conclusion is that the feelings of fatigue, such as they are, are not measures of mental inability. Kraepelin had already found that we can be mentally fatigued without feeling so. Thorndike wishes to emphasise that we can *feel* mentally fatigue without being so, the sign to stop work coming before there is any measurable evidence that ability to work is decreasing. The relation between the fact and the feeling of fatigue is thus very involved; and while it may be that we have to regard the feeling of fatigue as a beneficent warning, it may also be due merely to a lack of desire to work. HAVELOCK ELLIS.

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4. Ætiology of Insanity.

Relation of Syphilis to Organic Brain Disease and Insanity. (*Arch. of Neurol., London County Asylums*, 1899.) *Mott, F. W.*

It is with very great pleasure and satisfaction that the alienists of this country will welcome the *Archives of Neurology* of the Pathological Laboratory at Claybury, and they will similarly welcome the promise of an annual publication of the work done in that laboratory.

The whole volume shows that the Claybury pathologist and his assistants have commenced their work by a vigorous study of causes of insanity. They have begun upon what Möbius would call the exogenous causes, and have at present limited themselves to the study of syphilis in the insane.

The article at present under review is divided into two sections. The first deals with "brain syphilis in hospital and asylum practice," with notes of sixty cases and twenty-three asylum post-mortem examinations. The second is devoted to "observations on the ætiology and pathology of general paralysis."

We take it that the first part forms a preliminary study of brain syphilis generally. We have failed to find much in this paper which can be regarded as original; indeed, the paper is more of the nature of a critical digest, syphilitic brain disease being discussed under the usual headings of basic meningitis, meningitis of the convexity, cerebro-spinal meningitis, arteritis and neoplastic formations (gummata), encephalitis.

We must agree entirely with Dr. Mott's symptomatology of these conditions so far as physical signs are included, but we cannot agree that there are any mental symptoms which can be regarded as characteristic or even suggestive of brain syphilis. We learn, for instance, that "recurrent attacks of drowsiness, stupor, and coma should always make one suspect basic meningitis." This may be true of recurrent coma; but recurrent stupor is most common in the endogenous cases of insanity. Again, we cannot accept that there is of necessity even a suggestion of syphilis because "there is weakness of memory, slowness of thought and action, loss of will power, often a stolid indifference, with a tendency to causeless outbursts of passions, even of cheerfulness and mirth." These symptoms are not even characteristic of a toxic condition.

We must, however, agree with the author when he states that mercury should be exhibited whenever the physical signs suggest a

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syphilitic origin of the disease. Mercury may not cure the disease, but it will arrest its progress (we exclude general paralysis here).

The Superintendents of County Asylums will be in sympathy with Dr. Mott's complaint, which is not as strong as it might be, that much difficulty arises from the mode in which a patient is transferred from his home to the infirmary and from the infirmary to the asylum. This makes it extremely difficult to obtain a history of the case, and consequently to treat the patient to the greatest possible advantage.

W. H. B. STODDART.

Observations upon the Ætiology and Pathology of General Paralysis. (*Arch. of Neurol., Lond. County Asylums*, 1899.) *Mott, F. W.*

Dr. Mott in this paper asks two questions: What part does syphilis play in the pathology of general paralysis? What is the pathology of the morbid process underlying this terrible disease?

Although the dictum of Krafft-Ebing that *general paralysis is a product of civilisation and syphilisation* is becoming more recognised abroad, only some authorities recognise it in this country. Dr. Mott does not consider the dictum "no syphilis, no general paralysis," held by some, proven; but sums up strongly in favour of the very important *rôle* syphilis plays in relation to this malady. He, however, leaves his readers to form their own conclusions after studying the evidence he brings forward. His chief arguments are—

(1) General paralysis is unknown where syphilis is unknown.

(2) In the rural districts of Ireland and Sweden, where alcoholism is common but syphilis rare, general paralysis is either extremely rare or unknown.

(3) Priests, Quakers, and clergymen are seldom affected with general paralysis, and syphilis is also correspondingly rare.

(4) In rural districts general paralysis is uncommon, likewise syphilis. Both become more common as large towns are approached, where probably the other factor, mental stress and the struggle for existence, is also greater.

(5) Syphilis affects all classes of males from peer to artisan, likewise general paralysis, but it is common only amongst the lower classes of women, and diminishes as the station of life rises until it becomes very rare among the upper classes; so also general paralysis. Examples have occurred of married couples with syphilis developing general paralysis.

(6) In proportion to the reliability with which histories can be taken, so authorities are more definite as to the importance of syphilis in the production of this disease.

(7) Dr. Mott next disposes of the view that, because syphilitic residua are only found in a certain proportion of cases, tertiary lesions being uncommon, and antisyphilitic remedies fail to afford relief, therefore *syphilis cannot be the cause of the disease.*

(8) General paralysis is generally admitted to be due less to heredity than other forms of insanity. It is, in his opinion, an *organic brain disease with mental symptoms.*

(9) A history of syphilitic infection may not be obtained even where

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definite syphilitic residua exist. Crocker found that, in at least 20 *per cent.* of obvious syphilitic skin diseases, there was no history of infection; therefore to say that general paralysis or tabes cannot be due to syphilis, unless in every case a history of infection can be obtained, is absurd.

(10) Dr. Simpson, of the West Riding Asylum, contends that syphilis cannot be a factor in the production of this disease because of the rarity of recent infection or secondary rashes. Dr. Mott, however, on this point is in agreement with Krafft-Ebing, that, on the contrary, this is really in favour of the presence of syphilis; for, considering the promiscuous sexual life early general paralytics lead, the absence of recent syphilis points to immunity by previously acquired or inherited infection. He quotes Krafft-Ebing's negative inoculation with syphilitic virus of eight general paralytics.

(11) Oppenheim regards the above experiment as a crucial test, and states that people without syphilis, but who are the subjects of mental stress, excitement, and excesses *in Baccho et Venere*, are liable to develop neurasthenia; the syphilitic neurasthenic, however, is liable to dementia paralytica. This seems to be the correct explanation of the process; *it is the outcome of stress and syphilis.*

(12) Perhaps the most conclusive argument in favour of syphilis results from the study of twenty-two cases of juvenile general paralysis (*vide* 'Journ. of Ment. Sc.,' 1901, p. 170).

Dr. Mott then discusses the association of general paralysis with tabes, maintaining the dictum of the unity of the affections.

Another important factor is mental activity and stress in the struggle for existence among those who toil with their brains rather than with their hands. The striving, ambitious, sexually excitable, town-bred individual suffering with brain fag is especially liable to develop general paralysis if he has been infected by syphilis, and possibly it may develop after influenza. That mental stress does play an important part finds anatomical proof in the greater wasting of the hemisphere which is most used.

Sexual excesses and masturbation lead to asthenia, partly by violent emotions and exhaustion of the nervous system; but it may be also by the loss of important complex chemical compounds, depriving the nervous system of some substance essential for its metabolism.

Alcohol, Dr. Mott thinks, is a most powerful agent in assisting the toxic influence of syphilis, and its abuse in the early stages of the disease accelerates the progress of the malady.

The next part of the paper discusses the pathology of general paralysis. In Dr. Mott's opinion, brain atrophy, independent of coarse vascular lesion, is by far the most striking objective phenomenon in general paralysis; it especially affects the frontal and central regions, and spares, as a rule, the occipital and temporal lobes. On carefully weighing, after draining, the two hemispheres and comparing their weights, among other results he finds that the proportion of cases of the right hemisphere exceeding in weight that of the left is more than double that of the non-general paralytic cases; and if the juvenile general paralytic cases and the left-handed person be added, the percentage in which the comparative diminished weight of the hemisphere which is

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most used in speech and all special manual operations is raised to 71 per cent.

Dr. Mott had previously shown that there was evidence to prove that when nervous tissue underwent degeneration, protagon or lecithin broke up into cholin, glycero-phosphoric acid, and stearic acid. Investigation shows that this is true of general paralysis, and he assumes that there is in this malady an escape of cholin into the cerebro-spinal fluid and blood. Cholin is a toxic substance, but not very powerful; it produces a fall in the blood-pressure, partly by slowing the heart's action, but mainly by paralysing the peripheral neuro-muscular mechanism of the splanchnic arterial system. The cerebro-spinal fluid also contains nucleo-proteid. The existence of these two bodies in the cerebro-spinal fluid might tend to produce stasis in the veins of the brain, especially those opening into the longitudinal sinus, in which the blood flows contrary to gravity. It is possible for nucleo-proteid, in contact with the wall of the veins, to produce a tendency to coagulation or stasis, because, if experimentally injected into the circulation, it produces instant coagulation. The cellular proliferation and leucocyte accumulation in the lymphatic sheaths is always more marked where the cellular degeneration is most profound and recent, and it is possible that this inflammation is due to irritation produced by the products of degeneration. The part of the brain which usually exhibits thickening and opacity of the lepto-meninges coincided more closely with the distribution of the veins opening into the longitudinal sinus than with the distribution of the internal carotid artery. There are two reasons for this—two conditions which mutually interact upon one another in the establishment of a vicious circle, viz., degenerating nerve structures, the products of which accumulate and irritate the perivascular lymphatics surrounding the veins, causing a tendency to stasis and inflammation combined with conditions which produce mechanical congestion of the veins; and this reacting back on the nerve structures leads to still further disintegration of nervous tissue: thus the one vicious condition feeds the other.

Œdema of the brain is a striking feature in general paralysis, which must be associated with arterial anæmia, for the brain being contained in a closed cavity, the amount of arterial blood is proportional in a measure to the space occupied by venous blood.

Dr. Mott indicates in his paper his reasons for supposing that *the disease is a primary degeneration of the neuron*, with secondary inflammatory changes; in other words, a parenchymatous degeneration due to a loss of durability of the nerve-cell—a premature decay of tissue in which inherited and acquired conditions take part, with the result that progressive death of the latest and most highly developed nervous structures ensues as soon as their initial energy is unable to cope with the antagonistic influences of environment.

This by no means even touches upon many important considerations, the result of Dr. Mott's investigation of this disease. He goes on to state facts of great interest regarding status epilepticus and blood-pressure, also changes in cardiac and striated muscle.

J. R. Lord.

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Syphilis in General Paralysis of the Insane. (*Arch. of Neur., Lond. Co. Asylums*, 1899.) *Lewis, H. W.*

Two hundred consecutive admissions into Claybury Asylum were the subject of inquiry, and some evidence of venereal infection was found in seventy-one instances. Out of these two hundred cases twenty-three were general paralytics, and of these sixteen presented absolute evidence of syphilis, four cases were doubtful, and in three cases there was no evidence of this malady. He presents their cases in full, and also a tabulated analysis of their symptoms, which fully justify not only the diagnosis of general paralysis, but also Dr. Lewis's estimate of the syphilitic factor. Among many important facts he notes that out of twenty-three cases twelve had hereditary taint, sixteen were town-bred, five had a history of gonorrhœa, and only two cases were habitual drunkards, while fifteen were distinctly abstemious. He points out a useful fact in the diagnosis between general paralysis and alcoholic insanity, often very difficult, but helped by remembering the rarity of a history of drunkenness in the former. A history of head injury occurred in seven cases, sufficiently frequent to point out its importance as an exciting cause. This is best shown in two of the cases recorded, where the disease ran an exceptionally rapid course, and started very definitely from head injury. J. R. LORD.

Heredity and Alcoholism [*Eredità ed alcoolismo*]. (*Ann. di Nevrol.*, *fasc.* i, 1900.) *Lui, A.*

The author has made his observations on 1500 patients admitted during a period of five years to the provincial asylum of Brescia. In that province alcoholism is very rife, alcoholic insanity ranking third amongst the clinical forms of mental disease.

The points specially considered were—(1) With what frequency does alcoholism develop on an hereditary morbid condition, and what is the nature of that condition? (2) What are the characters of alcoholism in cases with hereditary taint as compared with others? (3) What are the morbid results of parental alcoholism on the offspring? Regarding the first point, the author found hereditary taint in 57 *per cent.* of the alcoholic insane; in three fifths the transmission was direct, in two fifths indirect; transmission through the father was more frequent than through the mother. All forms of nervous disease were found in the alcoholic ancestry; parental intemperance was noted in 25 per cent. of the cases.

On the second question the author finds, in agreement with Legrain, that alcoholism in subjects with neuropathic ancestry gives rise to graver and earlier mental disorder.

With regard to the third point—the influence of parental alcoholism on the offspring—the author notes that 12 per cent. of the total admissions to the asylum were the children of alcoholic parents; and further, that this influence was most evident in insanities of the degenerate type, where it occurred in 20 per cent. of all cases, in 24 per cent. of idiots and imbeciles, and in 12 per cent. of epileptics.

A table shows summarily the neuropathic conditions present in thirty alcoholic families traced through three generations.

W. C. SULLIVAN.

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Heredity. (*Prog. Méd., Nos.* 40—43.) *Chantemesse and Podwyssotsky.*

These lectures describe the changes from the fusion of the spermatozoon with the germ cell. It would be impossible without translating the whole text to transmit a knowledge of the order and character of these processes, and to some extent it would be unprofitable, for the mystery of development still remains unrevealed; but as the information afforded by these learned professors is drawn from the most recent researches (some of it is new to us), we venture to translate a few passages here and there which more nearly concern the student of mental pathology. Researches in comparative pathology confirm and control the clinical observation. Herting has noted anomalies in the division of the nuclei in the eggs of sea-urchins kept in a modified liquid. Upon keeping the spawn of the frog in salt water he observed a delay, and then an arrest of development. In a saline solution of ·5 per cent. the development went on and produced anencephalous or hemicranian monsters. Pouchet and Chabry found that hatching the eggs of sea-urchins in water deprived of lime hindered the formation of the calcareous spicules which form the skeleton of their arms, resulting in the latter not developing at all, showing that the cause of cellular development does not always rest with the nuclei or cytoplasm, but also may reside in the outward conditions. In 1893, Herbst was able to modify the structure of the pluteus by hatching them in water to which he added various salts. Different monsters appeared with morphological character founded upon the elements which formed the salts. The monsters produced by the treatment with the salts of potash differed in appearance from those treated with the salts of lithia. These curious observations make us hope that we shall yet be able to specify the types of the most common cachexies, such as alcoholic, tuberculous, and syphilitic. Folet Varinski (1883) and Dareste (1891), experimenting on animals higher in the scale, obtained by heating the eggs on one side a reversion of the head and of the heart, which culminated in a complete inversion of all the viscera. Féré (1895), by subjecting the eggs of fowls to the vapours of alcohol in an incubator, has brought about the production of monstrosities. Gley and Charrin (1896), experimenting with guinea-pigs and rabbits which were subjected to the influence of pyocyanic toxines, noted many abortions, and in the brood which survived a retarded growth and sundry deficiencies of nutrition. Charrin observed slow growth in the children of diseased mothers. There is no doubt that soluble substances do pass from the maternal to the fœtal circulation. The experiments of Strauss and Chamberland, confirmed by Koubassoff, show that the bacteria of carbuncle get through the placenta. Chantemesse and Widal have demonstrated that the bacteria of typhoid may be present in the fœtus of females inoculated with the virus of typhoid. The same germ was found by Eberth in the blood of children born of mothers who had typhus fever. In like manner the streptococcus, the bacillus of glanders, and the hæmatozoa of malarial fever have been traced from the mother to the fœtus. Experiments of this kind, however, are liable to fail if the peculiarities of the structure of the placenta are not considered. The disposition of this organ, which is believed to act like a filter in most cases, in this respect acts differently in different animals, and even

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differently in animals of the same species, and in the same animal at different stages of gestation.

The authors present the following general conclusions:

1. The anomalies and pathological conditions acquired in the course of an individual life (with the exception of some infectious diseases) are not transmissible as such to the offspring.

2. The only maladies which are hereditary and transmitted as such to the descendants are those which have been already inherited by progenitors themselves, or the pathological states which have arisen in the organism of the progenitors in the first stages of intra-uterine life,—that is to say, before the germs of the future sexual glands have been differentiated from the mass of the whole embryo.

3. Diseases acquired by the parents may provoke disorders of nutrition in the sexual glands and in the uterus, and thus influence the development of the spermatozoon, of the ovum, and of the embryo. This may become the cause of divers forms of diseased growth, general weakness, irregular development, and signs of degeneration in the descendants. These cachexies create an hereditary predisposition to divers affections.

The authors define nervous heredity as the aptitude to contract nervous disorders handed down to an organism by progenitors placed in the same conditions of heredity, or exposed to certain influences which can act upon the nervous system. Neuropathic heredity may have for its anatomical basis the imperfect development of the ganglion cells of the nerve-fibres. The psychological basis in mental diseases is the feeble resistance which the moral personality opposes to every suggestion and to every impulse. Trifling causes, vexations, or exhaustion bring out insanity in those predisposed, while others escape. Most impulsions are hereditary, one of the most tenacious being the impulse to suicide. He cites a case of a monomaniac from Moreau (de Tours) who killed himself when thirty years old. His son had scarcely arrived at that age when he was seized with monomania, and made two attempts at suicide. Another man in the flower of his age became insane and drowned himself. His son, blessed with good health and riches, the father of two fine children, drowned himself at the same age. Neurasthenia "which rides upon the neuroses and psychoses" is often hereditary. So are epilepsy and hysteria. These two diseases are rarely transmitted by similar heredity; one finds in the ascendants derangements of nutrition of the nervous system, such as chronic infections, permanent cachexies like arthritic rheumatism and gout, and continued intoxications like those of lead and alcohol. The experiments of Brown-Séquard upon the hereditary transmission of epilepsy in guinea-pigs, induced by section of the grand sympathetic of the neck, appear to prove that the effects of traumatism may be transmissible; but they note that counter-experiments have not confirmed the assertions of Brown-Séquard. A superficial mutilation is not transmitted from the father to the son; the amputation of the ears of bull-dogs and of the prepuce of Jewish children have to be repeated at each generation.

Can one attribute to each sex a special hereditary power? Do the sons inherit especially from the mother, and the daughters from the father? Joseph Muller, with his new theory of gamophagy, has sup-

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posed that in the fusion of the nuclei of the germinal cells there is digestion of one substance by the other, the weak by the strong. One often observes a predominance sometimes in favour of the male sex, sometimes in favour of the female. On pairing a female grey mouse with a male white mouse, we see that the offsping approach the male or female parent in an irregular way. Human half-breeds generally share the appearance of both parents.

The authors mention various hypotheses to explain the determination of sex, and cite the experiments of Maupas, who found that, in the Hydatina, he could produce males and females at pleasure by raising or lowering the temperature. W. W. IRELAND.

On Heredity in Disease. (*Scott. Med.-Surg. Journ., April*, 1900.)
Prof. Hamilton and others.

Professor Hamilton shows himself in this paper to be a loyal supporter of Weissman's theory of the continuity of the germ plasm in so far as disease affects the problem. His first point is that diseased conditions caused by external agencies cannot be by heredity through generations. He remarks, first, that mutilations are not transmitted, and that the so-called illustrations of the transmission of acquired disease resolve themselves into cases of antenatal contagion, *e.g.*, congenital syphilis, and the rare cases of congenital tuberculosis, or inheritance of a predisposition which has not been acquired. The well-recognised family tubercular proclivity must be accounted for by direct extra-uterine contagion and by a tubercular temperament, probably dependent on an inherent want of resisting power in the epithelial structures of the body, which has arisen as a variation in remote ascendants quite apart from external agencies. The colour of the hair, overgrowth of eyebrows and lashes, the presence of lanugo-like overgrowth along the spine and over the legs found in tubercular children, point to an anomalous epithelial type. Professor Hamilton points out that civilised communities show some immunity from tubercle as compared with savage ones, into which tubercle is introduced for the first time; the nature of the immunity he does not discuss, but it must be the result of selection, and not a transmissible acquired immunity. He considers the hereditary appearance of gout as due to a habit also arising as a variation, and therefore transmissible, which may be rendered apparent by diet and alcohol. The excessive amount of uric acid in the blood and tissues in these individuals may be a reversion to a type in which, as in birds and reptiles, uric acid was excreted normally in large amount. Mental disease of an hereditary type may in his opinion be accounted for by a diminished power of resistance on the part of nerve-cells. The psychopathic and tubercular constitutions are said to be frequently related; and this one would naturally expect since nerve-cells are closely related developmentally to epithelia, which, as we have seen, are the inherently weak cells in subjects of the tubercular diathesis. This relationship between the tubercular diatheses and neuroses is denied by some authorities. Dr. T. McDowall is of the opinion that a tubercular heredity is not more frequent in the insane than in the average sane patient. The writer's experience is that well-marked cases of tubercular predisposition are rare.

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But can external agencies bring about a transmissible morbid nervous state? Brown-Séquard's experiments, consisting of hemisection of the cord or division of the cervical sympathetic in guinea-pigs, induced epilepsy in the animals, and their progeny were readily thrown into convulsions. These appear to Professor Hamilton to be fallacious, but he does not state why. As crucial evidence of the transmissibility of acquired nervous disturbance from alcohol he would accept evidence it is quite impossible to obtain. He first requires a man free from ancestral taint. Does such an individual exist? Can we determine an individual to be such? The determinants concealed in the germ plasm seem to be rather difficult to scrutinise. He attributes mental derangement as usual to variation occurring in a far back ancestor; congenital syphilis as due simply to intra-uterine contagion. The eradication of a vicious heredity by inbreeding is next discussed, and Professor Hamilton states his opinion that it is possible, but the vice may appear atavistically, generations afterward. Professor Hamilton then asks evidence of telegony in disease, *e.g.*, can a tubercular first husband so affect his wife that his tubercular characters are imprinted on the offspring of a second marriage?

Dr. Clouston followed, and emphasised the fact that Weissman admits that environment, *e.g.*, climatic conditions, might affect the germ plasm, and so the subsequent individual; and on this admission he seems to endeavour to account for all the hereditary character of the neuroses, and so utterly repudiates the essentials of Weissman's teachings.

Professor Ewart described experiments on pigeons, showing that the degree of ripeness of the ovum at the time of impregnation influenced the character of the offspring.

Dr. Ballantyne spoke of the difficulty in separating cases of intra-uterine contagion from cases of hereditary transmission, and stated also that experimental methods relative to the transmission of acquired characteristics might be used during the period of development of the embryo with better results.

Dr. James was opposed to Weissman's theory. It was against "instinct and common sense." He credits Herbert Spencer with this statement.

Professor Schäfer mentioned that Dr. L. Hill had repeated Brown-Séquard's experiments with negative results as to the transmission of the neurosis.

Dr. W. Leslie Mackenzie's contribution can be characterised as able and lucid. He controverts the consolations drawn by Dr. Clouston from what he called Weissman's admissions. W. J. PENFOLD.

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5. Clinical Psychiatry and Neurology.

The Psychoses of Puberty. (*Rpt. xiii, Cong. Internat. de Méd., Sect. de Psychiat.*) *Marro and Ziehen.*

The above was one of the subjects selected for discussion in the Section of Psychiatry at the International Medical Congress (held last August at Paris), and papers were contributed by Professor Marro of

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