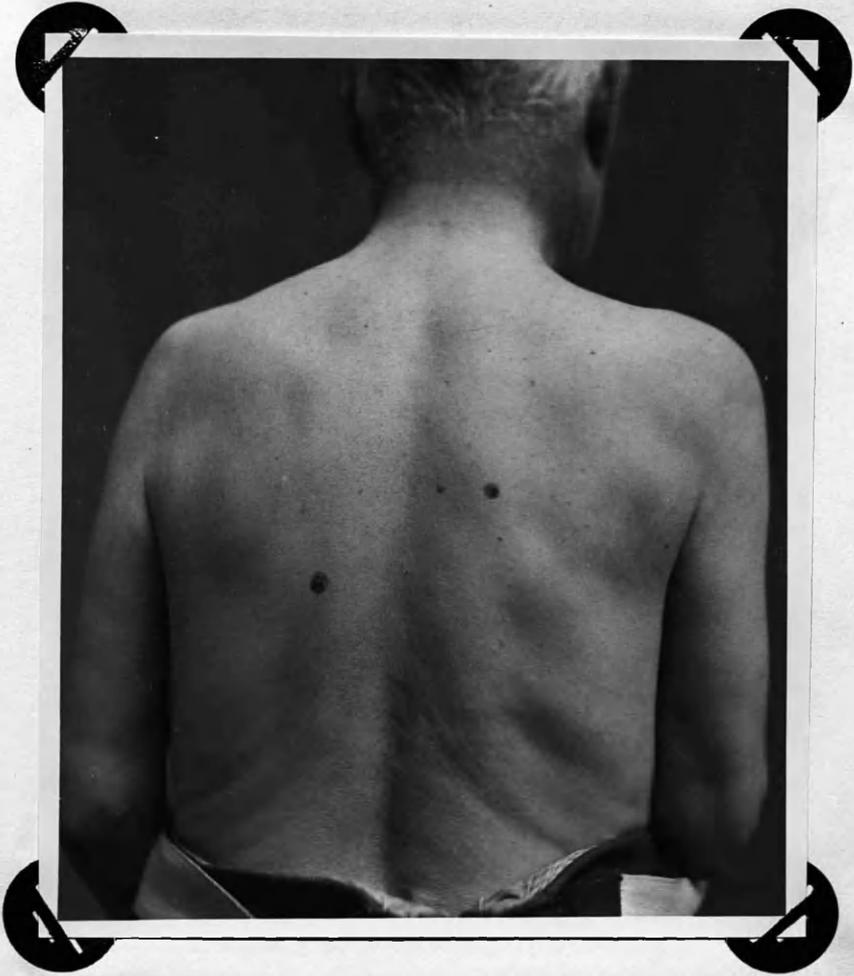


Fig. 8.



Fig. 9.



Fig. 10.



Fig. 11.



Fig. 12.



Fig. 13.



Fig. 14.

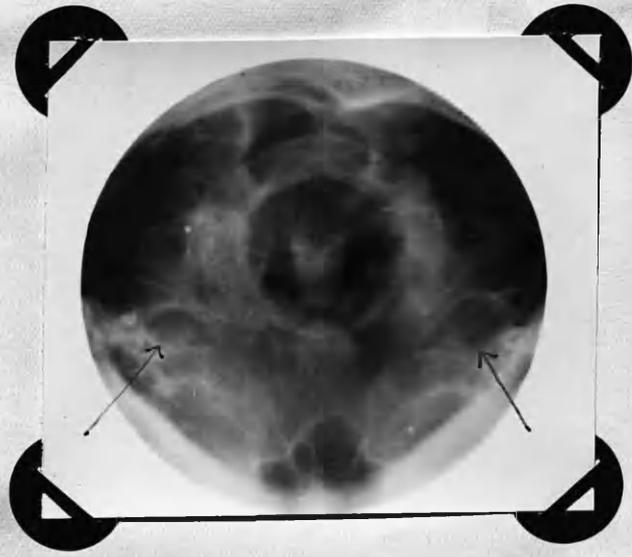


Fig. 15.





Fig. 16.



Fig. 17.



Fig. 18.



Fig. 19.



Fig. 20.

NOTES ON PHOTOGRAPHS.

Fig. 1 and Fig. 2. show full face and profile of same patient. Note hypoplastic characteristics. The nose is snub like. The eyes are deeply set, and the orbital arches overhanging. The upper lip is rather short. The mid face is comparatively short in relationship to the head as a whole.

Fig. 3 and Fig. 4. show full face of another patient. This face is also hypoplastic, but there is a tendency in the direction of the long nose of the asthenic. The upper lip is short. It should be noted that the nose is much more prominent in profile than is usually found in hypoplastic types even with asthenic elements. The chin is poorly developed.

Fig. 5. shows a profile which demonstrates a short upper lip. Apart from the nose, the modelling of the face is weak.

Fig. 6. shows a profile where the midface is short. The upper lip is also short. The eyes are small and deep set. The nose is exceptionally well developed and is asthenic in type.

Fig. 7. shows excessive hair on back and arms.

Fig. 8. shows hairy moles on back.

Fig. 9. is a photograph to show absence of pigment in part of pubic hair. It will also be observed that there is a number of areas of skin showing absence of pigment.

Fig. 10. shows bronzing of skin.

Fig. 11. shows hairy moles.

Fig. 12. demonstrates feminine curvature of pelvis and feminine modelling of thighs.

Fig. 13. is an example of asymmetry of head.

Fig. 14. is a photograph of X-ray film showing a typical normal Jugular Foramen. The arrows point to the foramina.

Fig. 15. indicates the usual type of Jugular Foramen as found in epilepsy. Sketches accompany the photographs by way of explanation. They are an approximate outline of the Jugular Foramina.

Fig. 16. This is a photograph of Case E. Part II. p. 22. He is fully dressed and is in one of his quiescent periods.

Figs. 17, 18, 19 and 20 show different positions taken up voluntarily by the patient in his "crucifixion period." The patient himself explained them as follows.

Fig. 17 was "Disobedience." Fig 18 was "Carrying the Cross."

Fig. 19 was "Purgatory." and Fig. 20 was "In the Grave."